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Technical Report Overview

Report: Fording River Operations Local Aquatic Effects Monitoring Program (LAEMP) 2021 Report

Overview: This report presents the 2021 results of the local aquatic effects monitoring program (LAEMP) developed for Teck's Fording River Operations (FRO). The report presents data and evaluation of current conditions and collects baseline data to support future evaluations of changes related to commissioning of an active water treatment facility that will be treating water from Cataract, Swift, and Kilmarnock creeks.

This report was prepared for Teck by Minnow Environmental Inc. and Lotic Environmental Ltd.

For More Information

If you have questions regarding this report, please:

- Phone toll-free to 1.855.806.6854
- Email **feedbackteckcoal@teck.com**

Future studies will be made available at **teck.com/elkvalley.**

Fording River Operations
Local Aquatic Effects Monitoring
Program (LAEMP) 2021 Report

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May 2022

Fording River Operation
Local Aquatic Effects Monitoring Program 2021 Report

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EXECUTIVE SUMMARY

The Fording River Operation local aquatic effects monitoring program (FRO LAEMP) was developed to monitor aquatic conditions related to ongoing mining and the future commissioning of the active water treatment facility (AWTF) and is a requirement in Permit 107517.

The first FRO LAEMP study design, and associated study questions, was submitted in accordance with Permit 107517 on June 1, 2016 (Minnow 2016) and covered 2016 to 2018 (a LAEMP 'cycle'). This study design was subsequently approved by Environment and Climate Change Strategy (ENV) on October 24, 2016. With the delay in construction and operation of the Fording River Operation – South Active Water Treatment Facility (FRO-S AWTF), the second FRO LAEMP study design for 2019 and 2020 (cycle 2) was submitted on May 31, 2019 to cover the extended pre-commissioning period (Minnow and Lotic 2019a). During the FRO LAEMP cycle 3 (2021 to 2023) study design development the study questions were updated based on evaluations of data from previous reports and input from the Environmental Monitoring Committee (EMC; December 3, 2020; February 3 and 23, 2021) and subject matter experts (SMEs) to reflect current conditions in the study area (e.g., commissioning of the Fording River Operation - North Saturated Rock Fill [FRO-N SRF], the Westslope Cutthroat Trout [WCT] population decline; Minnow and Lotic 2021a). Study questions in the current FRO LAEMP cycle are as follows:

1. Are nitrate concentrations in the study area changing and do they have the potential for adverse effects on biota?
2. Is water treatment affecting biological productivity downstream in the Fording River?
3. Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent with predictions, and if not, why?
4. How is temperature changing over time in the FRO LAEMP study area?

   4a. Is water temperature measurably different (greater than 1 degree Celsius) downstream of the AWTF and/or SRF effluent discharge relative to the upstream baseline condition?

   4b. If changes in water temperature are observed, are these changes attributed to mitigations (i.e., AWTF and/or SRF)?
5. What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?
6. What are the factors influencing fish health and population in the upper Fording River?

Annual LAEMP reports are required to be submitted on May 31st each year since 2017. Each annual report has expanded on the understanding of potential causes of the observed changes in the benthic invertebrate community, and sampling plans and data analyses were updated annually to reflect new learnings and knowledge gaps within the FRO LAEMP study area (Minnow 2017b, Minnow 2018a, Minnow and Lotic 2019a, Minnow and Lotic 2020a, 2021a).

Since the initial 2017 FRO LAEMP report, benthic invertebrate community abundance and richness has consistently been within the normal range throughout the study area; however, the relative abundance of mayflies (% Ephemeroptera) in September, has consistently been below the regional normal range in the upper Fording River (from the historical Cataract Creek confluence to upstream of Ewin Creek since 2015 Minnow 2017a, Minnow 2018, Minnow and Lotic 2018, Minnow and Lotic 2019b, Minnow and Lotic 2020b, 2021b). Areas with reduced % Ephemeroptera often corresponded with greater Plecoptera abundance. As a result of higher Plecoptera abundance, the relative proportion of combined Ephemeroptera-Plecoptera-Trichoptera (EPT) has remained within the regional normal range but has fallen below the site-specific (habitat adjusted) normal ranges throughout most of the study area. Strong negative correlations between key BIC endpoints, including % Ephemeroptera, and multiple mine-related constituents (nitrate, sulphate, total dissolved solids [TDS], selenium) have been identified, with many constituents also correlating positively with Plecoptera endpoints (Minnow and Lotic 2019b, 2020b, 2021b). Constrained multivariate ordinations have demonstrated that both habitat and water quality factors have significant influence on BIC structure throughout the study area, but covariation among habitat variables and mine-related stressors (i.e., changing in an upstream to downstream direction) has made identifying the individual contributions of each factor challenging. Drying surveys in 2019 and 2020 identified spatial and temporal variability in instream drying (Minnow and Lotic 2020b, 2021b), but while BIC differed in areas where seasonal drying occurs compared to those that remain wetted year-round, most BIC endpoints recovered within two to eight weeks post-rewatering (Minnow and Lotic 2021b).

The 2021 FRO LAEMP continued to provide existing conditions data for pre-commissioning of FRO-S AWTF, as well as insights into physical, chemical, and biological conditions in the upper Fording River. The evaluation of data related to Study Question #1 found that although nitrate concentrations have increased at some areas compared to previous years, these changes were not commensurate with changes in BIC community at individual study areas. Taken together, while nitrate should not be considered the sole cause of observed effects to BIC endpoints, evidence suggests that nitrate is contributing to variations in benthic invertebrate community structure within the study area, and sensitive taxa (i.e., Ephemeroptera and EPT endpoints) are the lowest in areas where nitrate concentrations are the highest. Chronic toxicity testing has not demonstrated a link between nitrate concentrations and adverse responses to fish endpoints, particularly during early life stages of WCT.

Existing conditions data to address Study Questions #2 and #4 were collected during the 2021 FRO LAEMP sampling programs. To date, total phosphorus and orthophosphate concentrations as well as benthic invertebrate productivity have been consistent over time in the study area. Although mean annual water temperatures have remained relatively consistent throughout the study area at individual locations, large seasonal variations in water temperature have been identified throughout the upper and middle study areas, with more limited seasonal fluctuations in the lower study area where there are significant influences from groundwater. Upon commissioning of the FRO AWTF-S, pre-commmissioning data will be used for comparisons to post-commissioning data to identify any potential changes as a result of treatment.

Evaluation of data related to Study Question #3 found that benthic invertebrate tissue selenium concentrations within the FRO LAEMP study area were as expected based on water chemistry in most areas in 2021, except in the Greenhouse Side Channel, downstream of the Swift-Cataract diversion, and downstream of the Multiplate culvert. Elevated tissue selenium concentrations at the Greenhouse Side Channel were explained by the presence of annelids in composite-taxa samples; however, the cause of elevated tissue selenium concentrations at downstream of the Swift-Cataract diversion and downstream of the Multiplate culvert are not clearly understood. Tissue selenium concentrations were highest at monitoring areas where total and bioavailable (reduced) selenium species were detected at the highest concentrations (i.e., downstream of highly mine-influenced inputs such as the Swift-Cataract Diversion). Future sampling will continue to monitor tissue selenium concentrations in the study area, and current data will be used as a basis for comparison post commissioning of the FRO AWTF- S.

The results of the 2021 FRO LAEMP to support Study Question #5 identified relative abundances of Ephemeroptera below the regional normal range from historical Cataract Creek confluence downstream to Ewin Creek. Abundance metrics (total, EPT, Ephemeroptera, Plecoptera, Trichoptera, Chironomidae) were within the normal ranges and have remained consisted over time. Many areas with low % Ephemeroptera had high percent and abundance of Plecoptera families (e.g., Nemouridae and Perlodidae), especially in the middle and lower study areas, but % EPT was below the site-specific normal ranges throughout most of the FRO LAEMP study area. Relative abundance of EPT in the Fording River downstream of Henretta Creek (RG_FODHE) and upstream of Shandley Creek (RG_FOUSH) returned to historical levels in 2021 after falling below the regional normal range in recent years. Lower % EPT at RG_FODHE has been linked to habitat changes associated with changes in flow paths related to channel braiding, but the cause of reduced % EPT at RG_FOUSH in previous years is currently unknown.

The evaluation of the BIC data in the FRO LAEMP study area has clearly demonstrated that both habitat and water quality factors are affecting variation in BIC communities, and although it remains difficult to separate the effect of individual contributions of each variable to the observed effects on BIC, the weight of evidence suggests that the key factors influencing shifts in BIC in the middle and lower study areas are elevated nitrate concentrations (middle and lower study area) and total nickel concentrations (middle study area), changes in substrate size and station gradient related to the Chauncey Creek alluvial fan (lower study area), and seasonal differences in water temperature and other habitat variables related to groundwater influence among areas. Several key habitat variables were identified as significantly contributing to the variation in BIC, including water velocity, water depth, water temperature, substrate size, embeddedness, station gradient, watershed slope, and watershed area. Continued evaluation of BIC following an improvement in water quality related to the commissioning of the FRO AWTF-S, as well as the use of BIC predictive modelling tools currently being developed under the RAEMP (Minnow 2021a) will aid in the interpretation of monitoring data to support answering Study Question #5.

Evaluation of data and key findings from studies related to Study Question #6 found that Westslope Cutthroat Trout (WCT) in the FRO LAEMP study area were in good condition and had a general absence of external anomalies based on the 2021 fishing efforts under the RAEMP. Muscle selenium concentrations were lower than the site-specific effects benchmark for WCT in all fish caught in the Fording River mainstem in 2021 except one (i.e., at the Multiplate culvert) and concentrations were consistent with previous years. Fish sampled opportunistically from Clode Creek, which received mine-influenced water from Clode Sedimentation Ponds, however, did have higher muscle selenium concentrations compared to other areas. Drying in the study area has varied spatially and temporally but annual drying usually occurs in the northern and southern drying sections between early October and late December each year, respectively, and may represent barriers to fish migration to key overwintering areas in the northern survey area. The WCT population appears to be recovering from the steep population decline in winter 2018/2019 and annual population monitoring will continue to track recovery.

TABLE OF CONTENTS

EXECUTIVE SUMMARY I

1 INTRODUCTION 1
1.1 Background 1
1.2 Conceptual Site Model 7
1.3 Linkages to the Adaptive Management Plan for Teck Coal in the Elk Valley 9

2 METHODS 11
2.1 Overview 11
2.2 Water Quality 17
2.2.1 Sample Collection 17
2.2.2 Laboratory Analysis 21
2.2.3 Chronic Toxicity Testing 23
2.2.4 Data Analysis 24
2.3 Hydrology 24
2.3.1 Seasonal Drying 24
2.3.2 Water Level and Temperature 25
2.3.3 Flow 27
2.4 Substrate Quality 28
2.4.1 Sediment 28
2.4.2 Calcite 29
2.5 Benthic Invertebrates 30
2.5.1 Community Structure 30
2.5.2 Tissue Selenium Concentrations 34
2.5.3 Biomass 35
2.6 Fish 36
2.6.1 Sample Collection 36
2.6.2 Laboratory Analysis 37
2.6.3 Data Analysis 38
2.7 Integrated Analysis 38

3 RESULTS 41
3.1 Water Chemistry 41
3.1.1 Water Quality 41
3.1.2 Selenium Speciation 46
3.1.3 Chronic Toxicity 47
3.2 Hydrology 50
3.2.1 Seasonal Surveys of Dry Sections 50
3.2.2 Temperature 53
3.2.3 Water Level and Flows 56
3.3 Substrate Quality 56
3.3.1 Sediment 56
3.3.2 Calcite 58
3.4 Benthic Invertebrate 60
3.4.1 Biological Productivity 60
3.4.2 Benthic Invertebrate Tissue Chemistry 60
3.4.3 Benthic Invertebrate Community 65
3.5 Integrated Analysis 84
3.5.1 Time Trend Analyses of Nitrate Concentrations and BIC 84
3.5.2 Correlation Analysis 84

3.5.3 Canonical Correspondence Analysis 88
3.6 Fish Sampling in the Upper Fording River 93
3.6.1 Westslope Cutthroat Trout Tissue Chemistry 93
3.6.2 Fish Condition Factor 97

4 DATA EVALUATION AND DISCUSSION 99
4.1 Study Question #1 99
4.1.1 Overview 99
4.1.2 Nitrate Concentrations 99
4.1.3 Biota in Relation to Nitrate Concentrations 99
4.1.4 Summary 101
4.2 Study Question #2 (Current Condition) 101
4.2.1 Overview 101
4.2.2 Nutrient Concentrations and Benthic Invertebrate Biomass and Density 101
4.3 Study Question #3 (Current Condition) 102
4.3.1 Overview 102
4.3.2 Benthic Invertebrate Tissue Selenium Concentrations 102
4.3.3 Summary 103
4.4 Study Question #4 (Current Condition) 104
4.4.1 Overview 104
4.4.2 Water Temperature 104
4.5 Study Question #5 104
4.5.1 Overview 104
4.5.2 Upper Study Area 105
4.5.3 Middle Study Area 107
4.5.4 Lower Study Area 108
4.5.5 Full Study Area 110
4.5.6 Summary 111
4.6 Study Question #6 112
4.6.1 Overview 112
4.6.2 WCT Monitoring Data 112
4.6.3 Fish Population 114
4.6.4 Summary 115

5 CONCLUSIONS 116

6 UPDATES TO 2021 TO 2023 FRO LAEMP STUDY DESIGN 125

7 REFERENCES 128

APPENDIX B WATER

APPENDIX C HYDROLOGY

APPENDIX D SUBSTRATE QUALITY

APPENDIX E BENTHIC INVERTEBRATES

APPENDIX F INTEGRATED ANALYSIS

APPENDIX G HABITAT

APPENDIX H BIOLOGICAL TRIGGERS

APPENDIX I WESTSLOPE CUTTHROAT TROUT MONITORING DATA

APPENDIX K LAB REPORTS

LIST OF FIGURES

Figure 1.1: Teck's Coal Mine Operations within the Elk River Watershed, Southeast British Columbia 2
Figure 1.2: Fording River Operations South AWTF 3
Figure 1.3: Fording LAEMP Conceptual Site Model 8
Figure 2.1: Monitoring Locations in the Upper Fording River, FRO LAEMP, 2021 15
Figure 2.2: Drying Surveys and Continuous Water Monitoring Stations in the Upper Fording River, FRO LAEMP, 2021 19
Figure 3.1: Average Monthly Nitrate Concentrations for FR_FRCP1, FR_FRABCH, and GH_FR1 under Low, Medium, and High Flows, FRO LAEMP, 2021 44
Figure 3.2: Summary of the 2021 Chronic Toxicity Tests in the Upper Fording River, FRO LAEMP, 2021 48
Figure 3.3: Summary of the 2021 Chronic Toxicity Causation Assessment in the Upper Fording River, FRO LAEMP, 2021 49
Figure 3.4: Calcite Index FRO LAEMP, 2021 59
Figure 3.5: Total Benthic Invertebrate Density and Biomass (Hess Sampling) by Area, FRO LAEMP, September 2021 61
Figure 3.6: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2021 66
Figure 3.7: Observed and Modelled Selenium Concentrations in Benthic Invertebrate Composite-taxa Samples Relative to Aqueous Selenium Concentrations at Biological Monitoring Areas Upstream and Downstream of Fording River Operations, FRO LAEMP, 2021 67
Figure 3.8: Benthic Invertebrate Abundance and Richness, FRO LAEMP, September 2021 68
Figure 3.9: Benthic Invertebrate % EPT and % Ephemeroptera, FRO LAEMP, September 2021 69
Figure 3.10: Benthic Invertebrate % Plecoptera and % Trichoptera, FRO LAEMP, September 2021 70
Figure 3.11: Benthic Invertebrate % Chironomidae and EPT Abundance, FRO LAEMP, September 2021 71
Figure 3.12: Benthic Invertebrate Ephemeroptera Abundance and Plecoptera Abundance, FRO LAEMP, September 2021 72
Figure 3.13: Benthic Invertebrate Trichoptera Abundance and Chironomidae Abundance, FRO LAEMP, September 2021 73
Figure 3.14: Benthic Invertebrate Baetidae Abundance and Heptageniidae Abundance, FRO LAEMP, September 2021 74
Figure 3.15: Benthic Invertebrate Ephemerellidae Abundance and Autotropohic Heterotrophic Index, FRO LAEMP, September 2021 75
Figure 3.16: Benthic Invertebrate Filtering Collector Index and Predator Index, FRO LAEMP, September 2021 76
Figure 3.17: Benthic Invertebrate Benthic Hyporheic Index, FRO LAEMP, September 2021 77

Figure 3.18; Benthic Invertebrate Community Percent Composition, FRO LAEMP, June to December 2021 ... 79
Figure 3.19: Heatmap of Spearman Correlation Coefficients of Benthic Invertebrate Community Endpoints against Physical and Chemical Parameters, Full Fording River, 2018 to 2021 ... 86
Figure 3.20: Variance Partitioning Between Habitat, Water and Calcite Using Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021 ... 89
Figure 3.21: Westslope Cutthroat Trout Muscle Selenium Concentrations, FRO LAEMP, 2018 and 2021 ... 94
Figure 3.22: Westslope Cutthroat Trout Muscle Selenium Concentrations, FRO LAEMP, 2018 and 2021 ... 95
Figure 3.23: Selenium Concentration in Female West Slope Cutthroat Trout, Fording River, June 2021 ... 96
Figure 3.24: Westslope Cutthroat Trout Condition, FRO LAEMP, 2018 and 2021 ... 98

LIST OF TABLES

Table 2.1: Summary of the 2021 FRO LAEMP ... 12
Table 2.2: Summary of Samples Collected for the FRO LAEMP, 2021 ... 16
Table 2.3: Stations Associated with Drying Surveys, Manual Flow Measurements, and Hydrometric and Water Temperature Loggers, FRO LAEMP, 2021 ... 18
Table 2.4: Summary of Teck Routine Water Quality Monitoring Associated with the FRO LAEMP, 2021 ... 20
Table 2.5: Water Quality Parameters Required Under Permit 107517 ... 22
Table 2.6: Benthic Invertebrate Community Index Descriptions, FRO LAEMP, 2021 ... 33
Table 2.7: Summary of Habitat Variables Used in Canonical Correspondence Analysis of Benthic Invertebrate Community, FRO LAEMP, 2020 ... 39
Table 2.8: Summary of Locations with Complete Datasets for Canonical Correspondence Analysis, FRO LAEMP, 2021 ... 40
Table 3.1: Drying Dates at Hydrometric Stations, FRO LAEMP, 2017 to 2021 ... 51
Table 3.2: Number of Dry Days at Hydrometric Stations, FRO LAEMP, 2017 to 2021 ... 54
Table 3.3: Summary Table of Water Temperature record at Hydrometric Stations, FRO LAEMP, 2017 to 2021 ... 55
Table 3.4: Summary Table of Calculated Discharge for Hydrometric Stations, FRO LAEMP, 2017 to 2021 ... 57
Table 3.5: Selenium Concentration in Composite-taxa Benthic Invertebrate Tissue, FRO LAEMP, 2021 ... 63
Table 3.6: Temporal Changes in Nitrate Concentrations and Benthic Invertebrate Community Endpoints in the FRO LAEMP, September 2012 to 2021 ... 85
Table 5.1: Summary of Results (Study Questions #1, #3, #5, and #6), FRO LAEMP, 2021 ... 117
Table 5.2: Summary of Findings, Responses and Adjustments Related to the FRO LAEMP in 2021 ... 121
Table 5.3: Summary of Biological Trigger Analysis for Percent EPT and Selenium Benthic Invertebrate Tissue, FRO LAEMP, 2021 ... 124
Table 6.1: Summary of Sampling Plan for the FRO LAEMP, 2022 ... 126
Table 6.2: FRO-N SRF Commissioning Sampling Plan, 2022 ... 127

ACRONYMS AND ABBREVIATIONS

ALS – ALS Environmental

AMP – Adaptive Management Plan

ANOVA – Analysis of Variance

AWTF – Active Water Treatment Facility

B-tool – Bioaccumulation Tool

BCWQG – British Columbia Water Quality Guidelines

BIC – Benthic Invertebrate Community

CA – Correspondence Analysis

CABIN – Canadian Aquatic Biomonitoring Network

CCA – Canonical Correspondence Analysis

Cc – Concretion

CI – Calcite Index

Cp – Calcite presence

Cp' – Calcite proportion

CMm – Coal Mountain Mine

CRC ICP-MS – Coupled Plasma-Mass Spectrometry

CSM – Conceptual Site Model

CVAFS – Cold Vapour Atomic Fluorescence Spectroscopy

DO – Dissolved Oxygen

DOC – Dissolved Organic Carbon

DQO – Data Quality Objectives

DQR – Data Quality Review

ECCC – Environment and Climate Change Canada

EMC – Environmental Monitoring Committee

ENV – Environment and Climate Change Strategy

EoC – Evaluation of Cause

EPA – Environmental Protection Agency

EPT – Ephemeroptera-Plecoptera-Trichoptera

EVFFHC – Elk Valley Fish and Fish Habitat Committee

EVO – Elkview Operations

EVWQP – Elk Valley Water Quality Plan

EWT – Early Warning Triggers

FRO – Fording River Operations

FRO-N SRF – Fording River Operation – North Saturate Rock Fill

FRO-S AWTF – Fording River Operation Active Water Treatment Facility - South

GC/MS – Gas Chromatography with Mass Spectrometric Detection

GHO – Greenhills Operations

GPS – Global Positioning System

IC-ICP-CRC-MS – Inductively Coupled Plasma Collision Reaction Cell Mass Spectrometry

ICP-MS – Inductively Coupled Plasma Mass Spectrophotometry

ICP-QQQ-MS – Inductively Coupled Plasma Triple Quadrupole Mass Spectrometry

KNC – Ktunaxa Nation Council

LA-ICPMS – Laser Ablation Inductively Coupled Plasma Spectrometry

LAEMP – Local Aquatic Effects Monitoring Program

LCO – Line Creek Operations

LM – Linear Model

LMM – Linear Mixed-Effects Model

LPL – Lowest Practical Level

LRL – Laboratory Reporting Limit

MOD – Magnitude of Difference

MOE – Ministry of the Environment

PAH – Polycyclic Aromatic Hydrocarbons

PC – Principal Components

PCA – Principal Component Analysis

pCCA – Partial Correspondence Analysis

QA/QC – Quality Assurance / Quality Control

RAEMP – Regional Aquatic Effects Monitoring Program

RISC – Resources Information Standards Committee

SME – Subject Matter Expert

SRF – Saturated Rock Fill

TDS – Total Dissolved Solids

TKN – Total Kjeldahl Nitrogen

TSS – Total Suspended Solids

Teck – Teck Coal Limited

TOC – Total Organic Carbon

UFR – Upper Fording River

WCT – Westslope Cutthroat Trout

WCT RWG – Westslope Cutthroat Trout Recovery Working Group

WSQG – Working Sediment Quality Guidelines

1 INTRODUCTION

1.1 Background

Teck Coal Limited (Teck) operates four steelmaking coal mines in the Elk River watershed, which are the Fording River Operations (FRO), Greenhills Operations (GHO), Line Creek Operations (LCO), and Elkview Operations (EVO; Figure 1.1). A fifth mine, Coal Mountain Mine (CMm), is also owned by Teck and located in the Elk River watershed; however, it is no longer in operation and has been moved into the care and maintenance designation. Discharges from the mines to the Elk River watershed are authorized by the British Columbia Ministry of Environment and Climate Change Strategy (ENV) through permits that are issued under provisions of the *Environmental Management Act*. Permit 107517 specifies the terms and conditions associated with discharges from Teck's five Elk Valley mine operations.

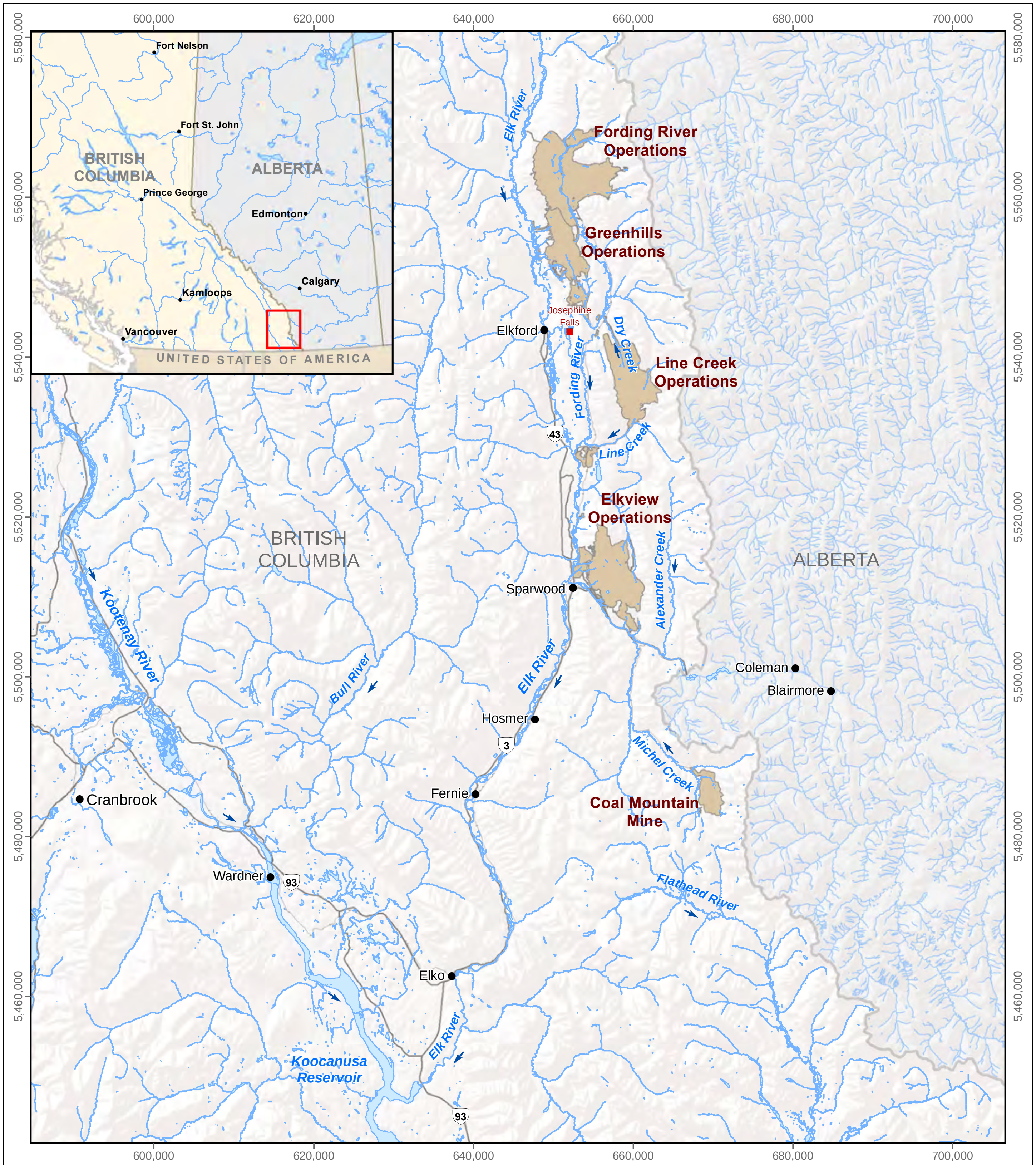
Permit 107517 required that Teck develop a local aquatic effects monitoring program (LAEMP) related to ongoing mining at FRO and the future commissioning of the Fording River Operation - South Active Water Treatment Facility (FRO-S AWTF) that will treat waters from Cataract, Swift, and Kilmarnock Creeks (Figure 1.2). As a result, the first FRO LAEMP study design was developed, which encompassed the 2016 to 2018 sampling years. A second study design was developed to cover the period between the first cycle and the expected commissioning of the FRO-S AWTF (2019 to 2020). Permit 107517 was amended in March 2021 (Teck 2021a) to include the third cycle of FRO LAEMP monitoring, and Section 8.3.2 outlines the LAEMP requirements as follows:

> *"The Permittee must complete to the satisfaction of the director a study design for a LAEMP which will focus on the upper Fording River for 2021-2023 by April 1, 2021. The study design must be reviewed by the EMC[1] and be designed to an appropriate temporal scale to capture short term, local effects to the immediate receiving environment."*

Also, Section 9.5 of Permit 107517 states:

> *"The LAEMP Annual Reports must be reported on in accordance with generally accepted standards of good scientific practice in a written report and submitted to the director by May 31 of each year following the data collection calendar year."*

[1] The Environmental Monitoring Committee (EMC) was established after the first RAEMP design was approved and implemented in 2015, and consists of representatives from Teck, ENV, the Ministry of Energy, Mines, and Petroleum Resources, the Ktunaxa Nation Council (KNC), Interior Health Authority, and an Independent Scientist. The EMC reviews submissions and provides technical advice and input to Teck and the ENV Director, as stipulated in Section 11.2 of Permit 107517.



LEGEND

Teck Coal Mine Operations

Teck's Coal Mine Operations within the Elk River Watershed, Southeast British Columbia

0 10 20 40 km

N W E S

Projection: North American Datum 1983 UTM Zone 11 U
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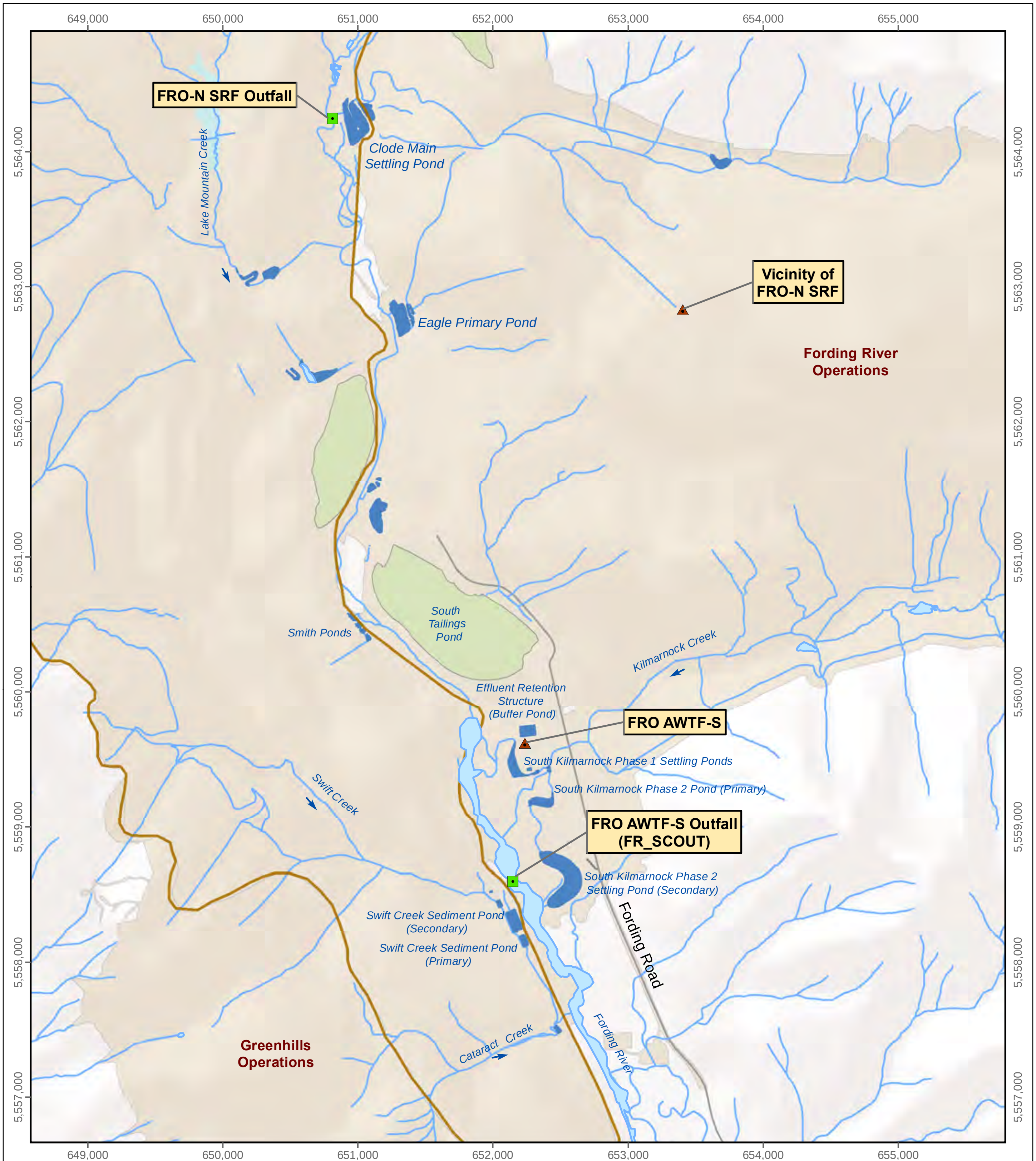
Figure 1.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\21-11 Figure 1.1 Teck Coal Limited Operation.mxd



LEGEND

- Water Treatment Facility
- Water Outfall
- Fording Swift Project Footprint
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operations

Fording River Operations South AWTF

0 0.5 1 2 km

Projection: North American Datum 1983 UTM Zone 11 N

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Figure 1.2

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The first FRO LAEMP study design was submitted in accordance with the Permit requirement on June 1, 2016 (Minnow 2016) and subsequently approved by ENV on October 24, 2016. This first cycle represented a period of monitoring of current conditions with respect to the future FRO-S AWTF. In addition to the need for monitoring data prior to active water treatment, there were also concerns related to potential increases in aqueous nitrate concentrations in the Fording River prior to initiation of water treatment, as projected in the Elk Valley Water Quality Plan (EVWQP; Teck 2014). Changes in biota related to changing flows in portions of the Fording River as a result of re-direction of water (i.e., re-direction of flows from Cataract, Swift, and Kilmarnock creeks for treatment or water management purposes) were also considered in the LAEMP study design. Seasonal drying surveys were added to the FRO LAEMP at the end of the first cycle (i.e., Fall 2017) to document the spatial and temporal extent of drying in the study area, and to contribute to the understanding of the potential effects of drying on biota. A study design for the second FRO LAEMP cycle was submitted on May 31, 2019 (Minnow and Lotic 2019a). This second study design was developed to cover the remaining period (2019 to 2020) prior to the commissioning of the FRO-S AWTF and, as such, continued to focus on monitoring of current conditions pre-treatment, the effects of nitrate and other mine-related constituents on the benthic invertebrate community (BIC), and the spatial and temporal patterns in seasonal drying throughout the study area (Minnow and Lotic 2019a, 2020a). Drying surveys were added in the Fording River side channel #2 and a 3 km section of Henretta Creek upstream of Henretta Lake (i.e., upstream of FRO licensed water use) at the end of the second FRO LAEMP cycle. A study design for the third FRO LAEMP cycle was submitted on April 1, 2021 (Minnow and Lotic 2021a). The third study design was developed to understand conditions in the upper Fording River post-commissioning of the FRO-S AWTF and Fording River Operation - North Saturated Rock Fill (FRO-N SRF); however, forward flow of treated waters from the FRO-S AWTF did not begin until December 22, 2021, and Phase 2 commissioning of the FRO-N SRF will not begin until Q4 2022so the present report represents current conditions in the study area.

After Phase 2 commissioning, the FRO-N SRF will treat water from Eagle 6 Pit, Clode Primary Pond, Liverpool Ponds, and Post Ponds and return treated water to Clode Secondary Pond prior to discharge to the Fording River via Clode Creek (Teck 2022a). To assess biological conditions related to FRO-N SRF commissioning, a biological monitoring area was added to the FRO LAEMP upstream of the Clode Creek confluence in 2019, which will be compared to downstream (RG_FOUNGD and RG_FODNGD) monitoring areas. The FRO-N SRF will be commissioned in 2022 and future FRO LAEMPs will evaluate pre- and post-commissioning conditions in the Fording River. Additional biological monitoring areas may be added to the FRO LAEMP in 2022 in anticipation of FRO-N SRF commissioning.

The first six years of the FRO LAEMP were focused on understanding conditions prior to the commissioning the FRO-S AWTF and how habitat, water quality constituents (including nitrate), and seasonal drying may affect BIC in the study area. Contrary to EVWQP projections, nitrate concentrations have not increased in the upper Fording River and have not changed concurrently with observed temporal changes in BIC endpoints (% Ephemeroptera and % Ephemeroptera-Plecoptera-Trichoptera [EPT] combined; Minnow and Lotic 2019b, 2020b, 2021b). A major finding of the FRO LAEMP has been an effect on % Ephemeroptera, whereby their relative proportions have been lower than the regional normal range from downstream of Cataract Creek to upstream of Ewin Creek since 2015 (Minnow 2017, Minnow 2018, Minnow and Lotic 2018, 2019b, 2020b, 2021b). Although several mine-related water quality constituents (nitrate, total selenium, sulphate, and total dissolved solids [TDS]) have been identified as correlating strongly and negatively with % Ephemeroptera (Minnow and Lotic 2018, 2019b, 2020b, 2021b), a strong co-variation between habitat and water quality factors has been identified making it difficult to understand individual contributions of water quality and habitat on BIC variation (Minnow and Lotic 2020b, 2021b)

In addition to monitoring conducted under the FRO LAEMP, fish population monitoring is also ongoing within the upper Fording River. The 2019 Westslope Cutthroat Trout (WCT) population monitoring program identified a steep decline in the WCT population numbers in 2019 compared to 2017 (74% lower for juveniles and 93% lower for subadults) within the upper Fording River, including the FRO LAEMP study area (Cope 2020). As a result, an evaluation of cause (EoC) was conducted and determined that “the decline occurred in February to March 2019 and was caused by the interaction of extreme ice conditions (due to extreme, prolonged, cold air temperatures; seasonal, winter low flows, and lower winter snowpack), sparse overwintering habitats and restrictive fish passage conditions during the preceding migration period in fall 2019” (Evaluation of Cause Team 2021). Two actions have been initiated as a result of findings from the EoC: 1) the development of an internal WCT recovery plan with consultation from regulators; and 2) restructuring of monitoring designs to consider reduced fish handling and improved statistical population assessment. Teck continues to work collaboratively with the Ktunaxa Nation Council (KNC), government regulators, the EMC, the Elk Valley Fish and Fish Habitat Committee (EVFFHC), and independent experts to gather more data and address ongoing protection of fish. The WCT Recovery Working Group (WCT RWG) has since been established, which is composed of experts from the above groups with the primary goal of facilitating the recovery of the WCT population in the upper Fording River.

The goal of the FRO LAEMP is to assess site-specific conditions on a frequent and localized basis, as required, until sufficient data have been collected, concerns no longer exist, or relevant monitoring can be incorporated into the RAEMP. The primary focus of the FRO LAEMP is to monitor aquatic ecosystem condition, particularly as it relates to conditions post-commissioning of water treatment compared to conditions prior to commissioning. Study questions from the first and second FRO LAEMP cycles were updated during the preparation of the third FRO LAEMP cycle to better reflect important considerations in the study area (e.g., the commissioning of the FRO-N SRF, the WCT population decline; Minnow and Lotic 2021a). Through the evaluation of data from previous reports, and EMC (December 3, 2020; February 3 and 23, 2021) and subject matter experts (SMEs), the FRO LAEMP study questions were updated as follows:

7. Are nitrate concentrations in the study area changing and do they have the potential for adverse effects on biota?
8. Is water treatment affecting biological productivity downstream in the Fording River?
9. Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent with predictions, and if not, why?
10. How is temperature changing over time in the FRO LAEMP study area?

    4a. Is water temperature measurably different (greater than 1 degree Celsius) downstream of the AWTF and/or SRF effluent discharge relative to the upstream baseline condition?

    4b. If changes in water temperature are observed, are these changes attributed to mitigations (i.e., AWTF and/or SRF)?

11. What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?
12. What are the factors influencing fish health and population in the upper Fording River?

Study question 1 has been investigated through monitoring of nitrate concentrations and BIC structure as part of annual sampling in the FRO LAEMP. Water quality samples collected concurrently with BIC samples were combined with Teck's routine water quality monitoring data from stations along the upper Fording River to augment the temporal dataset.

Study questions 2 to 4 relate specifically to water treatment, and since forward flow from the FRO-S AWTF did not occur until December 22, 2021, and phase 2 of commissioning of the FRO-N SRF will not occur until Q4 2022, these study questions will be addressed as existing conditions in the present report. Monitoring under the LAEMP up to and including 2021 to support these questions have captured pre-treatment aquatic conditions to which data will be compared once the facilities are operational.

Study question 5 has been addressed through detailed evaluations of the BIC in the FRO LAEMP study area, and through interpretations of the results compared to regional and site-specific normal ranges, water quality, and habitat variables (e.g., seasonal drying reaches, flow, substrate type, calcite, temperature).

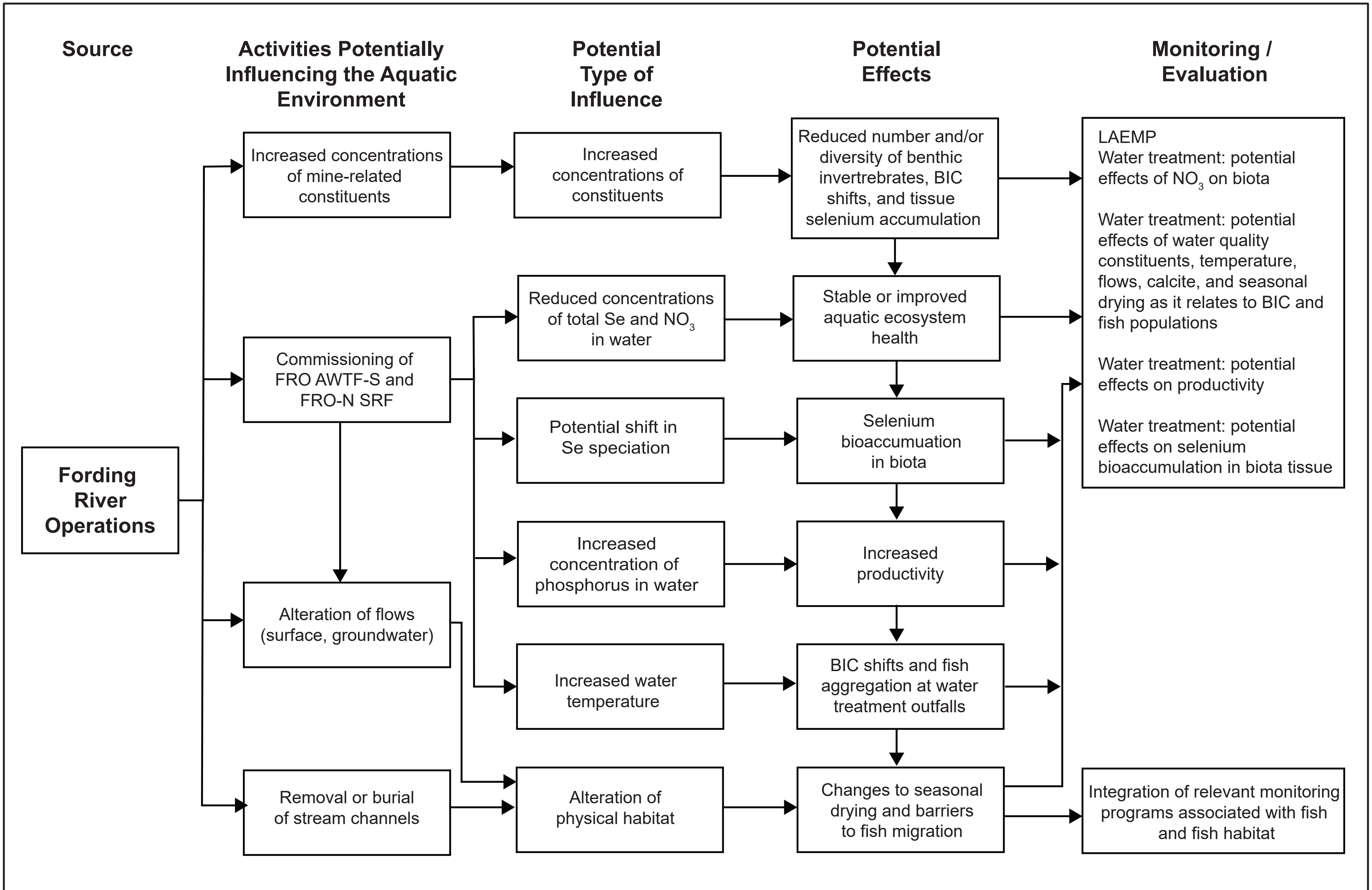
Study question 6 was added as a new study question in the third cycle of the FRO LAEMP to better integrate data collected among multiple programs to summarize the current understanding of factors influencing fish health and populations in the study area. This study question will evaluate FRO LAEMP data (e.g., benthic invertebrate abundance and tissue chemistry, water chemistry, temperature, seasonal drying) in conjunction with findings from other related studies (RAEMP, Environment and Climate Change Canada [ECCC] tri-annual tissue sampling, Upper Fording River [UFR] WCT Population Monitoring Program, and the FRO-S AWTF Flow Related Monitoring and Assessment Plan).

Relevant information obtained under other programs, such as the regional calcite and chronic toxicity monitoring programs are also summarized in the LAEMP. The results of the sixth year (2021 calendar year – January to December) of monitoring for the FRO LAEMP are the subject of this report, which includes comparison to previous years of data.

1.2 Conceptual Site Model

A conceptual site model (CSM) is a written and/or illustrative depiction of relationships between human activities that disturb the environment and the ways such disturbances can alter the ecosystem and affect biological receptors. Potential effects on aquatic receptors in the upper Fording River, both prior to and after the commissioning of the future FRO-S AWTF and FRO-N SRF were considered in a CSM (Figure 1.3). Assessment endpoints are the valued attributes of an ecosystem upon which management actions focus (USEPA 1998, 2003). Assessment endpoints considered in the FRO LAEMP are described in Section 2.1 and are evaluated using measurement endpoints. Typically, multiple measurement endpoints are used to support evaluation and interpretation of each assessment endpoint to conclude if the assessment endpoints/receptors are being protected.

As illustrated by the CSM, assessment and measurement endpoints may be affected through physical and/or chemical processes related to mining and operation of the AWTF (Figure 1.3). Biological measurements relating directly to population or community characteristics are referred to as direct indicators. Mine-related stressors (including tissue selenium concentrations) are also monitored as part of the FRO LAEMP and are referred to as indirect indicators. Laboratory chronic toxicity data (semi-direct indicators) are incorporated into the FRO LAEMP, as appropriate. Measurement of indirect and semi-direct indicators contribute to understanding if



Fording LAEMP Conceptual Site Model

Date: May 2022
Project 217202.0011

minnow environmental inc.

Figure 1.3

Document Path: C:\Users\mlapalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\Graphics\21-11 Figure 1.3 Conceptual Site Model.pdf observed effects on individual receptors are mine-related. Effects may act singly or in combination to influence aquatic populations and/or communities by changing the abundance or resilience of aquatic receptors (Figure 1.3) and are evaluated by monitoring benthic invertebrates as biological receptors within the FRO LAEMP. The study questions (Section 1.1) were developed in consideration of the potential effects identified in the CSM (Figure 1.3).

1.3 Linkages to the Adaptive Management Plan for Teck Coal in the Elk Valley

As required in Permit 107517 Section 10, Teck has developed an Adaptive Management Plan (AMP) to support implementation of the EVWQP to achieve water quality and calcite targets, protect human health, groundwater, and aquatic ecosystem health (Teck 2018, 2021a). Following an adaptive management framework, the AMP identifies six Management Questions that are re-evaluated at regular intervals as part of AMP updates through the EVWQP implementation. The AMP also identifies key uncertainties that need to be reduced to fill gaps in current understanding and support achievement of the EVWQP objectives.

The FRO LAEMP was designed to monitor conditions in the upper Fording River in advance of water treatment and answer specific questions on an annual basis (Section 1.2). Each annual LAEMP cycle (results are reported on May 31st of each year for the preceding calendar year) are also used for tracking issues for which a potential need for responses under the AMP framework has been identified, including the biological triggers assessments. Biological triggers are intended as a simple and consistent way to flag potential unexpected monitoring results that may require additional evaluation and action under the adaptive management response framework. As an example of adaptive management, seasonal drying between Swift and Cataract Creeks was observed in late 2018, resulting in flows in the Fording River at the FRO Compliance Point consisting predominantly of water from Cataract Creek. To evaluate the potential effects on biota in the area downstream of Cataract Creek, two additional biological sampling events were included in December 2018 and February 2019 (Minnow and Lotic 2020b). In June of 2020, benthic invertebrate tissue selenium concentrations were anomalously high in three out of five replicates at RG_FRCP1SW. These results were included in a broader investigation of annelid presence in composite-taxa benthic invertebrate tissue samples and the effects on selenium concentrations (Luoma 2021; Golder 2021). In the current report, % EPT and composite-taxa benthic invertebrate tissue selenium concentration were assessed against their respective biological triggers (additional information and methods pertaining to this analysis can be found in Appendix H).

In addition to addressing questions specific to the FRO LAEMP on an annual basis, monitoring data from the LAEMP will contribute to the broader data set assessed every three years within the RAEMP. The RAEMP is designed to evaluate AMP Management Question #5 (i.e., "Does monitoring indicate that mine-related changes in aquatic ecosystem conditions are consistent with expectations?"). During the development of the AMP, a number of uncertainties related to Management Question #5 were identified that were summed up as Key Uncertainty 5.1 (i.e., "How will monitoring data be used to identify potentially important mine-related effects on the aquatic ecosystem?"). Teck continues to work with its consultants and the EMC to address and reduce Key Uncertainty 5.1 and its underlying uncertainties.

Data from the LAEMP and RAEMP will also contribute to answering AMP Management Question #2 (i.e., "Will aquatic ecosystem health be protected by meeting the long-term site performance objectives?). A Key Uncertainty associated with Management Question #2 is "How will the science-based benchmarks be validated and updated?" with underlying uncertainty about how aquatic monitoring data will be used to validate and update the benchmarks. Progress on reducing these uncertainties, and associated learnings, will be described in Annual AMP Reports.

The third annual AMP report was submitted in July 2021, which summarized data from 2020, identified early warning triggers (EWTs) for nitrite, total dissolved solids (TDS), and uranium at the historical[2] Fording River Compliance Point (FR_FRCP1; Teck 2021b). The annual surface water quality report for 2021, however, only identified an EWT for TDS at the new compliance point (RG_FRABCH; Teck 2022b). Implementation of adaptive management actions is not constrained to the AMP or LAEMP annual reporting cycles but may be (and have been) triggered at any time during the monitoring and reporting cycle.

Please refer to the 2021 AMP update (Teck 2021b) for more information on the adaptive management framework, the Management Questions, the key uncertainties, the response framework, continuous improvement, linkages between the AMP and other EVWQP programs, and AMP reporting.

[2] The Fording River Operation compliance point changed from FR_FRCP1 to FR_FRABCH on March 11, 2021 (Permit 107517; Teck 2022b)

2 METHODS

2.1 Overview

The general approach for the FRO LAEMP (Table 2.1) includes explanation of the collected data and data evaluation in relation to each of the study questions. This report includes data up to the end of the 2021 calendar year for all endpoints. Historical data are also presented where appropriate. Biological samples (BIC and benthic invertebrate tissue) were collected in June, September, and December as per the FRO LAEMP study design (Minnow and Lotic 2021a) from established biological monitoring areas within the study area extending from the Fording River and Henretta Creek upstream of FRO, through the operations and downstream to between Chauncey Creek and Ewin Creek (Figure 2.1; Table 2.2). Consistent with previous years, winter conditions prevented access to RG_FO26 and RG_HENUP in December 2021, so RG_UFR1 was used as the reference area for that sampling program. Also consistent with previous years, BIC samples were not collected at RG_FOBCP and benthic invertebrate tissue and water samples were not collected at RG_FRCP1SW in December 2021 because ice was too thick to access riffles and/or the area was dry (Table 2.2).

Benthic invertebrate community samples were collected at each FRO LAEMP biological monitoring area in June and September[3], and a subset of biological monitoring areas upstream and downstream of the old Compliance point (FR_FRCP1) in December 2021 (Table 2.2). Benthic invertebrate community sampling in 2021 was consistent with previous years, except for the addition of sampling at the new Compliance Point (FR_FRABCH) in December.

Benthic invertebrate tissue[4] and water quality, including selenium speciation, sampling occurred at all FRO LAEMP biological monitoring areas in June, September, and December. In addition, sampling was added in the Greenhouse side channel (RG_FRGHSC) and Fording River side channel two (RG_FRSCH2) in September as part of the FRO AWTF- S commissioning sampling plan (pre-commissioning sampling, Minnow and Lotic 2021a), and because these side channels have been identified as potential WCT habitat (Table 2.2).

Benthic invertebrate biomass and density sampling, as well as sediment sampling, was conducted in September at a sub-set of biological monitoring areas (Table 2.2). Benthic invertebrate biomass and density sampling was added upstream (RG_FOUCL) and downstream

[4] Replicates of five were taken at areas associated with the FRO-S AWTF commissioning sampling plan to facilitate strong statistical comparisons pre- and post-commissioning.

Table 2.1: Summary of the 2021 FRO LAEMP

Study Questions	Context	Assessment Endpoints	Measurement Endpoints[a]: Water	Measurement Endpoints[a]: Water Sampling Stations and Water Temp/Flow Loggers	Measurement Endpoints[a]: Biological	Measurement Endpoints[a]: Biological Sampling Areas	How Data Will be Evaluated to Address Study Question
1. Are nitrate concentrations in the study area changing, and do they have the potential for adverse effects on biota?	EVWQP projections identified an increasing trend in nitrate concentrations in the upper Fording River. Treatment plans have been finalized within the study area (FRO AWTF S and Eagle 4 SRF) and aqueous nitrate concentrations are expected to decrease following commissioning compared to pre-commissioning concentrations. Nitrate concentrations above EVWQP benchmarks have the potential to adversely affect biota.	Benthic invertebrate community relative to nitrate concentrations in the upper Fording River, and various organisms response to chronic toxicity testing.	Nitrate concentrations in water, surface water chronic toxicity tests (quarterly and semi-annually)	Routine water sampling at FR_UFR1, FR_HC3, FR_FR1, FR_MULTIPLATE, FR_FRNTP, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRRD, FR_FRABCH, GH_PC2, FR_FR5; Water sampling concurrent with biological sampling at RG_FRSCH2, RG_FRGHSC, RG_FOUCL, RG_FOUNGD, RG_FODNGD, and RG_FRCP1SW, Chronic toxicity tests at FR_UFR1, FR_FRCP1 and FR_FRABCH	Benthic invertebrate community structure (September) and chronic toxicity testing	CABIN kick and sweep benthic invertebrate community (BIC) sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW; chronic toxicity tests at RG_UFR1, RG_FOBCP and RG_FO22	1. Evaluate nitrate concentrations relative to EVWQP predictions. 2. Determine changes of nitrate concentrations relative to baseyear and water treatment commissioning at each station throughout the study area. 3. Determine if BIC endpoints are outside of regional and/or site-specific normal ranges or moving away from the reference ranges in accordance with observed nitrate concentrations. 4. Determine if BIC results correspond with expectations based on nitrate concentrations in water relative to the site-specific benchmark for nitrate. 5. Use statistical tools (e.g., correlations, constraining ordination) to evaluate the potential impact of nitrate on BIC (see study question 5). 6. Interpret chronic toxicity results in the context of nitrate concentrations in the study area.
2. Is water treatment affecting biological productivity downstream in the Fording River?	Phosphorus will be added to the FRO AWTF-S and FRO Eagle 4 SRF to facilitate microbial growth. Increased phosphorus concentrations in the effluent has the potential to cause increased algae growth in the upper Fording River, changing the trophic status and overall health.	Phosphorus concentrations in water upstream and downstream of water treatment pre-commissioning. Biological invertebrate productivity downstream from the FRO AWTF-S and FRO Eagle 4 SRF discharge locations pre-commissioning and relative to productivity observed upstream from the discharge locations.	Nutrient concentrations, particularly total phosphorus and orthophosphate (phosphorus is the limiting nutrient in the upper Fording River)	Routine water sampling at FR_UFR1, FR_HC3, FR_FR1, FR_MULTIPLATE, FR_FRNTP, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRRD, FR_FRABCH, GH_PC2, FR_FR5; Water sampling concurrent with biological sampling at RG_FRSCH2, RG_FRGHSC, RG_FOUCL, RG_FOUNGD, RG_FODNGD, and RG_FRCP1SW	Benthic invertebrate biomass, benthic invertebrate community structure, periphyton scores (all in September only)	BIC sampling as above; Biomass and density (HESS) sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_FOUCL, RG_FOUNGD, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_FRUPO, RG_FO22	1. Determine changes of total phosphorus and orthophosphate concentrations relative to baseyear throughout the study area. 2. Compare biomass/density upstream and downstream from water treatment pre-commissioning.
3. Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent with predictions, and if not, why?	Treatment plans (FRO AWTF S and Eagle 4 SRF) are expected to remove up to 50% of total selenium downstream in the Fording River; however, treatment could also result in an increase in the concentrations of more bioavailable selenium species (i.e., reduced selenium), resulting in increases of benthic invertebrate tissue selenium concentrations.	Benthic invertebrate tissue selenium concentrations downstream from the FRO AWTF-S and FRO Eagle 4 SRF locations pre-AWTF commissioning and relative to concentrations observed upstream from the discharge locations. Selenium concentrations and species in water upstream and downstream of water treatment and pre- and post-commissioning.	Total and dissolved selenium concentrations, and selenium speciation	Routine water sampling at FR_UFR1, FR_HC3, FR_FR1, FR_MULTIPLATE, FR_FRNTP, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRRD, FR_FRABCH, GH_PC2, FR_FR5; Water sampling concurrent with biological sampling at RG_FRSCH2, RG_FRGHSC, RG_FOUCL, RG_FOUNGD, RG_FODNGD, and RG_FRCP1SW	Benthic invertebrate tissue selenium concentrations (composite-taxa samples)	Benthic invertebrate tissue sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FRSCH2, RG_FRGHSC, RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, , RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW	1. Determine if benthic invertebrate tissue selenium concentrations are outside the regional normal range or above EVWQP benchmarks. 2. Compare benthic invertebrate tissue selenium concentrations to expected concentrations based on the selenium bioaccumulation model. 3. If tissue selenium concentrations are higher than those predicted by the bioaccumulation model, determine if differences in tissue selenium concentrations are correlated with changes in selenium species concentrations. 4. Use B-tool to compare measured versus modelled benthic invertebrate tissue selenium concentrations relative to concentrations of reduced selenium.

Notes: EVWQP=Elk Valley Water Quality Plan; AWTF=Active Water Treatment Facility; SRF=Saturated Rock Fill; FRO LAEMP=Fording River Operations Local Aquatic Effects Monitoring Program; WCT=Westslope Cutthroat Trout; BI=Benthic Invertebrate; BIC=Benthic Invertebrate Community; WQ=Water Quality; EWT=Early Warning Trigger; CABIN=Canadian Aquatic Biomonitoring Network. "-" indicates no sampling anticipated

[a] Sediment samples will also be collected at RG_HENUP, RG_FO26, RG_FOUKI, RG_SCOUTDS, RG_FOBKS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_FRUPO, and RG_FO22 to support various LAEMP and operational requirements.

[b] Additional locations will be monitored under programs outside of the LAEMP.

Table 2.1: Summary of the 2021 FRO LAEMP

Study Questions	Context	Assessment Endpoints	Measurement Endpoints[a]				How Data Will be Evaluated to Address Study Question
			Water	Water Sampling Stations and Water Temp/Flow Loggers	Biological	Biological Sampling Areas	
4. How is temperature changing over time in the FRO LAEMP study area 4a. Is water temperature measurably different (greater than 1 degree Celsius) downstream of the AWTF and/or SRF effluent discharge relative to the upstream baseline condition? 4b. If changes in water temperature are observed, are these changes attributed to mitigations (i.e., AWTF and/or SRF)?	Water temperatures in the study area have the potential to change as a result of influences from the FRO AWTF-S and FRO Eagle 4 SRF effluent. These temperature changes have the potential to adversely affect WCT downstream if they are greater than specific threshold temperatures (i.e., greater than 1 degree Celsius downstream relative to upstream) and occur at specific times of the year relative to WCT migrations.	Water temperatures throughout the study area	Water temperature data loggers	Temperature and flow data loggers at FR_UFR1, FR_FR1, FR_FOUCL FR_FRDSCC1, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRCP1SW, FR_FRRD, GH_PC2, FR_FRABCH	-	-	1. Evaluate overall temporal changes in water temperatures throughout the study area. 2. Integrate results from FRO-S Flow Related Monitoring and Assessment Plan, where appropriate, to help answer the question.
5. What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?	Shifts in community structure have been observed in areas throughout the study area in previous FRO LAEMPs. Variations in BIC throughout the study area may be associated with specific habitat variables and/or water quality stressors.	BIC endpoints, chronic toxicity testing, tissue chemistry, water chemistry, sediment chemistry, and habitat (e.g., seasonal drying, flow, substrate type, calcite, temperature).	Order Constituents, plus nickel and other WQ constituents with Early Warning Triggers (EWT) in surface water, chronic toxicity tests (quarterly and semi-annually), water temperature and flow, seasonal drying surveys.	Routine water sampling at FR_UFR1, FR_HC3, FR_FR1, FR_MULTIPLATE, FR_FRNTP, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRRD, FR_FRABCH, GH_PC2, FR_FR5; Water sampling concurrent with biological sampling at RG_FRSCH2, RG_FRGHSC, RG_FOUCL, RG_FOUNGD, RG_FODNGD, and RG_FRCP1SW, Chronic toxicity tests at FR_UFR1, FR_FRCP1 and FR_FRABCH, Temperature and flow data loggers at FR_UFR1, FR_FR1, FR_FOUCL FR_FRDSCC1, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRCP1SW, FR_FRRD, GH_PC2, FR_FRABCH	BIC structure and composite-taxa benthic invertebrate tissue selenium concentrations	CABIN kick and sweep benthic invertebrate community (BIC) sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW; chronic toxicity tests at RG_UFR1, RG_FOBCP and RG_FO22, Benthic invertebrate tissue sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FRSCH2, RG_FRGHSC, RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, , RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW	1. Determine if BIC endpoints are outside of regional and/or site-specific normal ranges or moving away from the reference ranges in accordance with potential water quality stressors and/or habitat variables. 2. Determine changes of concentrations of constituents identified as EWTs relative to baseyear at each station throughout the study area. 3. Determine if chemical/physicals stressors and/or habitat variables correlate with key BIC metrics. 4. Use statistical tools (e.g., redundancy analysis) to understand the factors that are causing variations in BIC endpoints throughout the study area. 5. Use chronic toxicity testing results to further interpret how water quality may be affecting biota in the study area.

Notes: EVWQP=Elk Valley Water Quality Plan; AWTF=Active Water Treatment Facility; SRF=Saturated Rock Fill; FRO LAEMP=Fording River Operations Local Aquatic Effects Monitoring Program; WCT=Westslope Cutthroat Trout; BI=Benthic Invertebrate; BIC=Benthic Invertebrate Community; WQ=Water Quality; EWT=Early Warning Trigger; CABIN=Canadian Aquatic Biomonitoring Network; ECCC=Environment and Climate Change Canada. "-" indicates no sampling anticipated

[a] Sediment samples were also collected at RG_HENUP, RG_FO26, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBCP, RG_FRUPO, and RG_FO22 to support various LAEMP and operational requirements.

[b] Additional locations were monitored under programs outside of the LAEMP.

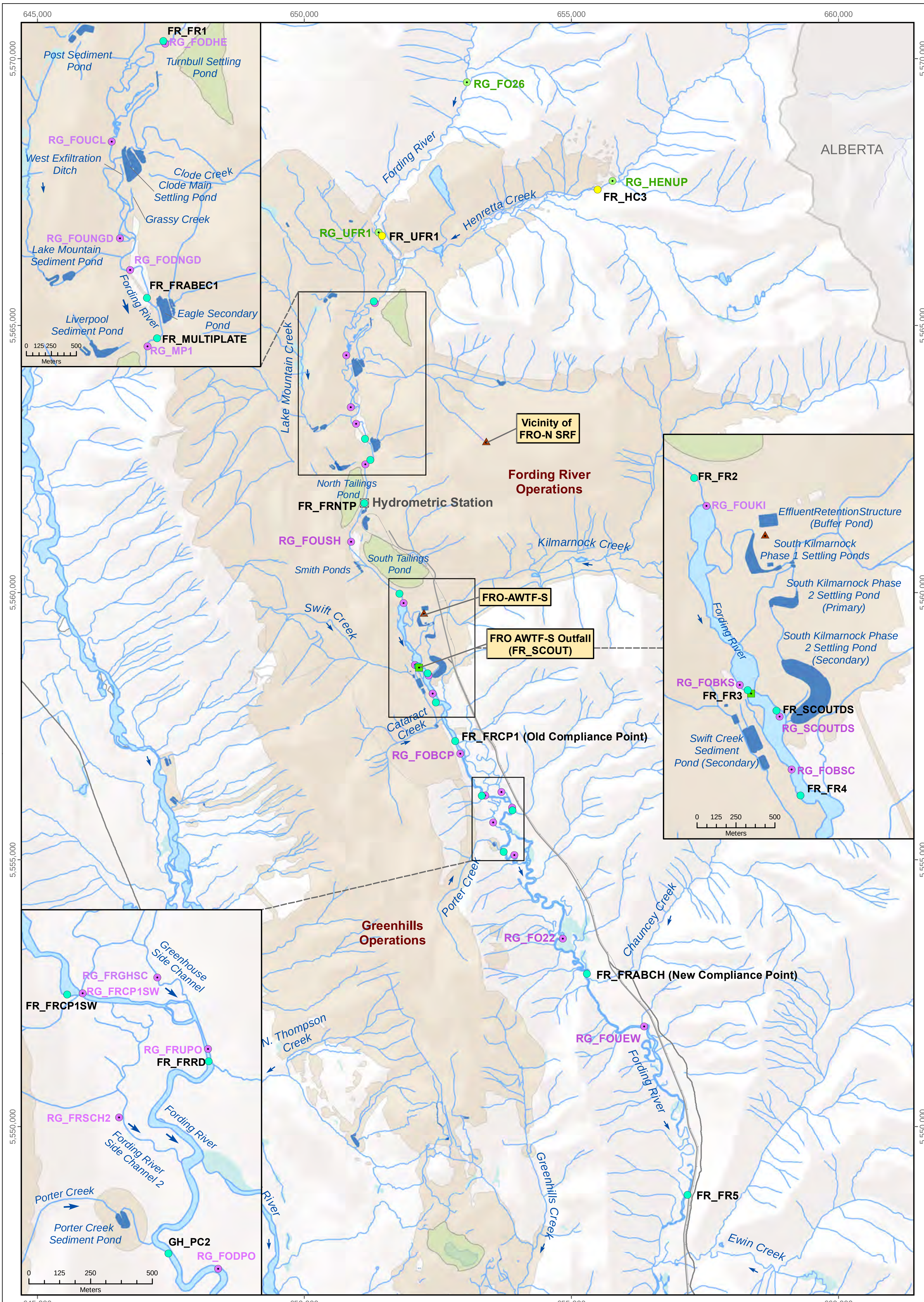
Table 2.1: Summary of the 2021 FRO LAEMP

Study Questions	Context	Assessment Endpoints	Measurement Endpoints[a]				How Data Will be Evaluated to Address Study Question
			Water	Water Sampling Stations and Water Temp/Flow Loggers	Biological	Biological Sampling Areas	
6. What are the factors influencing fish health and populations in the Upper Fording River?	Fish health and populations in the upper Fording River may be affected by natural and/or mine-related water quality and habitat stressors.	Westslope Cutthroat (WCT) health and population assessments, WCT behaviour assessments (e.g. aggregations near water treatment outfalls), WCT fish tissue assessments, seasonal drying surveys, BIC endpoint assessments, BI tissue and water chemistry, water temperatures and flows.	Order Constituents, plus nickel and other WQ constituents with Early Warning Triggers (EWT) in surface water, chronic toxicity tests (quarterly and semi-annually)	Routine water sampling at FR_UFR1, FR_HC3, FR_FR1, FR_MULTIPLATE, FR_FRNTP, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRRD, FR_FRABCH, GH_PC2, FR_FR5; Water sampling concurrent with biological sampling at RG_FRSCH2, RG_FRGHSC, RG_FOUCL, RG_FOUNGD, RG_FODNGD, and RG_FRCP1SW, Chronic toxicity tests at FR_UFR1, FR_FRCP1 and FR_FRABCH, Temperature and flow data loggers at FR_UFR1, FR_FR1, FR_FOUCL FR_FRDSCC1, FR_FR2, GH_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRCP1SW, FR_FRRD, GH_PC2, FR_FRABCH	WCT health (tissue chemistry and anomalies) and population[b], BIC endpoints, benthic invertebrate tissue	CABIN kick and sweep benthic invertebrate community (BIC) sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW; chronic toxicity tests at RG_UFR1, RG_FOBCP and RG_FO22, Benthic invertebrate tissue sampling at RG_FO26 (Ref), RG_HENUP (Ref), RG_UFR1 (Ref), RG_FRSCH2, RG_FRGHSC, RG_FODHE, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, , RG_FRUPO, RG_FODPO, RG_FO22, RG_FOUEW	1. Evaluate WCT health (tissue chemistry and anomalies) and population using findings from other related studies (e.g., RAEMP, WCT Population Monitoring, FRO-S Flow Related Monitoring and Assessment Plan, and Fording Outfall Fish Plan). 2. Integrate findings from related studies (e.g., RAEMP, ECCC tri-annual WCT tissue sampling, WCT Population Monitoring, and FRO-S Flow Related Monitoring and Assessment Plan) with FRO LAEMP fish habitat data (e.g., seasonal drying, BIC, benthic invertebrate tissue chemistry, water chemistry and temperatures) to understand how factors may be influencing WCT health and populations.

Notes: EVWQP=Elk Valley Water Quality Plan; AWTF=Active Water Treatment Facility; SRF=Saturated Rock Fill; FRO LAEMP=Fording River Operations Local Aquatic Effects Monitoring Program; WCT=Westslope Cutthroat Trout; BI=Benthic Invertebrate; BIC=Benthic Invertebrate Community; WQ=Water Quality; EWT=Early Warning Trigger; CABIN=Canadian Aquatic Biomonitoring Network; ECCC=Environment and Climate Change Canada. "-" indicates no sampling anticipated

[a] Sediment samples were also collected at RG_HENUP, RG_FO26, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBCP, RG_FRUPO, and RG_FO22 to support various LAEMP and operational requirements.

[b] Additional locations were monitored under programs outside of the LAEMP.



LEGEND

Water Monitoring Station
- Mine-exposed
- Reference

Biological Sampling Area
- Mine-exposed
- Reference

- Hydrometric Station
- Water Treatment Facility
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operations

Monitoring Locations in the Upper Fording River, FRO LAEMP, 2021

0 0.75 1.5 3 km
0 0.5 1 2 mi

Projection: North American Datum 1983 UTM Zone 11 U

Date: May 2022
Project 217202.0011

minnow environmental inc.

Figure 2.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\21-11 Figure 2.1 Monitoring Locations in Upper Fording River.mxd

Table 2.2: Summary of Samples Collected for the FRO LAEMP, 2021

	Biological Monitoring Area (Associated Teck Water Station)[dg]	Area Description	Biological Monitoring Area UTM Coordinates		Water Quality						Sediment Quality			Benthic Invertebrates								
					Water Chemistry			Selenium						Hess: Biomass/Density (# of samples)			Kick and Sweep: Community (# of samples)			Kick and Sweep: Composite-taxon Selenium (# of samples)[b]		
			Easting	Northing	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec
Reference	RG_HENUP (FR_HC3)	Henretta Creek u/s all mine operations	655771	5567710	1	1	-	1	1	-	-	3	-	-	10	-	3	3	-	3	3	-
Reference	RG_FO26[c] (FR_UFR1)	Fording River u/s Henretta (u/s all mines)	653064	5569601	1	1	-	1	1	-	-	3	-	-	10	-	3	3	-	3	5	-
Reference	RG_UFR1[ac] (FR_UFR1)	Fording River u/s Henretta at Teck WQ station	651376	5566758	1	1	1	1	1	1	-	-	-	-	-	-	-	-	3	5	5	5
Mine-exposed	RG_FRSCH2[e]	Fording River side channel 2 beginning d/s of FRCP1SW reconnecting u/s of FODPO	653549	5555700	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	5	5
Mine-exposed	RG_FRGHSC[e]	Greenhouse side channel connecting with Fording River d/s of FRUPO	653689	5556265	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	5	5
Mine-exposed	RG_FODHE (FR_FR1)	Fording River d/s Henretta Creek	651320	5565422	1	1	1	1	1	1	-	-	-	-	-	-	3	3	-	3	3	3
Mine-exposed	RG_FOUCL (FR_FOUCL)	Fording River u/s of Clode Creek	650787	5564445	1	1	1	1	1	1	-	-	-	-	10	-	3	3	-	3	3	3
Mine-exposed	RG_FOUNGD	Fording River u/s North Greenhills Diversion	650870	5563476	1	1	1	1	1	1	-	-	-	-	10	-	3	3	-	3	3	3
Mine-exposed	RG_FODNGD (FR_FRABEC1)	Fording River d/s Lake Mountain Creek/ North Greenhills Diversion	650972	5563162	1	1	1	1	1	1	-	-	-	-	-	-	3	3	-	3	3	3
Mine-exposed	RG_MP1 (FR_MULTIPLATE)	Fording River d/s Multiplate d/s Eagle Ponds	651143	5562400	1	1	1	1	1	1	-	-	-	-	-	-	3	3	-	3	3	3
Mine-exposed	RG_FOUSH (FR_FRNTP)	Fording River u/s Shandley Creek	650876	5560957	1	1	1	1	1	1	-	-	-	-	-	-	3	3	-	3	3	3
Mine-exposed	RG_FOUKI (FR_FR2)	Fording River u/s Kilmarnock Creek	651859	5559804	1	1	1	1	1	1	-	5	-	-	10	-	3	3	3	5	5	5
Mine-exposed	RG_FOBKS (FR_FR3)	Fording River immediately u/s of the FRO AWTF-S discharge	652074	5558652	1	1	1	1	1	1	-	5	-	-	10	-	3	3	-	5	5	5
Mine-exposed	RG_SCOUTDS (FR_SCOUTDS)	Fording River d/s of FRO AWTF-S outfall	652307	5558501	1	1	1	1	1	1	-	5	-	-	10	-	3	3	3	5	5	5
Mine-exposed	RG_FOBSC (FR_FR4)	Fording River d/s Swift Creek, u/s Cataract Creek	652407	5558109	1	1	1	1	1	1	-	-	-	-	10	-	3	3	3	5	5	5
Mine-exposed	RG_FOBCP[f] (FR_FRCP1)	Fording River between Cataract & Porter Creek (Old Compliance Point)	652920	5556982	1	1	1	1	1	1	-	5	-	-	10	-	3	5	x	5	5	5
Mine-exposed	RG_FRCP1SW	Fording River ~1150 m d/s of Compliance Point	653387	5556201	1	1	x	1	1	x	-	-	-	-	10	-	3	3	-	5	5	x
Mine-exposed	RG_FRUPO (FR_FRRD)	Fording River u/s of Porter Creek	653894	5555975	1	1	1	1	1	1	-	5	-	-	10	-	3	3	3	5	5	5
Mine-exposed	RG_FODPO (GH_PC2)	Fording River d/s Porter Creek, u/s Chauncey Creek	653935	5555085	1	1	1	1	1	1	-	-	-	-	-	-	3	3	3	5	5	5
Mine-exposed	RG_FO22[f] (FR_FRABCH)	Fording River u/s Chauncey Creek (New Compliance Point)	654841	5553523	1	1	1	1	1	1	-	5	-	-	10	-	3	5	3	5	5	5
Mine-exposed	RG_FOUEW (FR_FR5)	Fording River d/s Chauncey Creek, u/s Ewin Creek	656365	5551875	1	1	1	1	1	1	-	-	-	-	-	-	3	3	3	5	5	5

Notes: '-' indicates sample that was not taken because it was not a part of the sampling design; 'x' indicates sample that was not taken because of drying and/or ice conditions.

[a] RG_UFR1 was used as a reference area in winter months when there was no access to RG_FO26 or RG_HENUP. It was added for June and September for additional pre-FRO AWTF-S commissioning data.

[b] n=5 for composite-taxon tissue samples in areas associated with the FRO AWTF-S commissioning sampling plan.

[c] The water quality monitoring station is the same for biological monitoring stations RG_FO26 and RG_UFR1.

[d] Routine water quality monitoring stations associated with biological monitoring areas are outlined in brackets

[e] RG_FRSCH2 and RG_FRGHSCH were added in September 2021 to support the FRO AWTF-S commissioning sampling plan and to understand side channel habitat quality (Minnow and Lotic 2021a).

[f] triplicate samples of periphyton for both ash free dry mass and chlorophyll-a analysis taken during the RAEMP

[g] periphyton scores of n=5 were taken at each biological monitoring area in September, except at RG_FRGHSC.

(RG_FOUNGD) of Clode Creek influences in September 2021 to assess conditions pre-commissioning of the FRO-N SRF.

Water level (flow) and temperature were monitored continuously at established gauges throughout the study area. Water level and temperature data loggers were consistent with the previous year, except an additional logger was added near RG_FOUCL to capture water level and temperature upstream of Clode Creek to support the FRO-N SRF outfall (Table 2.3; Figure 2.2). Drying surveys were conducted monthly between January and reconnection, while bi-weekly surveys[5] were conducted October through December 2021 within the Southern (12.6 km long), Northern (6.1 km long), and upper Henretta (3 km long) drying survey areas (Table 2.3; Figure 2.2).

2.2 Water Quality

2.2.1 Sample Collection

Water quality and selenium speciation samples, as well as *in situ* water quality data (i.e., temperature, flow, pH, conductivity, and DO), were collected concurrently with all biological sampling (Table 2.2). In addition, routine water quality monitoring data collected by Teck and that correspond with many biological sampling areas were included in the FRO LAEMP (Table 2.4 and Figure 2.1). Water quality samples were collected to understand potential changes to concentrations of constituents with EWTs in accordance with Permit 107517, while selenium speciation samples were collected to provide a baseline understanding of speciation in the study area before the commissioning of the FRO-S AWTF and the FRO-N SRF, and to compare to benthic invertebrate tissue selenium concentrations.

All water samples collected concurrent with biological sampling were collected by wading into the river and filling sampling bottles from below the surface of the water. For water quality samples, preservatives were added to samples for total and dissolved metals, total organic carbon, and dissolved mercury, while field filtering was applied to all samples being analyzed for dissolved constituents. For selenium speciation sampling, samples for dissolved selenium were field filtered and stored at 4°C, samples for total selenium were stored at 4°C, and samples for selenium speciation were field filtered and frozen. Water quality and selenium speciation samples were not collected at RG_FRCP1SW in December 2021 because the riffles were dry and/or frozen, so sampling for benthic invertebrates was not possible.

[5] The second survey for that month was for the fish stranding surveys, which also documented drying; however, the fish stranding surveys did not include side channels so is limited to only mainstem areas.

Table 2.3: Stations Associated with Drying Surveys, Manual Flow Measurements, and Hydrometric and Water Temperature Loggers, FRO LAEMP, 2021

Water Station ID		Location Description	UTM (11U)		Drying Survey Frequency[c]	Manual Discharge Measurements	HOBO Level Logger	Solinst LevelVent Logger	Solinst M5 Level Logger[b]	Barometer
			Easting	Northing						
Ref	FR_UFR1[b] (RG_FO26 and RG_UFR1)	Upper Fording River upstream of Henretta confluence	651472	5566717	M	Y	-	Y	Y	Y
Mine-exposed	FR_FR1[b] (RG_FODHE)	Fording River at the Turnbull	651289	5565415	M	Y	-	Y	Y	-
	FR_FRUPP	Fording River upstream of Post pond	650923	5565169	M	N	-	-	-	-
	FR_FOUCL[b] (RG_FOUCL)	Fording River upstream of Clode	650787	5564445	M	Y	-	Y	Y	-
	FR_FRDSCC1[b]	Fording River downstream of Clode confluence	650840	5563925	M	Y	-	Y	Y	-
	FR_MULTIPLATE (RG_MP1)	Fording River at Multiplate	651280	5562515	M	N	-	-	-	-
	FR_FR2 (RG_FOUKI)	Fording River downstream of the north tailings pond	651781	5559984	M	Y	Y	Y	Y	-
	FR_FR3 (RG_FOBKS)	Fording River immediately upstream of the FRO AWTF-S discharge	652125	5558620	M	Y	Y	Y	Y	-
	FR_SCOUTDS[a] (RG_SCOUTDS)	Fording River downstream of the FRO AWTF-S discharge	652272	5558373	M	Y	-	Y	Y	-
	FR_FR4 (RG_FOBSC)	Fording River between Swift Creek reach 1 channel and Cataract Creek	652464	5557943	M	Y	-	Y	Y	Y
	FR_FRCP1 (RG_FOBCP)	Fording River Old Compliance Point	652823	5557220	M	Y	Y	Y	Y	-
	FR_FRCP1SW (RG_FRCP1SW)	Fording River ~1150 m downstream of the Compliance Point	653324	5556197	M	Y	Y	Y	Y	-
	FR_FRRD (RG_FRUPO)	Fording River upstream Porter Creek	653897	5555925	M	Y	Y	-	Y	-
	GH_PC2 (RG_FODPO)	Fording River downstream of Porter	653734	5555147	M	Y	Y	Y	Y	-
	FR_FRABCH[c] (RG_FO22)	Fording River upstream of Chauncey Creek (New Compliance Point)	655282	5552799	M	N	Y	Y	Y	-

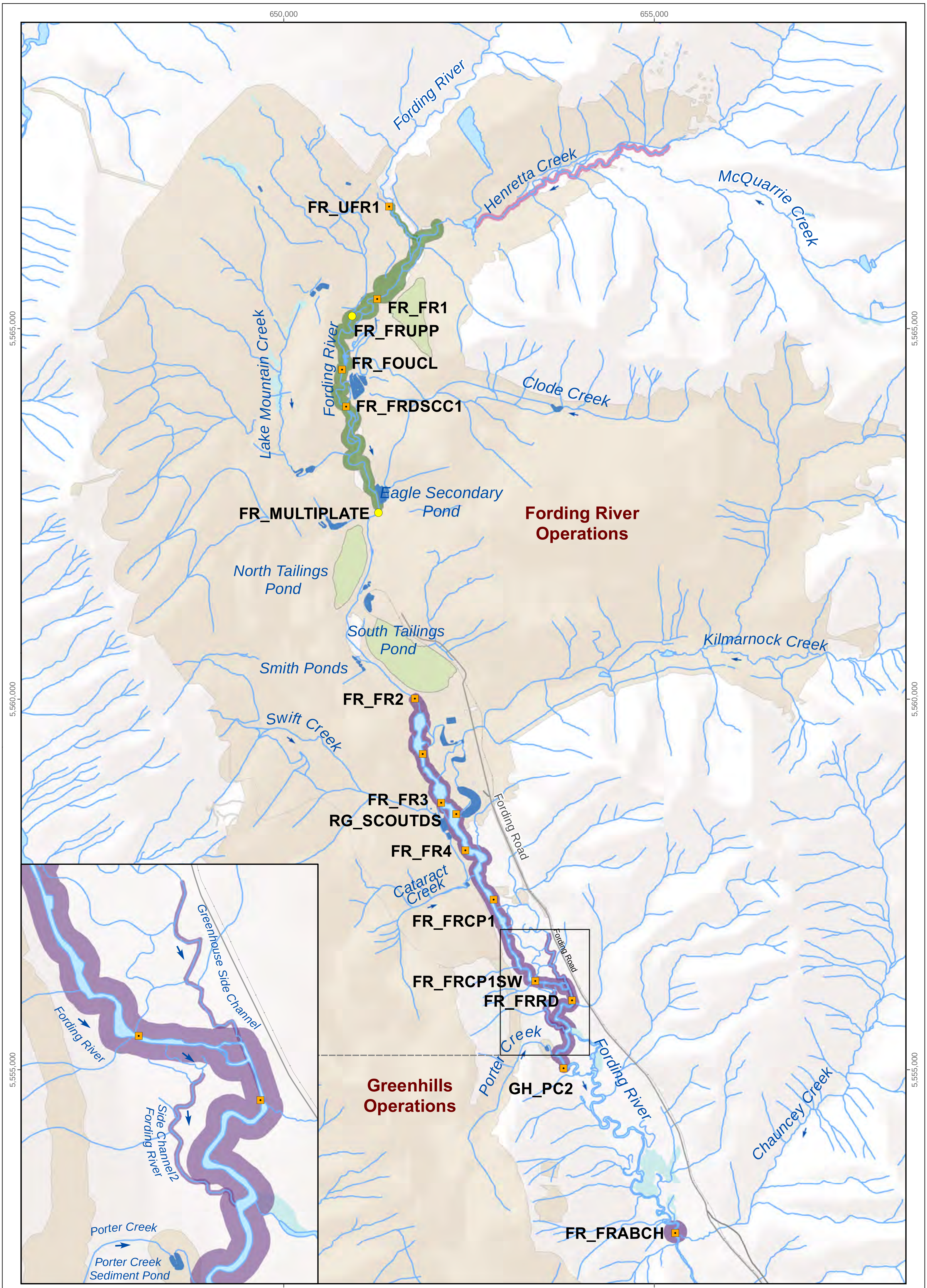
Note: "-" indicates station not having data logger type.

[a] Data logger and flow location FR_FOUCL added April 2021.

[b] Solinst M5 level loggers added July 2021.

[c] drying surveys began in August and continued until reconnection of the Fording River.

[d] Biological monitoring area associated with survey and logger stations identified in brackets.



LEGEND

- Continuous Logger Station
- Water Quality Monitoring Station
- Upper Henretta Drying Survey
- Northern Drying Survey
- Southern Drying Survey
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operations

Drying Surveys and Continuous Water Monitoring Stations in the Upper Fording River, FRO LAEMP, 2021

0 0.75 1.5 3
km

N
W E
S

Projection: North American Datum 1983 UTM Zone 11 U
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Date: May 2022
Project 217202.0011

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Figure 2.2

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Table 2.4: Summary of Teck Routine Water Quality Monitoring Associated with the FRO LAEMP, 2021

Location Description	Water Station ID[h]	Paired Water Quality EMS Number	Regional Water Quality EMS Number	UTM (11U)		Water Quality Samples			
				Easting	Northing	Designation	Field parameters[a]	All other parameters required under mine permits[b]	Toxicity
Fording River upstream of FRO	FR_UFR1 (RG_FO26[j] and RG_UFR1)	E216777		651459	5566677	Reference	W/M	W/M	Q[cd]
Henretta Creek upstream of FRO	FR_HC3 (RG_HENUP)	E300096		655489	5567547	Reference	W/M	W/M	-
Fording River downstream of Henretta Creek	FR_FR1 (RG_FODHE)	0200251		651304	5565451	Exposed	W/M	W/M	-
Fording R. u/s Clode Creek	FR_FOUCL (RG_FOUCL)[e]	N/A		650787	5564418	Exposed	M[e]	M[e]	
Fording River u/s of Eagle Pit pond decant	FR_FRABEC1[e] (RG_FODNGD)	N/A		651137	5562881	Exposed	M[e]	M[e]	
Fording River Multiplate Culvert on Greenhills Access Road	FR_MULTIPLATE[e] (RG_MP1)	N/A		651238	5562482	Exposed	W[e]	W[e]	Q[i]
Fording River downstream of the North Tailings Pond	FR_FRNTP[e] (RG_FOUSH)	N/A		651122	5561675	Exposed	W[e]	W[e]	-
Fording River upstream of the FRO AWTF-S discharge	FR_FR2 (RG_FOUKI)	0200201		651781	5559984	Exposed	W	W	Q[i]
Fording River immediately upstream of the FRO AWTF-S discharge	FR_FR3[eg] (RG_FOBKS)	N/A		652125	5558620	Exposed	M[e]	M[e]	-
Fording River immediately downstream of the FRO AWTF-S discharge	FR_SCOUTDS (RG_SCOUTDS)	N/A		652307	5558501	Exposed	M	M	-
Fording River between Swift and Cataract	FR_FR4[e] (RG_FOBSC)	0200311		652464	5557943	Exposed	M[e]	M[e]	Q[i]
Fording River Operation Old Compliance Point	FR_FRCP1 (RG_FOBCP)	E300071		652823	5557220	Exposed	W/M	W/M	Q[c]
Fording River upstream Porter Creek	FR_FRRD[i] (RG_FRUPO)	E300097		653897	5555925	Exposed	M	M	Q[i]
Fording River downstream of Porter	GH_PC2[e] (RG_FODPO)	E287431		653734	5555147	Exposed	M[e]	M[e]	-
Fording River Operation New Compliance Point.	FR_FRABCH (RG_FO22)	E223753		655293	5552865	Exposed	W/M	W/M	Q[cf]
Fording River upstream of Ewin Creek	FR_FR5[ej] (RG_FOUEW)	N/A		657174	5548724	Exposed	M[e]	M[e]	-

Notes: Q = quarterly; M = monthly; W/M = weekly during freshet (March 15 to July 15); Q - quarterly; N/A - Not Applicable; "-" indicates no data available.
[a] Dissolved oxygen, temperature, specific conductance, pH.
[b] Total and dissolved metals, total and dissolved organic carbon, nutrients, and major ions as per Table 18 of Permit 107517.
[c] Chronic toxicity as per Permit 107517 requirements.
[d] Not required by Permit 107517; FR_UFR1 is used as a reference location in the chronic toxicity program. Frequency may change depending on the needs of the program.
[e] Non permitted location, frequency may change in 2022.
[f] Chronic toxicity started in Q4 2018 at this location.
[g] This sampling location, previously called GH_FR3, was merged to FR_FR3 for data management purposes.
[h] Biological monitoring areas associated with water quality monitoring stations are outlined in brackets.
[i] Chronic Toxicity started Q1 2021 as part of the UFR Chronic Toxicity Study.
[j] Stations paired for correlation and multivariate analyses but are presented separately in report figures because of their distance from one another.

2.2.2 Laboratory Analysis

Water samples were analyzed by ALS Environmental (ALS; Calgary, AB) for constituents consistent with Permit 107517 (i.e., conventional parameters, major ions, nutrients, and total and dissolved metals; Table 2.5) using the following methods indicated in parentheses:

- total organic carbon (TOC) and dissolved organic carbon (DOC) (combustion method; American Public Health Association [APHA] 5310 for TOC);
- Total suspended solids (TSS) and total dissolved solids (TDS; gravimetric method; APHA 2540 D and C for TSS and TDS, respectively);
- alkalinity (potentiometric titration; APHA 2320);
- turbidity (nephelometric method; APHA 2130 Turbidity);
- hardness, as $CaCO_3$ (by calculation; APHA 2340 B);
- total and dissolved metals[6], (collision cell inductively coupled plasma - mass spectrometry and inductively coupled plasma - optical emission spectrophotometry; APHA 3030 B&E/ Environmental Protection Agency [EPA] SW-846 6020A, and EPA 3005A/6010B, respectively);
- bromide, chloride, fluoride, and sulphate (ion chromatography; APHA 4110 B);
- ammonia, as N (fluorescence; J. Env. Monit., 2005, 7:37-42);
- nitrate and nitrite, as N (ion chromatography; EPA 300.0);
- total Kjeldahl nitrogen (TKN) (fluorescence; APHA 4500-NORG D.); and
- orthophosphate and total phosphorus (colourimetric method; APHA 4500-P Phosphorus).

Selenium speciation analysis was conducted by Brooks Applied Labs (Bothell, Washington) using ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Analytes included selenate, selenite, dimethylselenoxide, methylseleninic acid, methaneselenonic acid, selenocyanate, selenomethionine, selenosulphate, and unknown selenium species. Selenium species were first separated on an ion exchange column and then detected using a collision/reaction cell-equipped inductively coupled plasma mass spectrophotometry (ICP-MS). The applied method was optimized to provide interference-free quantitation of individual selenium species at part-per-trillion (ppt) levels. Total (filtered and unfiltered) selenium analyses were also performed by Brooks Applied Labs

[6] Here and elsewhere in this document, “metals” includes metalloids, such as selenium.

Table 2.5: Water Quality Parameters Required Under Permit 107517[a]

Category	Parameters
Field Parameters	water temperature, specific conductance, dissolved oxygen (DO), pH
Conventional Parameters	specific conductance, total dissolved solids, total suspended solids, hardness, alkalinity, dissolved organic carbon, total organic carbon, and turbidity
Major Ions	bromide, fluoride, calcium, chloride, magnesium, potassium, sodium, and sulphate
Nutrients	ammonia, nitrate, nitrite, total Kjeldahl nitrogen (TKN), orthophosphate, and total phosphorus
Total and Dissolved Metals	aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc

[a] Parameters are consistent with those outlined in Table 27, Appendix 3 of Permit 107517.

using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). Water samples were collected into borosilicate glass containers and preserved to a pH < 2 with nitric acid. An aliquot of each preserved sample was further digested with nitric and hydrochloric acids in a closed vessel (bomb) prior to analysis. The applied sample collection, preservation, digestion, and analytical procedures are designed to accurately quantify selenium in the presence of potential interferences (e.g., chloride and bromide) and regardless of the chemical form of selenium present in solution (e.g., ionic, particulate, or volatile molecular forms).

Quality Assurance/Quality Control (QA/QC) associated with routine water sampling is described by Teck in annual water quality reports submitted under Permit 107517. Duplicate water quality samples taken concurrently with biological samples were reviewed in Appendix A. Overall, water chemistry data were of acceptable quality and considered acceptable for this study.

2.2.3 Chronic Toxicity Testing

Chronic toxicity testing was conducted by Nautilus Environmental for the annual Regional Chronic Toxicity Study as required by Permit 107517 and for the Upper Fording River (UFR) Chronic Toxicity supporting study in 2021[7] (summarized under a single report; Golder 2022a). Endpoints for water flea (*Ceriodaphnia dubia*) survival and reproduction, amphipod (*Hyalella azteca*) survival and dry weight, rainbow trout (*Oncorhynchus mykiss*) survival, viability, length, and weight, and fathead minnow (*Pimephales promelas*) hatch, survival, biomass, length, and development were tested for water quality. Chronic toxicity testing with *Pseudokirschneriella subcapitata* was not required in the upper Fording River chronic toxicity program in 2021 and was only included in the regional program in accordance with Permit 107517. Chronic toxicity tests were completed with water from seven water quality stations within the FRO LAEMP study area under the two programs in 2021:

- FR_FRCP1, FR_FRABCH, and FR_UFR1 (reference) for the regional program, and;
- FR_MULTIPLATE and FR_FR2 upstream of the Swift-Cataract Diversion[8] and FR_FR4 and FR_FRRD downstream of the Swift-Cataract Diversion for the upper Fording River chronic toxicity supporting study (Golder 2022a).

Chronic toxicity testing in 2021 was conducted and summarized quarterly and annually in accordance with Permit 107517 (Golder 2022a).

[7] Conducted to inform whether extent and magnitude of potential chronic effects in the upper Fording River are being captured in the routine Regional Chronic Toxicity Monitoring Program.

[8] Cataract Creek was diverted through Swift Ponds to Swift Creek in August of 2019 because of low flow conditions and seasonal drying between Swift and Cataract Creeks.

2.2.4 Data Analysis

Water quality data were downloaded from Teck's EQuIS database and included both routine monitoring results collected by Teck and samples collected concurrently with biological sampling. Analyses of water quality data were completed using the following approaches (see Appendix J for detailed methodology):

- Tabular and graphical comparison to EVWQP benchmarks, interim screening values (nickel) and screening values (TDS) and British Columbia Water Quality Guidelines (BCWQGs);
- Graphical spatial comparisons of seasonal mean concentrations of order constituents (nitrate, total selenium, dissolved cadmium, and sulphate) and total nickel, as well as selenium species concentrations collected concurrently with biological monitoring;
- Principal Component Analysis (PCA) to condense water quality results for use in benthic invertebrate community correlation analysis;
- Evaluation of temporal trends in monthly mean water quality concentrations using a two-way censored regression Analysis of Variance (2-way ANOVA).

2.3 Hydrology

2.3.1 Seasonal Drying

Monthly drying surveys for this reporting period began in late fall 2020 and were continued until the Fording River and Henretta Creek were reconnected, then restarted in September until December 2021 (surveys continue in 2022, however are not included in this report). Additional drying survey field visits were added in October 2021 allowing for biweekly observations from October to December 2021. One additional site visit was completed in June to collect high flow discharge measurements and another site visit in July to complete a post-freshet download and to assess any damage that may have occurred to data loggers during freshet. Drying dates were determined for each survey section with logger data and overall drying observations for each section of the Fording River.

2.3.1.1 Field Methods

In 2021, monthly drying surveys were completed (January to April and September to December) to evaluate surface water connectivity along the Fording River and Henretta Creek in the FRO LAEMP study area. The drying survey sections in the FRO LAEMP study area are broken down into three sections: the southern survey, the northern survey, and the Henretta Creek survey. The southern survey covers a 12.8 km section of the Fording River from the

Chauncey Creek confluence (FR_FRABCH) upstream to the south tailings pond (FR_FR2). The southern survey also includes two side channels of the Fording River that were added in November 2020: Side channel #2 and the Greenhouse side channel. The northern survey covers a 6.1 km section of the Fording River from the Multiplate culvert (FR_MULTIPLATE) to a location on the Fording River upstream of the Henretta Creek confluence (FR_UFR1). The Henretta Creek survey covers a 3.5 km section of Henretta Creek upstream of Henretta Lake (i.e., upstream of FRO licensed water use; Table 2.3; Figure 2.2). Additional seasonal drying surveys were added from October to December 2021, allowing for biweekly monitoring of the drying conditions; however, these additional surveys excluded Side channel 2 and the Greenhouse side channel. Methods followed those used in previous years; field crews walked each section to delineate any extent of drying, isolated pools, fish, and wildlife observations by marking them with a handheld global positioning system (GPS) and on an iPad with geo-referenced map to facilitate mapping (Minnow and Lotic 2019b, 2020b, 2021b). Drying sections were also recorded as GPS tracks on an iPad to facilitate mapping and estimate the extent of drying.

2.3.1.2 Data Analysis

Coordinates (taken by GPS) and tracks collected during the drying surveys were mapped to display the monthly/biweekly conditions and any observed drying sections of the Fording River. The results of monthly surveys were used, in combination with water level logger data and trail cameras, to determine the exact dates when a section of the Fording River had become dry between visits. Dry days for each survey section and hydrometric station were summarized for each year from 2017 to 2021. Dry days were calculated for each low flow season (e.g., winter of 2020/21) not per calendar year.

2.3.2 Water Level and Temperature

2.3.2.1 Data Collection

Water level and temperature were continuously monitored at 13 hydrometric stations in 2021 using a combination of three types of level loggers, which were installed in stilling wells (Figure 2.2). The combination of loggers was included for protection against the loss of data in the event of a logger malfunction and included Solinst M5 loggers (primary), Solinst 3250 LevelVent Dataloggers (secondary), and Onset Hobo U-20 level-loggers (tertiary; Table 2.3). The loggers were programed to record water level and water temperature at 15-minute intervals. Data was downloaded from the loggers pre-freshet in April, post-freshet in July, and October before freeze-up to avoid data loss.

A new hydrometric station was installed in the northern survey area at FR_FOUCL in April 2021. The station is located upstream of the Clode Creek confluence, which will receive treated water from the FRO-N SRF outfall once commissioned in 2022. In the southern survey area, the stilling well at FR_FRCP1 was damaged during freshet in June 2021, but all data was recovered and a new stilling well was installed.

2.3.2.2 Data Analysis

Continuous water level data were collected and corrected for barometric pressure from October 2017 to October 2021, where applicable. For each hydrometric station, a log-linear stage-discharge curve was generated using manual stage and discharge measurements. Stage (m) and discharge (m^3/s) values were manually verified and measurements with suspected errors or high uncertainty (e.g., flows conducted under ice conditions) were removed from further analyses. All stage measurements below 0.001 m were treated as 'dry' and were excluded. Benchmarks were checked for each site and shifts were corrected. The water level record was also verified by comparing to manual measurements and spikes and other erroneous readings were cleaned. Hourly discharge and stage records were compared against manual observations to calculate the Offset (m), Absolute Error (m^3/s), and the mean Relative Error (Absolute Error divided by Measured Flow; %; Schaefer and Chernos 2022).

Solinst M5 loggers and barometers were installed in 2021 as the new primary logger to extend water level and temperature records as they provide an increased measurement accuracy compared to the Hobo U20 level loggers and the same level of accuracy as the Solinst LevelVent (+/- 0.03cm and +/- 0.05˚C). Solinst LevelVent loggers internally correct for barometric pressure, and therefore do not require a barometer for barometric correction after they are downloaded. In 2020, Solinst LevelVent loggers were observed to malfunction if submerged (i.e., freshet). If submerged, Solinst LevelVent loggers were unable to accurately internally correct for barometric pressure or would no longer communicate due to water damage. Solinst LevelVent loggers and Hobo U20 level logger records were used in the event of data loss or logger malfunction of the primary logger. Solinst M5 water level data were corrected for barometric pressure manually in Microsoft Excel using the barometric record and a reference water stage relative to the staff gauge. Correcting the data for atmospheric pressure created a continuous record of water stage in meters. Stage is a locally reference water level relative to the staff gauge at a given location, however, stage records are only relative to that station and cannot be used to compare water level or quantity between sites. Stage is subsequently converted to discharge using stage-discharge relationships to generate annual hydrographs (Section 3.2). Water level and temperature records were used in combination with field observations to determine the date when a site was observed to be dry or rewetted between drying surveys.

2.3.3 Flow

2.3.3.1 Data Collection

Monthly discharge measurements were collected by field crews at each station using a Hach EM950 velocity meter, where surface flow conditions permitted (i.e., wadable and limited ice cover). Flow measurement methods were consistent with those reported previously (Minnow and Lotic 2018, 2019b, 2020b, 2021b), following the Manual of British Columbia Hydrometric Standards (RISC 2009). The Hach EM950 profiler function was used to determine if flow panels exceeded 10% of the discharge in the field to increase hydrological data grading in 2021. During ice covered visits, a transect was cut into the ice by hand or a minimum of five holes were drilled through the ice with an auger to get an estimate for discharge; however, winter flow measurements under ice are unlikely to serve as reliable data points and are for informational purposes only. Ice affected discharge measurements were flagged and were not used in stage-discharge development. One high flow measurement was collected at each site in June 2021 using a Sontek M9 ADP unit to enable flows to be collected without wading and to assist in developing the upper end of each rating curve. Benchmark surveys were completed three times a year at each site before level loggers were downloaded to determine if the stilling well had shifted and to comply with Resources Information Standards Committee (RISC) standards (RISC 2009).

2.3.3.2 Data Analysis

Paired stage readings and manual discharge measurements at each site were used to develop site specific power function stage-discharge relationships. The stage discharge relationship was used to convert the continuous water level records recorded at each site into a discharge record. Stage (m) and discharge (m^3/s) values were manually verified and qualitatively determined outliers (relative to the existing relationship) or measurements with high uncertainty (e.g., flows conducted under ice conditions) were removed from the stage-discharge relationship. All stage measurements below 0.001 m were treated as ‘dry’ and were excluded. A discharge time series (i.e., hydrograph) was plotted for each site. Lotic retained MacDonald Hydrology Consultants for senior review and quality grading of the hydrological data. Grades were assigned for each site following British Columbia Ministry of Environment Hydrological RISC Standards (RISC 2009).

2.4 Substrate Quality

2.4.1 Sediment

2.4.1.1 Sample Collection

Sediment quality samples were collected concurrently with benthic invertebrate sampling at eight areas in September 2021 (RG_HENUP, RG_FO26, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBCP, RG_FRUPO, and RG_FO22; Table 2.2). Five replicates were collected at mine-exposed areas, and three replicates were collected at reference areas, consistent with methods outlined in the 2021 to 2023 RAEMP study design (Minnow 2021a). Sediment samples were collected using a stainless-steel spoon and were transferred into glass jars for analysis of polycyclic aromatic hydrocarbons (PAHs), and into polyethylene bags for all other analyses (i.e., metals, moisture content, total organic carbon, and particle size distribution). Surficial sediment was collected by slowly and carefully placing the spoon on the sediment surface in a manner that minimized disturbance and inserting the spoon into the sediment to capture sediment to a depth of 1 to 2 cm. The spoon was then slowly lifted to the surface to avoid sample washout. The content of each spoonful was inspected to confirm that it was predominantly fine sediment (i.e., no pieces of vegetation, woody debris, or rocks, and minimal sand), and, if acceptable, was placed into a clean plastic tub. This procedure was repeated to form a composite sample representative of the sampling area with sufficient material for analysis, and the stainless-steel spoon was used to homogenize the sediment. Sampling equipment was rinsed with site water between stations. Due to shear stress and deposition characteristics of lotic environments in the upper Fording River, sediment was collected in small pockets of depositional areas, predominantly along the riverbank and often behind habitat structures that reduced flow. These areas were generally found within 10 to 100 meters of riffles where biological samples were collected.

For QA/QC purposes, one duplicate (split) sample was collected at a frequency of approximately 3% of the total number of samples for monitoring areas in the FRO LAEMP (i.e., two duplicate samples), but an overall frequency of 10% was sampled in the Elk River watershed as part of the greater RAEMP and LAEMP sampling in September 2021 and will be evaluated in the 2020 to 2022 RAEMP report. Following collection, samples were placed in a refrigerator at approximately 4°C until submission to the analytical laboratory.

2.4.1.2 Laboratory Analysis

Samples for chemical analysis were sent to ALS Environmental (ALS; Calgary, AB). The laboratory was instructed to thoroughly homogenize each sediment sample (according to standard laboratory protocols), to confirm the aliquots taken for analysis were representative and comparable.

Sediment samples were analyzed using the following methods: metals by CRC ICP-MS (EPA 200.2/6020A), mercury by Cold Vapour Atomic Fluorescence Spectroscopy (CVAFS; EPA 200.2/245.7), TOC by combustion method (Bartels and Sparks 2009), and PAHs by rotary extraction using hexane/acetone (EPA 3570/8270) followed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Particle size distribution was determined by dry sieving (coarse particles), wet sieving (sand), and the pipette sedimentation method (fine particles). Moisture content was determined gravimetrically by drying the sample at 105°C.

Sediment chemistry data collected for the 2021 FRO LAEMP were of acceptable quality as characterized by appropriate LRLs, excellent laboratory precision and accuracy, good field precision and reproducibility, and no hold time exceedances (Appendix A). Overall, the associated data were considered acceptable for this study.

2.4.1.3 Data Analysis

Sediment quality data were tabulated, summarized, and compared to British Columbia Working Sediment Quality Guidelines (WSQGs), except for selenium concentrations which were compared to an alert concentration considered equivalent to an upper WSQG (BCMOECCS 2019, 2021). The sediment data were also compared to reference area normal ranges, which were the 2.5th and 97.5th percentiles of pooled reference area distribution after removal of outliers (Minnow 2021b). Normal ranges could not be calculated for several PAHs because most of the values were below laboratory reporting limits (LRL). Data from 2017 to 2021 were plotted for all constituents for which a WSQG was available and visually assessed for temporal changes.

2.4.2 Calcite

Measurements of calcite presence and concretion were conducted on 100 particles (pebbles) at each biological sampling location concurrent with (and using the same particles as) the 100-pebble count. Calcite presence (Cp) has historically been a binary assessment (i.e., presence [score = 1] or absence [score = 0]; Teck 2016, Lotic 2021). In 2021, an additional method for assessing calcite presence in lotic environments was included (Cp', Lotic 2021, Zathey et al. 2021, Robinson et al. 2022) that scored the percent of the particle surface area covered by calcite as a decimal to the nearest 10th percentile (0.1, 0.2, 0.3, etc.; see Appendix G). The degree of concretion (Cc) was assessed by determining if the particle was removed with negligible resistance (not concreted; score = 0), noticeable resistance but removable (partially concreted; score = 1), or immovable (fully concreted; score = 2). If distinct particles were not visible due to heavy calcification, values of 1 (for presence) and 2 (for concretion) were recorded. If fines were encountered and calcite presence could not be visually confirmed, values of 0 (for presence) and 0 (for concretion) were recorded. If rocks were visible under fine material, the rock was selected for calcite measurements.

2.4.2.1 Data Analysis

The results for the 100 particles were expressed as a Calcite Index (CI and CI') based on the following equations (Lotic 2021, Zathey et al. 2021, Robinson et al. 2022):

$$CI = C_p + C_c \text{ or } CI = C_p{}' + C_c$$

Where:

$$CI \text{ or } CI' = Calcite\ Index^{9}$$

$$C_p = Calcite\ Presence\ Score = \frac{Number\ of\ particles\ with\ calcite}{100\ (binary\ score)}$$

$$C_p{}' = Calcite\ Presence\ Score = \frac{Number\ of\ particles\ with\ calcite}{100\ (proportional\ score)}$$

$$C_c = Calcite\ Concretion\ Score = \frac{Sum\ of\ particle\ concretion\ scores}{100}$$

Calcite data collected as part of the Regional Calcite Monitoring Program (Lotic 2022) were reported but were not used in analyses as the calcite measurements taken concurrently with biological sampling were deemed more appropriate because they are representative of the areas sampled for benthic invertebrates (i.e., riffles).

2.5 Benthic Invertebrates

2.5.1 Community Structure

2.5.1.1 Sample Collection

Triplicate BIC samples were collected at each of the FRO LAEMP biological monitoring areas in June and September 2021, except for RG_FOBCP and RG_FO22 where five replicates were collected in September to fulfill requirements under the 2021 to 2023 RAEMP study design (Table 2.2; Minnow 2021a). Triplicate samples were also collected in December 2021 at select areas in the lower part of the study area (Table 2.2). Sampling of BIC deviated from the study design on two occasions; BIC samples were not collected at biological monitoring area RG_FOBCP (located at the old Compliance Point) in December due to very thick ice

[9] CI refers to the binary assessment of Cp and CI' refers to the proportional assessment of Cp'.

conditions at the time of sampling, and BIC sampling was added at RG_FO22 (the new Compliance Point) in December.

Benthic invertebrate community sampling followed the Canadian Aquatic Biomonitoring Network (CABIN) method, which involved 3-minute travelling kick sampling in riffle habitats into a net with a triangular aperture measuring 36 cm per side and mesh having 400 µm openings (Environment Canada 2012a). During sampling, the field technician moved across the stream channel (from bank to bank, depending on stream depth and width) in an upstream direction. With the net being held immediately downstream of the technician's feet, the detritus and invertebrates disturbed from the substrate were passively collected in the kick-net by the stream current. After three minutes of sampling time, the sampler returned to the stream bank with the sample. The kick-net was rinsed with water to move debris and invertebrates into the collection cup at the bottom of the net. The collection cup was then removed and the contents poured into a labelled plastic jar and preserved to a level of 10% buffered formalin in ambient water. Replicate samples were spaced either in separate riffles or a minimum of 50 m apart (when the area was a continuous riffle).

2.5.1.2 Laboratory Analysis

Benthic invertebrate community samples were sent to Cordillera Consulting (lead taxonomist Scott Finlayson), in Summerland BC, for sorting and taxonomic identification. Organisms were identified to the lowest practical level (LPL; typically genus or species). At the beginning of the sorting process, each sample was examined and evaluated for estimation of total invertebrate numbers. If the total number was estimated to be greater than 600, then the laboratory's sub-sampling protocol was followed. A minimum of 5% of each sample was sorted, in accordance with Quality Assurance/Quality Control (QA/QC) requirements of Environment Canada (Environment Canada 2014). Sorting efficiency and sub-sampling accuracy and precision were quantified using methods specified by Environment Canada (Environment Canada 2012b, 2014).

A data quality review (DQR) was conducted on the 2021 BIC data (Appendix A). Overall, benthic invertebrate community structure data were of acceptable quality and the associated data can be used with a high level of confidence in the derivation of conclusions.

2.5.1.3 Supporting Measures

Consistent with the requirements of the CABIN sampling protocol, supporting habitat information (i.e., water velocity and depth, *in situ* water quality [temperature, dissolved oxygen [DO], conductivity, pH], and substrate characteristics [Wolman 100-pebble count and substrate embeddedness]) was collected concurrent with BIC sampled in riffle habitats

(Environment Canada 2012a). Periphyton scores were also ascribed to each biological monitoring area during September sampling, and according to CABIN sampling protocol (Environment Canada 2012a). The scoring was ascribed as follows:

1 – rocks not slippery, no obvious colour (<0.5mm thick);

2 – rocks slightly slippery, yellow-brown to light green in colour (0.5-1mm thick);

3 – rocks have noticeable slippery feel, patches of thicker green to brown algae (1-5mm thick);

4 – rocks are very slippery, numerous clumps (5-20mm thick); and

5 – rocks mostly obscured by algae mat, may have long strands (>20mm thick).

2.5.1.4 Data Analysis

Benthic invertebrate community structure was evaluated based on total abundance, taxonomic richness (to the lowest practicable level of taxonomy), the abundances and relative abundances (%) of major taxonomic groups, and habitat and feeding indices (Table 2.6; Appendix Table E.1). Analyses of benthic invertebrate community data were completed using the following approaches (see Appendix J for detailed methodology):

- Graphical (temporal and spatial) comparison of data relative to regional[10] and, when applicable, site-specific normal ranges[11];Graphical comparison of seasonal changes in BIC endpoints (2018 to 2021)
- Evaluation of temporal changes in BIC endpoints using a two-way ANOVA with post-hoc contrasts testing for differences among years for each station;
- Assessment of BIC structure using correspondence analysis.

Benthic invertebrate community data collected in September were the focus of data analyses and interpretation. Data from other seasons (June and December) were used in seasonal visual data evaluations

[10] The reference normal range as presented in the RAEMP represents the 2.5th and 75th percentiles of the distribution of reference area data (pooled 2012 to 2019 data) reported in the 2017 to 2019 RAEMP report (Minnow 2020).

[11] Site-specific normal ranges represent the 2.5th and 97.5 percentile for a given area as determined by habitat predictors for a given site in relation to the complete set of Elk Valley monitoring areas. The site-specific normal ranges were estimated using regression modelling as presented in the RAEMP (Minnow 2020).

Table 2.6: Benthic Invertebrate Community Index Descriptions, FRO LAEMP, 2021

Index	Description
Autotrophic to Heterotrophic Index	Reflects the ratio of energy use by the benthic invertebrate community (BIC) as primary productivity within the stream from algae growth to heterotrophic energy sources (e.g., leaves and sticks)
Shredder Index	Reflects the ratio of coarse particulate organic matter (CPOM) to fine particulate matter (FPOM) used by BIC
Filtering Collector Index	Reflects the ratio of suspended Fine Particular Organic Matter (FPOM) to depositional FPOM used by the BIC
Predator Index	Reflects the abundance of predators
Benthic to Hyporheic Index	Reflects the ratio of habitats used by BIC, reflects sediment stability and flow permanence

2.5.2 Tissue Selenium Concentrations

2.5.2.1 Sample Collection

Composite-taxa benthic invertebrate tissue samples were collected in June, September, and December from mine-exposed and reference areas included in the FRO LAEMP and to support pre-commissioning monitoring for the FRO-S AWTF (Table 2.2; Minnow and Lotic 2021a). Replicates of five tissue samples were collected at areas associated with the FRO AWTF- S commissioning sampling plan (Minnow and Lotic 2021a) to increase statistical power for pre- and post-commissioning comparisons. This included mine-exposed areas located between downstream of the South Tailings Pond (RG_FOUKI) and upstream of Ewin Creek (RG_FOUEW) as well as the Greenhouse side-channel (RG_FRGHSC) and side channel 2 (RG_FRSCH2), and the reference area located immediately upstream of mining in the Fording River (RG_UFR1). Triplicate samples were collected at the remaining areas. Benthic invertebrate tissue samples were not collected at RG_FRCP1SW in December 2021 because the riffles were dry or frozen.

Composite-taxa benthic invertebrate tissue samples were collected for selenium analysis using the kick sampling method described in Section 2.5.1, except that the sampling was not timed, and kicking continued until sufficient sample was collected. Replicate samples were collected either in separate riffles or a minimum of 50 m apart (when the area was a continuous riffle)[12]. Invertebrates were picked free of debris in the field, placed into sterile labelled cryovials and stored in a cooler with ice packs until they were transferred to a freezer later in the day. Approximately 2 g of wet tissue were collected for each sample where possible, and composite-taxa samples were representative (proportional) of the invertebrates collected from the kick and sweep.

2.5.2.2 Laboratory Analysis

Benthic invertebrate tissue samples were kept in a freezer until they were shipped in coolers on ice to TrichAnalytics Inc. (Trich) in Saanichton, BC. At the laboratory, samples were freeze-dried and analyzed for metals (including selenium) using laser ablation inductively coupled plasma spectrometry (LA-ICPMS). Results were reported on a dry weight (dw) basis, along with moisture content (based on the difference between wet and freeze-dried sample weights).

A DQR was conducted on the 2021 benthic invertebrate tissue data (Appendix A). Benthic invertebrate tissue data collected for the 2021 FRO LAEMP were of good quality as

[12] Benthic invertebrate tissue samples at RG_FOBCP in December 2021 were all collected within the same riffle because it was the only riffle that could be accessed after breaking through approximately 30 cm of ice.

characterized by appropriate LRLs and excellent laboratory precision and accuracy, and the data can therefore be used with a good level of confidence in the derivation of conclusions.

2.5.2.3 Data Analysis

Composite-taxa benthic invertebrate tissue selenium concentrations were plotted for each FRO LAEMP monitoring area sampled in 2021 relative to:

- the regional normal (reference area) range, defined as the 2.5th and 97.5th percentiles of tissue selenium concentrations measured in reference areas that have not been disturbed by mining in historical studies completed in the Elk River watershed from 1996 to 2019 reported in RAEMP (Minnow 2020);
- data from previous sampling periods from 2012 to present, where available;
- the Level 1 EVWQP benchmarks for effects to invertebrates (13 milligrams/kilogram [mg/kg] dry weight [dw]), dietary effects to birds (15 mg/kg dw), and dietary effects to juvenile fish (11 mg/kg dw; Golder 2014);
- the Level 2 EVWQP benchmarks for effects to invertebrates (20 milligrams/kilogram [mg/kg] dry weight [dw]), dietary effects to birds (22 mg/kg dw), and dietary effects to juvenile fish (18 mg/kg dw; Golder 2014); and
- the Level 3 EVWQP benchmarks for effects to invertebrates (27 milligrams/kilogram [mg/kg] dry weight [dw]), dietary effects to birds (41 mg/kg dw), and dietary effects to juvenile fish (26 mg/kg dw; Golder 2014).

Tissue selenium concentrations were paired with corresponding water selenium concentrations and compared to predictions from selenium bioaccumulation model (Golder 2020a) and the bioaccumulation tool (i.e., the ‘B-tool; predicts selenium tissue concentrations accounting for differences in selenium species and sulphate concentrations [Golder 2020b]).

2.5.3 Biomass

2.5.3.1 Sample Collection

Benthic invertebrate biomass and density samples were collected in September from 2017 to 2021 to assess biological productivity before commissioning of the FRO-S AWTF and the FRO-N SRF. Ten replicate stations were sampled at each of twelve biological monitoring areas (mine exposed: RG_FOUCL, RG_FOUNGD, RG_FOUKI, RG_FOBKS, RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, RG_ FRUPO, and RG_FO22; reference: RG_FO26, RG_HENUP) in September 2021 for analysis of benthic invertebrate biomass and density (Table 2.2; Figure 2.1). Benthic invertebrates were collected using a Hess sampler with 500 µm mesh, for measurement of biomass and community endpoints relative to the area sampled. Stations were located a minimum of 5 m a part, so they were representative of the overall monitoring area. A single sample was collected at each station by carefully inserting the base of the Hess sampler into the substrate to a depth of approximately 5 to 10 cm. Gravel or cobble enclosed within the Hess sampler was carefully washed while allowing the current to carry dislodged organisms into the mesh collection net. Organisms collected into the net were rinsed into the bottom of the net, and then into a labelled wide-mouth plastic jar. Samples were preserved to a level of 10% buffered formalin in ambient water within approximately 6 hours of collection to ensure that biomass was not lost through predation or decomposition of tissues before the samples were sorted at the laboratory.

2.5.3.2 Laboratory Analysis

Benthic invertebrate biomass and density (Hess) samples were sent to Zeas Inc. (lead taxonomist Danuta Zaranko), in Nobleton ON, for sorting and taxonomic identification. At the laboratory, preserved organisms in each sample were sorted from the sample debris, identified, and weighed at the family-level of taxonomy. Each family group of organisms was placed onto a fine cloth to drain excess surface moisture before being weighed to the nearest 0.1 mg. Total and family-level density and biomass were reported for each sample (preserved wet weight; see Appendix K for laboratory reports).

2.5.3.3 Data Analysis

Laboratory data for benthic invertebrate biomass and density samples were converted to units of number of organisms per square meter (org/m^2) based on the known area sampled. Biomass and density data from 2017 to 2021 were plotted and changes were visually compared to assess spatial and temporal patterns pre-commissioning of the FRO-S AWTF.

2.6 Fish

2.6.1 Sample Collection

Non-lethal sampling of mature WCT for muscle selenium concentrations is required under the RAEMP once per monitoring cycle (Minnow 2021a). In September 2021, samples were collected from WCT sampling areas around RG_FODGH13 and RG_FOBCP14,15 for monitoring water quality under Permit 107517, and at two reference areas (Bull River, Flathead River), in accordance with the approved RAEMP study design (n=8 per area; Minnow 2021a). In addition to regular RAEMP sampling, adult female WCT were collected non-lethally during the spring spawning window (June) in accordance with ECCC direction to collect three samples at two areas of the upper Fording River. The first area was Clode Flats (RG_CLFL), located between Henretta Creek and the Multiplate culvert, and the second area was located in the Fording River S6 Oxbow area (RG_FROXB). In addition to fish sampling under the RAEMP, Teck collects tissue (dorsal muscle and whole body) samples from WCT incidental mortalities and fish salvages when relevant, to add valuable information to the dataset on fish selenium concentrations.

Sampling methods followed those outlined in the RAEMP study design (Minnow 2021a). Upon capture, fish were anesthetized using clove oil prior to processing. Measures of body weight were collected using appropriately sized spring scales (e.g., 100 g, 500 g, 1,000 g), and total and fork lengths were recorded using a measuring board equipped with a meter stick (± 1 mm). All fish were inspected for any external anomalies such as deformities, erosions (fin and gill), lesions, tumors, injuries, infections and/or parasites during processing and representative photographs were collected (Minnow 2021a). A biopsy punch was used to collect a non-lethal muscle sample from each fish, and Vetbond™ tissue adhesive was used to seal the wound and prevent infection. Skin was removed from each muscle sample using a scalpel and the remaining tissue was placed into a sterile microcentrifuge tube. Samples were stored on ice in the field and transferred to a freezer later in the day. Tissue samples were kept in a freezer until they were transported overnight in coolers with ice packs to an accredited laboratory.

2.6.2 Laboratory Analysis

Fish tissue samples were kept in a freezer until they were shipped in coolers on ice to TrichAnalytics Inc. (Trich) in Saanichton, BC. At the laboratory, samples were freeze-dried and analyzed for metals (including selenium) using laser ablation inductively coupled plasma spectrometry (LA-ICPMS). Results were reported on a dry weight (dw) basis, along with moisture content (based on the difference between wet and freeze-dried sample weights).

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[13] Fording River between Chauncey Creek and Greenhills Creek.

[14] Monitoring area RG_FOBCP is associated with Teck's water quality station FR_FRCP1. At the time the 2021 to 2023 RAEMP study design was submitted (February 2021), FR_FRCP1 was the Compliance point for FRO; this was changed to FR_FRABCH later in 2021

[15] As sampling success is dependent on where fish are located, WCT associated with RG_FOBCP were caught further upstream at sampling area RG_MP1 (located downstream of the Multiplate culvert) but are still considered representative of fish from the area.

2.6.3 Data Analysis

For the purposes of the FRO LAEMP report, muscle selenium concentrations of WCT from RAEMP fish sampling in the upper Fording River in 2021 were plotted with data from 2018 (where available), reference area data, and in comparison, to the applicable site-specific muscle benchmark (15.5 mg/kg dw; muscle equivalent site-specific benchmark; Nautilus and Interior Reforestation 2011) and the British Columbia selenium guideline for fish muscle (4 mg/kg dw; BCMOE 2014. Additionally, tissue selenium concentrations from incidental mortality WCT samples were plotted with reference area data, and in comparison to the British Columbia selenium guideline for fish muscle. Corresponding meristics data (total weight, length and fork length) were tabulated along with observations of anomalies and calculated Fulton's condition factor. Condition factor was also plotted for visual comparison among areas.

2.7 Integrated Analysis

Factors contributing to BIC variation within the FRO LAEMP study area were evaluated by comparing BIC endpoints with water quality, and where applicable, habitat variables. Correlation analysis and canonical correspondence analysis (CCAs) were conducted on data from the full study area, and then three individual study areas (upper, middle, and lower) within the full study area. The upper, middle, and lower study areas were grouped based on spatial differences of habitat (water depth, water flow/velocity, water temperature, substrate size, etc.) and water quality identified in previous FRO LAEMP reports (Minnow and Lotic 2019b, 2020b). Integrated analyses were completed using the following approaches (see Appendix J for detailed methodology):

- Nitrate concentrations were analyzed with a Linear Model (LM) and BIC endpoints (abundance, richness, % EPT, and % Ephemeroptera) were analyzed with a Linear Mixed-Effects Model (LMM) to identify concurrent changes in nitrate concentrations and BIC endpoints at biological monitoring areas.
- Spearman Rank Correlations were conducted between key BIC endpoints and physical and chemical variables (Appendix Table F.1);
- A CCA was performed to investigate patterns in BIC in June and September of 2018 to 2021 relative to habitat (Tables 2.7 and 2.8) and physical and chemical variables. Importance of individual stressor and habitat variables were investigated with permutation-based ANOVAs.

Table 2.7: Summary of Habitat Variables Used in Canonical Correspondence Analysis of Benthic Invertebrate Community, FRO LAEMP, 2020

Variable Source	Habitat Variables
Steam Characteristics	Mean Depth
	Bankfull Width
	Mean Velocity
Substrate	Embeddedness
	D16
	D84
GIS	% Watershed greater than 30% slope
	Station Gradient
	Watershed Area

Table 2.8: Summary of Locations with Complete Datasets for Canonical Correspondence Analysis, FRO LAEMP, 2021

Biological Monitoring Area	2018	2019	2020	2021
RG_HENUP	✓	✓	✓	✓
RG_FO26	✓	✓	✓	✓
RG_UFR1	x	x	x	x
RG_FODHE	✓	✓	✓	✓
RG_FOUCL	x	x	✓	✓
RG_FOUNGD	✓	✓	✓	✓
RG_FODNGD	✓	✓	✓	✓
RG_MP1	✓	✓	✓	✓
RG_FOUSH	✓	✓	✓	✓
RG_FOUKI	✓	✓	✓	✓
RG_FOBKS	✓	✓	✓	✓
RG_SCOUTDS	x	x	✓	✓
RG_FOBSC	✓	✓	✓	✓
RG_FOBCP	✓	✓	✓	✓
RG_FRCP1SW	✓	✓	✓	x
RG_FRUPO	✓	✓	✓	✓
RG_FODPO	✓	✓	✓	✓
RG_FO22	✓	✓	✓	✓
RG_FOUEW	✓	✓	✓	✓

Note: 'x' denotes biological monitoring areas and years not included in the Canonical Correspondence Analysis.

3 RESULTS

3.1 Water Chemistry

3.1.1 Water Quality

Water quality data will be interpreted to address Study Questions #1, #2, #3, #5, and #6 (see Sections 4.1, 4.2, 4.3, 4.5, and 4.6). Water quality constituents were summarized, tabulated, and screened against relevant BCWQGs, EVWQP benchmarks, and screening values, where applicable (Appendix Table B.1). Constituents with EWTs and identified as mine-related under the AMP were plotted from 2012 to 2021 and compared with BCWQGs, EVWQP benchmarks, and screening values (Appendix Tables B.1 and B.2; Appendix Figures B.1 to B.18). Concentrations of water quality constituents were typically the highest in the winter months when water flows were lowest (Appendix Figures B.1 to B.18). Of the Order constituents under the EVWQP (dissolved cadmium, sulphate, nitrate, total selenium), dissolved cadmium concentrations were the lowest and concentrations were consistently below the EVWQP Level 1 benchmark at all water quality stations evaluated in the FRO LAEMP in 2021 (Appendix Table B.1; Appendix Figure B.4). Sulphate concentrations were above the EVWQP Level 1 benchmark between FR_SCOUTDS and FR_FRCP1, and at FR_FRRD throughout the winter months only (Appendix Table B.1; Appendix Figure B.16). Except for the freshet period, nitrate concentrations were above the EVWQP Level 1 benchmark at all mine-influenced water quality stations evaluated in the FRO LAEMP, and above the EVWQP Level 2 benchmark at all stations except for FR_FRCP1SW (Appendix Table B.1; Appendix Figure B.11). Total selenium was seasonally (lower flow months of summer, fall, and winter) above the EVWQP Level 1 benchmark from RG_FOUNGD downstream to FR_FR5 (Appendix Table B.1; Appendix Figure B.15). Total nickel concentrations were above the Level 1 interim screening value during low flow months from RG_FOUNGD downstream to FR_FRRD (Appendix Table B.1; Appendix Figure B.10). Total dissolved solids were above the Level 1 screening value between FR_SCOUTDS and GH_PC2 throughout the low flow winter period (Appendix Table B.1; Appendix Figure B.6). Of the remaining mine-related constituents with BCWQGs, nitrite concentrations were above the long-term BCWQG at only three stations within the study area (FR_FRABEC1, FR_FR2, and FR_FR3) during the winter Appendix Table B.1; Appendix Figure B.12), and total zinc was atypically high in one sample at the reference area RG_FO26, which was above the long-term BCWQG (Appendix Table B.1). None of the other mine-related constituents (total antimony, total barium, total boron, dissolved cobalt, total manganese, and total molybdenum) were measured at concentrations greater than their respective guidelines, and no BCWQG is available for total lithium. Except for ammonia at FR_FRNTP, which was above the long-term BCWQG in 6% of samples, no other constituents (total chloride, total beryllium, total lead, total mercury, total silver, total thallium, total uranium, dissolved aluminum, dissolved copper, and dissolved iron) were above BCWQGs, where available (Appendix Table B.1).

Seasonal mean concentrations of Order constituents (nitrate, total selenium, dissolved cadmium, and sulphate) and total nickel in 2021 were plotted spatially (Appendix Figure B.19). Total selenium concentrations were highest between FR_SCOUTDS and FR_FR5, peaking in the middle study area at FR_FRCP1 in winter 2021 (Appendix Figure B.19). Nitrate concentrations were consistently elevated in the Fording River from upstream of Clode Creek (FR_FOUCL) to FR_FR5 throughout the winter, when visually compared to reference areas (Appendix Figure B.19). Sulphate concentrations followed a similar spatial pattern as total selenium with the highest concentrations observed between FR_SCOUTDS and the current Compliance Point at Chauncey Creek (FR_FRABCH) during late summer through to winter (Appendix Figure B.19). Dissolved cadmium concentrations, while below EVWQP benchmarks, were highest in late summer between FR_SCOUTDS and FR_FRCP1, with the highest concentrations observed in between at water quality station FR_FR4 (Appendix Figure B.19). Total nickel concentrations varied spatially, increasing throughout the upper study area (from Henretta Creek to upstream of the South Tailings Pond), then leveling off before increasing between FR_SCOUTDS and FR_FRCP1 in the middle study area, then decreasing substantially in the lower study area (Appendix Figure B.19). Concentrations of dissolved cadmium and total nickel were frequently highest during freshet in the lower study area (FR_FRRD downstream to FR_FR5), while nitrate, sulphate, and total selenium were the highest during low flow seasons (Appendix Figure B.19).

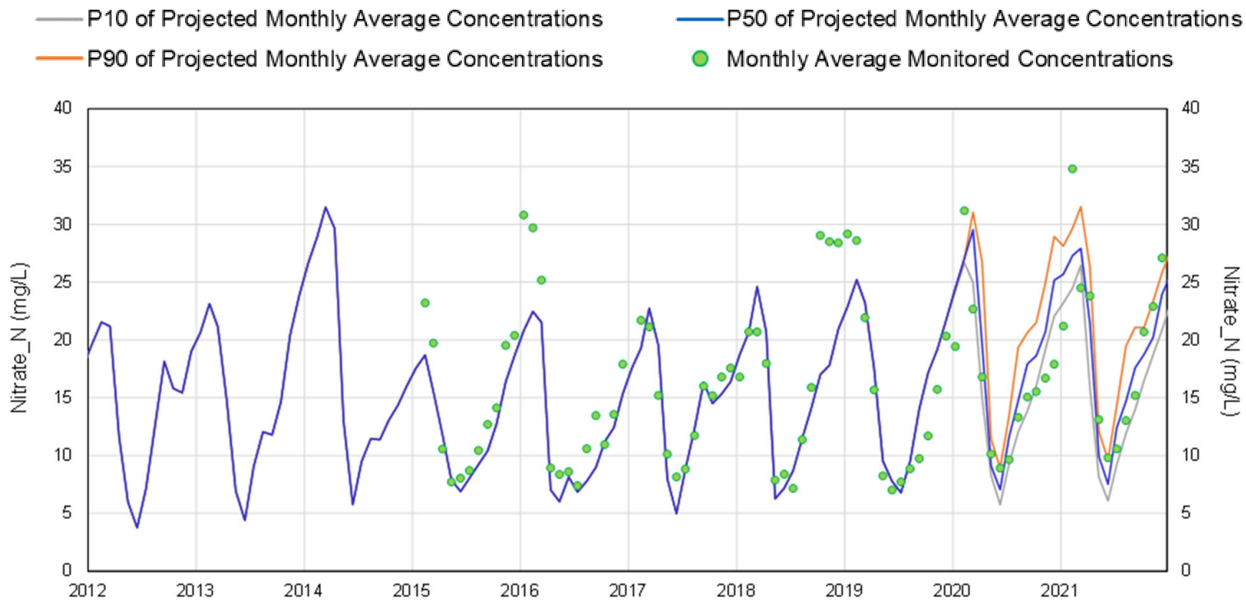
To evaluate changes in water quality over time (2012 to 2021), nutrients and mine related constituents identified under the AMP were statistically analyzed for temporal trends (Appendix Table B.3). Annual mean dissolved cadmium concentrations were significantly higher in 2021 at six stations (FR_MULTIPLATE, FR_FRNTP, FR_FR4, FR_FRCP1, FR_FRRD, and FR_FRABCH) compared to the base year; however, only FR_MULTIPLATE and FR_FRCP1 were higher in 2021 compared to all annual historical means (Appendix Table B.3), and all values were below EVWQP Level 1 benchmark (Appendix Table B.1). Total nickel concentrations in 2021 were higher than the base year at several stations throughout the FRO LAEMP study area (FR_MULTIPLATE downstream to FR_FR4, and at GH_PC2 and FR_FR5), but only concentrations at FR_SCOUTDS were higher than all historical annual means (Appendix Table B.3). Nitrate concentrations in 2021 were significantly higher than the base year at all stations within the FRO LAEMP study area except for the Fording River downstream of Henretta Creek (FR_FR1) and the Fording River downstream of Porter Creek (GH_PC2). Several stations (FR_MULTIPLATE, FR_FRNTP, FR_FR2, FR_SCOUTDS, and FR_FRABCH) had concentrations above the range of annual historical means in 2021 (Appendix Table B.3). Nitrite concentrations were significantly higher than the base year at five stations in 2021 (FR_MULTIPLATE, FR_FRNTP, FR_SCOUTDS, FR_FRCP1, and FR_FRABCH), but only concentrations at the FR_SCOUTDS were greater than all annual historical means and indicated a consistent increase over time (Appendix Table B.3). Total selenium, sulphate, and TDS concentrations were higher than the base year at all stations within the study area in 2021, except for FR_FR1, FR_MULTIPLATE, FR_SCOUTDS, and FR_FRCP1; however, the concentrations in 2021 were similar to one or more historical annual means and have not indicated a consistent increasing temporal trend (Appendix Table B.3). Although total uranium concentrations were also higher than the base year at all stations within the study area except FR_FR1, FR_SCOUTDS, and FR_FRCP1 in 2021 (Appendix Table B.3), no concentrations were above BCWQGs (Appendix Table B.1). Annual mean concentrations of total phosphorus and orthophosphate in 2021 were not statistically different than the base year or the annual historical means at any stations throughout the study area (Appendix Table B.3). While some statistically significant changes were observed for other constituents with EWTs, concentrations were below guidelines or benchmarks.

Principal component analysis (PCA) was conducted on water quality samples from 2012 to 2021 (Appendix Table B.4) to summarize water chemistry variables for use in the correlation analysis (Section 3.5). Principal component axis 1 (PC1) and principal component axis 2 (PC2) explained 50% and 26% of the variation in water chemistry, respectively. Almost all mine-related water quality constituents had significant and strong positive correlations with PC1, whereas fewer constituents had a significant and strong correlation with PC2 (Appendix Table B.4). Given that most constituents included in the PCA correlated strongly with PC1, the explanatory power of PC1 was high, but the influence of individual constituents remained low.

3.1.1.1 Modelled Nitrate Concentrations

Nitrate concentrations are currently modelled in the upper Fording River at the former FRO Compliance point (FR_FRCP1), the current FRO Compliance point (FR_FRABCH), and the GHO Fording River Compliance point (GH_FR1; Fording River Order Station under Permit 107517). Measured concentrations at each station were plotted with modelled concentrations to assess current conditions against expectations (Golder 2022b). Nitrate concentrations measured from each station demonstrated seasonal highs during low flow periods (i.e., fall and winter), which were consistently above median (50^{th} percentile; P50) projected monthly average concentrations (Figure 3.1; Golder 2022b). To account for the low flow conditions and the subsequent elevated nitrate concentrations, 90^{th} percentile (P90) monthly average concentration model projections were integrated into modelling beginning in 2020.

Former FRO Compliance Point (FR_FRCP1; E300071)



Current FRO Compliance Point (FR_FRABCH; E223753)

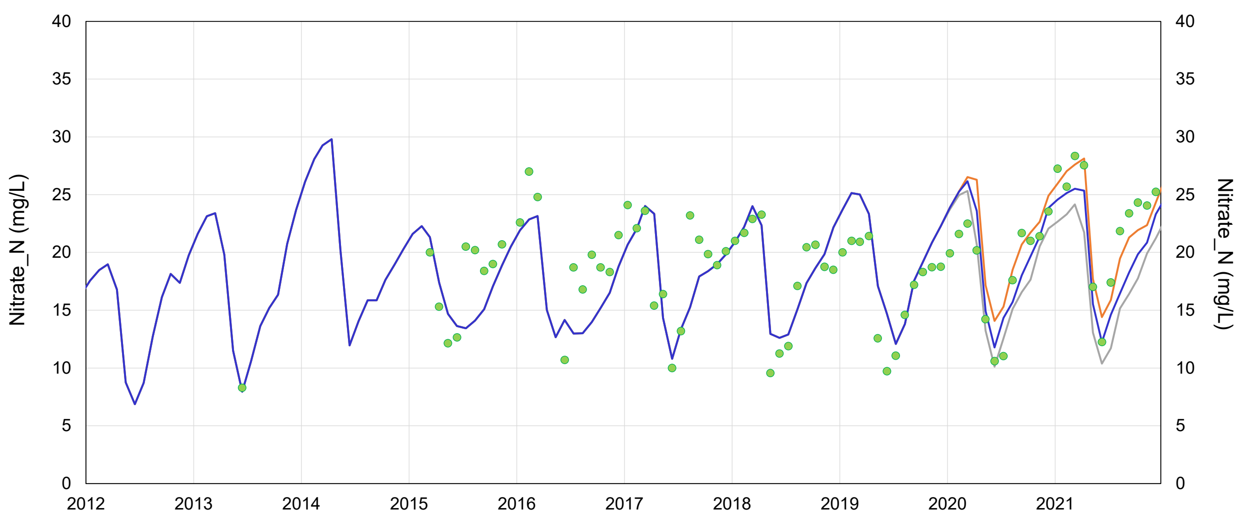


Figure 3.1: Average Monthly Nitrate Concentrations for FR_FRCP1, FR_FRABCH, and GH_FR1 under Low, Medium, and High Flows, FRO LAEMP, 2021[a]

Notes: The solid grey, blue, and orange lines correspond to the P10, P50 and P90 of modelled monthly average concentrations using 20 climate realizations. Monitored monthly average concentrations are indicated by green circles, noting that all 2021 monitored flows are preliminary and are subject to review and adjustment.

[a] Golder 2022a

GHO Fording River Compliance Point (GH_FR1; 0200378)

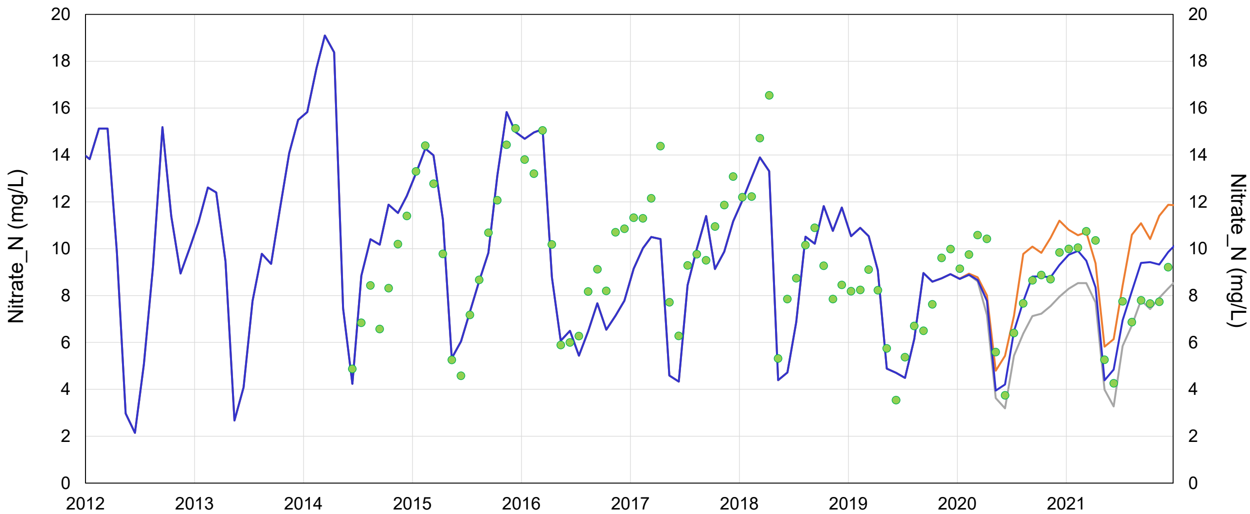


Figure 3.1: Average Monthly Nitrate Concentrations for FR_FRCP1, FR_FRABCH, and GH_FR1 under Low, Medium, and High Flows, FRO LAEMP, 2021[a]

Notes: The solid grey, blue, and orange lines correspond to the P10, P50 and P90 of modelled monthly average concentrations using 20 climate realizations. Monitored monthly average concentrations are indicated by green circles, noting that all 2021 monitored flows are preliminary and are subject to review and adjustment.

[a] Golder 2022a

Monitored nitrate concentrations at FR_FRCP1 have been consistent with the current monthly average model projected concentrations, except for winter 2016, winter 2018 and 2019[16], and Q4 of 2021 (Figure 3.1). Measured nitrate concentrations at FR_FRABCH have varied in relation to the monthly average model projected concentrations, and with concentrations in 2021 higher than the P90 low flow conditions in Q1, Q3 and Q4 (Figure 3.1). Nitrate concentrations measured at GH_FR1 were above the monthly average model projected concentrations periodically between 2016 and early 2021, however, measured nitrate concentrations were below projected values in the last half of 2021 (Figure 3.1). Updated projections for 2014 to 2022 suggested increases in nitrate concentrations at FR_FRCP1 and, to a lesser extent FR_FRABCH relative to expected values; however, concentrations at the Order station (GH_FR1) have been within the projected range and consistent with expectations (Figure 3.1; Golder 2022b).

3.1.2 Selenium Speciation

Aqueous selenium speciation data will be interpreted to address Study Question #3 (see Section 4.3). Selenium concentrations in 2021 varied by season, with higher concentrations in September and December compared to June for all selenium species and at all stations (Appendix Figure B.20; Appendix Table B.5). Selenate was the dominant species present in all samples, with very low concentrations of the more bioavailable reduced forms of selenium such as selenite and organoselenium species (e.g., methylseleninic acid; Appendix Table B.5). Concentrations of selenate increased from upstream to downstream throughout the study area similar to total selenium concentrations and were elevated compared to most other areas in Fording River Side Channel #2 (RG_FRSCH2) and the Greenhouse Side Channel (RG_FRGHSC; Appendix Figure B.20; Appendix Table B.5). Concentrations of selenite were highest at biological monitoring areas in the Fording River from RG_MP1 downstream to RG_FRCP1SW, with lower concentrations measured in the lower study area (RG_FRUPO downstream to RG_FOUEW; Appendix Table B.5; Appendix Figure B.20). Organoselenium species methylseleninic acid was detected at five biological monitoring areas (RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW, and RG_FO22) in September, but concentrations were at or just above the laboratory reporting limit (LRL; Appendix Table B.5). Reference areas had low concentrations of selenate compared to mine exposed areas and only one sample in Henretta Creek upstream of FRO (RG_HENUP) in June had a detectable selenite concentration (Appendix Table B.5).

[16] Nitrate concentrations were elevated during this period because water in the Fording River was predominately from Cataract Creek because of seasonal drying upstream. Cataract Creek was subsequently diverted and continuously elevated nitrate concentrations have not been observed since then at this station.

3.1.3 Chronic Toxicity

Chronic toxicity testing will be interpreted to address Study Questions #1, #5, and #6 (see Sections 4.1, 4.5 and 4.6). Results (reported in the 2021 UFR Chronic Toxicity Report [Golder 2022a]) were categorized by effects ratings of 'no,' 'possible,' and 'likely' adverse response of four organisms (water flea, amphipod, rainbow trout, and fathead minnow) to water sampled from each station outlined above.

Overall, most tests were categorized as having no adverse responses for endpoints of each organism in water from six mine-exposed water quality stations (FR_MULTIPLATE, FR_FR2, FR_FR4, FR_FRCP1, FR_FRRD, and FR_FRABCH) within the FRO LAEMP study area[17] sampled in 2021 (Figure 3.2). At FR_MULTIPLATE, 11 of 13 endpoints assessed had no adverse responses across any quarter (Figure 3.2). Although the likely adverse response for amphipod dry weight at FR_MULTIPLATE in Q3 was not attributed to any water quality constituent, nickel was identified as potentially contributing to the likely adverse response for water flea reproduction in Q4 (Golder 2022a; Figures 3.2 and 3.3). No adverse responses were also observed in 11 of 13 endpoints at FR_FR2 across all quarters (Figure 3.2), and while the likely adverse response for fathead minnow survival in Q1 may have been caused by microbes (no water quality constituent was identified), nickel was again identified as potentially contributing to the possible adverse response for water flea reproduction in Q4 (Golder 2022a; Figure 3.3). Similar to FR_MULTIPLATE and FR_FR2, there were no adverse responses observed in 11 of 13 endpoints at FR_FR4, but nickel showed the greatest evidence of potentially contributing to the possible adverse responses for amphipod dry weight in Q3 and Q4, and the possible and likely adverse responses for water flea reproduction in Q3 and Q4, respectively (Golder 2022a; Figure 3.3). At FR_FRCP1, no adverse responses were observed for 9 of 13 endpoints across quarters, but again nickel showed the greatest evidence of potentially contributing to the likely adverse response for water flea reproduction in Q1, Q3, and Q4 and amphipod dry weight in Q3 (Golder 2022a; Figure 3.3). The possible adverse respond for rainbow trout survival at FR_FRCP1 in Q4 was potentially associated with nitrate concentrations; however, microbe contamination also contributed to the observed response confounding the results. The likely adverse response for fathead minnow survival at FR_FRCP1 in Q1 was not associated with any water quality constituent. At FR_FRRD, no adverse responses were observed in 11 of 13 endpoints, and the two possible adverse responses (water flea reproduction and amphipod dry weight in Q4) could not be attributed to any water quality constituents (Golder 2022a; Figure 3.3).

[17] Figures 3.2 and 3.3 contain two stations (GH_FR1 and LC_LC5) not associated with the FRO LAEMP but were included in the figure taken directly from the Chronic Toxicity Report (Golder 2022b). Testing was also conducted at a FRO LAEMP reference area (FR_UFR1) but the data were not included in the figures.

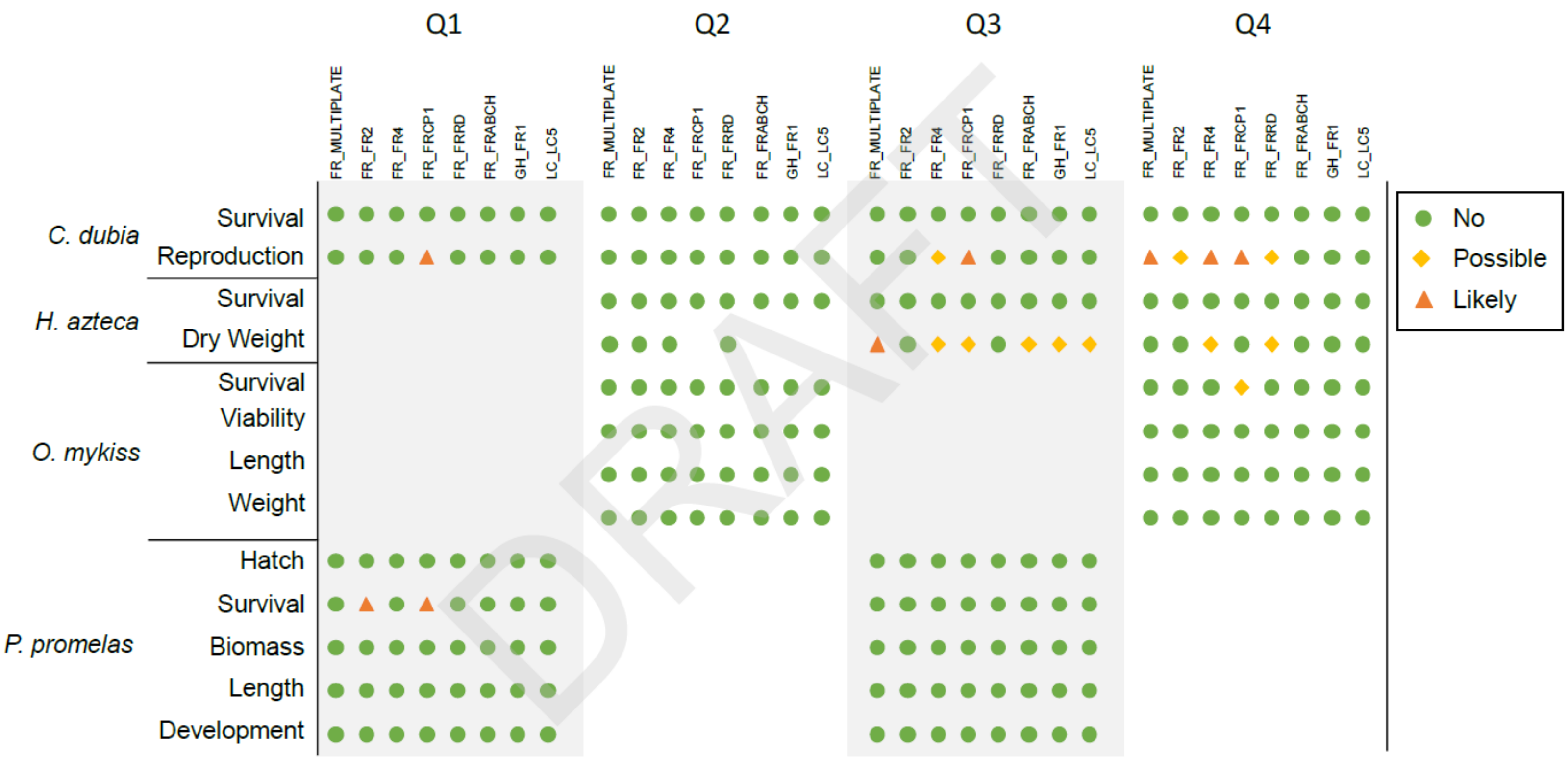


Figure 3.2: Summary of the 2021 Chronic Toxicity Tests in the Upper Fording River, FRO LAEMP, 2021

Notes: Stations GH_FR1 and LC_LC5 were not associated with the FRO LAEMP but were included in the above figure taken directly from the 2021 Chronic Toxicity Report for the Upper Fording River (Golder 2022b). Q2 dry weight measurements of *H. azteca* were disposed of due to a lab technician error; however, four stations (FR_MULTIPLATE, FR_FR2, FR_FR4, and FR_FRRD) were re-tested. There was evidence of microbes in the Q3 *P. promelas* tests and in the Q2 and Q4 *O. mykiss* tests.

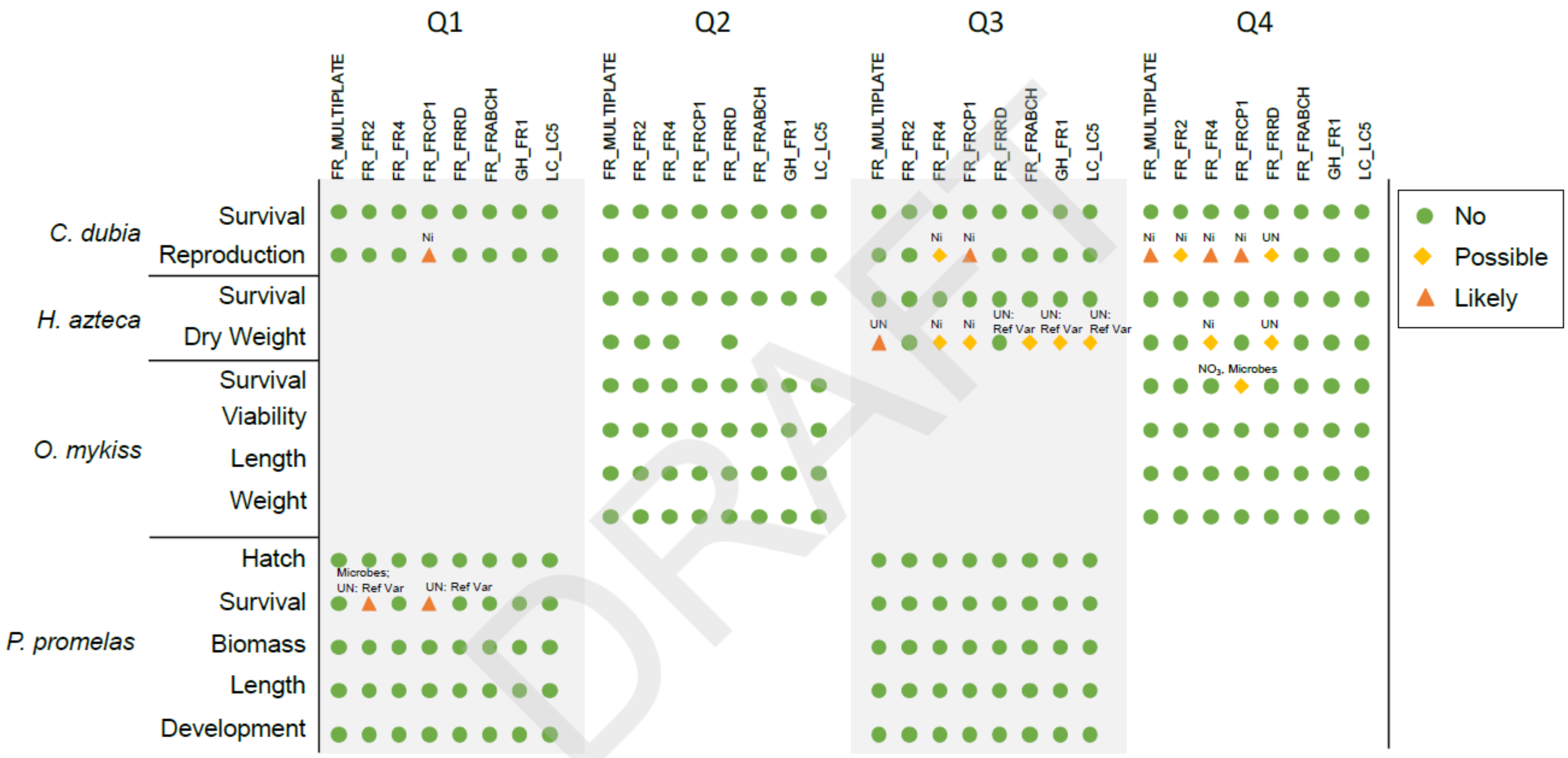


Figure 3.3: **Summary of the 2021 Chronic Toxicity Causation Assessment in the Upper Fording River, FRO LAEMP, 2021[a]**

Notes: Stations GH_FR1 and LC_LC5 were not associated with the FRO LAEMP but were included in the above figure taken directly from the 2021 Chronic Toxicity Report for the Upper Fording River (Golder 2022b). Q2 dry weight measurements of *H. azteca* were disposed of due to a lab technician error; however, four stations (FR_MULTIPLATE, FR_FR2, FR_FR4, and FR_FRRD) were re-tested. Ni = nickel; NO_3 = nitrate; UN: Ref Var = unknown cause in test with high inter-reference variability; UN = unknown, no water quality constituent was identified in causation assessment

At the Compliance point (FR_FRABCH), no adverse responses were observed in 12 of 13 endpoints, and the possible adverse response for amphipod in Q3 could also not be attributed to any water quality constituents (Golder 2022a; Figure 3.3). Overall, the incidence of adverse responses continues to occur in a minority of tests. While nickel showed the greatest evidence of contributing to observed effects in all *C.dubia* tests and some *H. azteca* tests, many cases were associated with elevated uncertainty in toxicity tests and/or weak to negligible evidence for influence of mine-influenced water quality.

Comparisons of chronic toxicity responses over time were made at FR_FRCP1 and FR_FRABCH. Except for Q4 2018 when upstream drying caused flows to come predominately from Cataract Creek, responses at FR_FRCP1 have been relatively consistent over time (Golder 2022a). Seasonal drying and/or reduced flows may have also contributed to the seasonal variability in toxicity testing responses observed at FR_FRCP1 in winter months compared spring and summer (Golder 2022a). Responses at FR_FRABCH have also been relatively consistent over time and responses have been less frequent and to a lower magnitude compared to FR_FRCP1 (Golder 2022a).

3.2 Hydrology

3.2.1 Seasonal Surveys of Dry Sections

Seasonal drying observations will be interpreted to address Study Questions #5 and #6 (see Sections 4.5 and 4.6). In the southern drying survey, a dry section 400 m in length was observed[18] in the mainstem Fording River on December 14, 2020, between FR_FRCP1 and FR_FRRD which also included a 200 m section of Side Channel 2, beginning at the upstream confluence with the Fording River. The maximum extent of drying in the southern section was observed in February 2021 at 950 m in length, extending from 450 m upstream of FR_FRCP1SW to the confluence of the Fording River with the Greenhouse Side Channel (Appendix Figure C.2). The Fording River was observed reconnected through Side Channel 2 during the March 14, 2021, survey, although a 150 m section of the Fording River main stem remained dry downstream of FR_FRCP1SW until April 12, 2021 (Table 3.1; Appendix Figures C.1 to C.4). A second dry section (30 m long) in the Fording River main stem was observed in February 2021, which was located 750 m downstream of FR_FRRD, directly downstream of the Oxbow channel (Appendix Figure C.2). This was the first time this section has been observed to dry since drying surveys began in 2017. During this dry period, the Fording River was flowing into the Oxbow from upstream. This second section was rewetted in March 2021 (Appendix Figures C.2

[18] A refined date of drying for this period was unable to be determined from the logger records due to the logger being entombed in ice.

Table 3.1: Drying Dates at Hydrometric Stations, FRO LAEMP, 2017 to 2021

Site (2017)	Oct	Nov	Dec
Henretta Survey			
Henretta Drying Section			
North Survey			
FR_UFR1			
FR_FR1			
FR_FRUPP			
FR_FOUCL			
FR_FRDSCC1			
FR_MULTIPLATE			
Northern Drying Section			
South Survey			
FR_FR2			
FR_FR3			
FR_SCOUTDS			
FR_FR4			
FR_FRCP1			
FR_FRCP1SW			Dec. 17
FR_FRRD			
GH_PC2			
FR_FRABCH			
Southern Drying Section			Dec. 17

Site (2018)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Henretta Survey												
Henretta Drying Section												
North Survey												
FR_UFR1												
FR_FR1												
FR_FRUPP												
FR_FOUCL												
FR_FRDSCC1												
FR_MULTIPLATE												
Northern Drying Section												
South Survey												
FR_FR2												
FR_FR3												
FR_SCOUTDS												
FR_FR4												
FR_FRCP1												
FR_FRCP1SW			Mar. 24						Sep. 9			
FR_FRRD												
GH_PC2												
FR_FRABCH												
Southern Drying Section			Mar. 24						Sep. 9			

Site (2019)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Henretta Survey												
Henretta Drying Section												
North Survey												
FR_UFR1												
FR_FR1												
FR_FRUPP												
FR_FOUCL												
FR_FRDSCC1												
FR_MULTIPLATE												
Northern Drying Section											Nov.19*	
South Survey												
FR_FR2												
FR_FR3												
FR_SCOUTDS												
FR_FR4	Jan. 29*		Mar. 13*									
FR_FRCP1												
FR_FRCP1SW			Mar. 12*									
FR_FRRD												
GH_PC2												
FR_FRABCH												
Southern Drying Section			Mar. 13*									

Site (2020)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Henretta Survey												
Henretta Drying Section									Sept*			
North Survey												
FR_UFR1												
FR_FR1												Dec. 14*
FR_FRUPP			Mar. 2*- Mar. 30*									
FR_FOUCL												
FR_FRDSCC1												
FR_MULTIPLATE												
Northern Drying Section				Apr. 14*						Oct. 13*		
South Survey												
FR_FR2												
FR_FR3												
FR_SCOUTDS												
FR_FR4												
FR_FRCP1	Jan. 6*- Jan.20*											
FR_FRCP1SW	Jan 6*			Apr. 13								Dec. 14*
FR_FRRD												
GH_PC2												
FR_FRABCH												
Southern Drying Section	Jan 6*			Apr. 13								Dec. 14*

Site (2021)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Henretta Survey												
Henretta Drying Section					May*			Aug 11*				
North Survey												
FR_UFR1												
FR_FR1			Mar. 17*									
FR_FRUPP												
FR_FOUCL												
FR_FRDSCC1												
FR_MULTIPLATE												
Northern Drying Section				Apr. 12*						Oct. 1		
South Survey												
FR_FR2												
FR_FR3												
FR_SCOUTDS												
FR_FR4												
FR_FRCP1												
FR_FRCP1SW			Mar. 15*									Dec. 20*
FR_FRRD												
GH_PC2												
FR_FRABCH												
Southern Drying Section				Apr. 12*						Oct. 12		

Dry.
Drying (periodically).
Wet.
No surveys conducted.

Note: " * " indicates the approximate date, and C.3). The southern section remained fully wetted through the summer and fall until October 12, 2021, when a section of the Fording River mainstem between one kilometer downstream of FR_FRCP1SW and FR_FRRD was observed dry (Appendix Figures C.6 and C.7). Connectivity (and therefore fish passage) was maintained as the Fording River remained connected through Side Channel 2 until December 20, 2021, when the side channel became dry in the upstream section (Appendix Figures C.8 and C.9). The Fording River was disconnected during the December 20, 2021, site visit as the dry section in the main stem increased to 900 m downstream of FR_FRCP1 and for a 350 m section of Side Channel 2 (Appendix Figures C.7 to C.9). Trail camera photos were used to narrow the date of drying between an eight-day window from December 13 to December 20, 2021.

The northern survey was added to the drying surveys in October 2019. Since its addition, seasonal drying has been observed to occur between FR_UFR1 and FR_FRUPP. In the northern survey, a dry section 150 m in length was first observed October 13, 2020, between FR_FR1 and FR_FRUPP (Table 3.1), which would have prevented fish passage. In fall 2021, however, this section of the Fording River (i.e., betweenFR_FR1 and FR_FRUPP) remained wetted until December 14, 2021, when the dry section was observed to extend 150 m upstream of FR_FR1. The maximum extent of drying in the northern survey was observed on February 8, 2021, where three dry sections between FR_UFR1 and FR_FRUPP totaled 1.78 km in length (Appendix Figure C.2). The section of the Fording River between FR_UFR1 and FR_FR1 remained dry until approximately March 17, 2021 (Appendix Figures C.1 to C.3). The section between FR_FR1 and FR_FRUPP observed to periodically wet and dry between March 17, 2021, and April 12, 2021 (Table 3.1). A dry section on the Fording River mainstem between the Clode Creek confluence and the Lake Mountain Creek discharge (FR_FRDSCC1) was observed from January 18, 2021, to March 15, 2021, and observed to dry again on October 12, 2021 (Appendix Figures C.1 to C.3). This section downstream of FR_FRDSCC1 remained connected through a second channel throughout the year (Appendix Figures C.1 to C.4). The northern survey remained wetted through summer 2021 until a dry section was observed during the October 12, 2021, survey between FR_FR1 and FR_FRUPP. The exact time of drying was confirmed via trail camera to occur on October 1, 2022. Drying in this section would completely prevent fish passage upstream to Henretta Lake.

Henretta Creek upstream of Henretta Lake was first observed dry in September 2020 during calcite surveys, which would have fully prevented fish passage in Henretta Creek during this period. The maximum length of drying was observed on March 15, 2021, whereby two dry sections were observed for a total length of 1.45 kms (Appendix Figure C.3). Henretta Creek was observed to be reconnected during the May 28, 2021, survey and remained connected until the Aug 11, 2021, survey (Appendix C.5). No level loggers are present in the Henretta survey area to further refine dates of drying between surveys. From the drying surveys, Henretta Creek was only observed to be completely connected during the high flow period between May 28, 2021 and August 11, 2021 (Table 3.1).

The number of dry days in the southern survey for winter of 2020/21 totaled 119 days, which was more than the winters 2017/2018 and 2019/2020, each having 97 and 98 dry days, respectively (Table 3.2). The winter of 2018/19 was excessively dry in the southern survey area, having 185 dry days (Table 3.2), where drying began very early (September) and occurred further upstream to FR_FR4 (Minnow and Lotic 2020b). Drying in the southern survey area during winter of 2020/2021 began in December, which was consistent with previous years (Table 3.1). Dry days in the northern survey for the 2020/21 winter were observed to occur for a longer period (181 dry days) compared to 2019/20 (147 dry days) and occurred further upstream, which included FR_FR1 for an extended period (Table 3.2). The first full season for the Henretta Creek survey occurred in 2020/2021 where Henretta Creek was dry for 269 days, beginning September 1, 2020, until May 28, 2021 (Table 3.2). Although there are fewer years with observations compared to the southern drying survey, the Henretta Creek area appears to dry first and for longer each year, followed by the northern survey section and the south survey section (Table 3.2).

3.2.2 Temperature

Water temperature data will be interpreted to address Study Questions #4 and #6 (see Sections 4.4 and 4.6). Continuous water temperature data records were used to plot daily low, mean, and maximum temperatures from October 2017 to October 2021 (Appendix Figure C.10). Water temperature in 2021 was comparable to previous study years, and the highest summer water temperatures recorded during this period continue to be from 2018, despite the extensive warm weather experienced in summer 2021 (Table 3.3). Three distinct winter thermal regimes in the southern survey were identified in the 2017 FRO LAEMP report (Figure 2.2): 1) the upper portion of the southern survey area, which included FR_FR2 and represented a typical year-round surface flow with low groundwater contribution; 2) areas of seasonal drying represented by FR_FRCP1SW; and 3) the lower portion of the southern survey area from FR_FRRD to FR_FRABCH having areas of higher groundwater contribution (Minnow and Lotic 2018; SNC Lavalin 2021). These temperature regimes have been consistent throughout the study period (2017 to 2021; Appendix Figure C.10). Areas in the lower section of the southern survey have demonstrated less extreme seasonal temperature fluctuations due to the high groundwater contribution compared to the other two regimes that show more extreme high and low seasonal temperatures (Appendix Figure C.10); however, the annual mean temperature was similar between all three areas (Table 3.3). Temperature records in the northern survey are not

Table 3.2: Number of Dry Days at Hydrometric Stations, FRO LAEMP, 2017 to 2021

Site	2017/18	2018/19	2019/20	2020/21
Henretta Creek Survey				
Henretta Creek Drying Section	-	-	-	269
Northern Drying Survey				
FR_UFR1	-	-	0	0
FR_FR1	-	-	0	93
FR_FRUPP	-	-	28	0
FR_FOUCL	-	-	0	0
FR_FRDSCC1	-	-	0	0
FR_MULTIPLATE	-	-	0	0
Northern Drying Section	-	-	147	181
Southern Drying Survey				
FR_FR2	0	0	0	0
FR_FR3	0	0	0	0
FR_SCOUTDS	0	0	0	0
FR_FR4	0	43	0	0
FR_FRCP1	0	0	14	0
FR_FRCP1SW	97	184	98	91
FR_FRRD	0	0	0	0
GH_PC2	0	0	0	0
FR_FRABCH	0	0	0	0
Southern Drying Section	97	185	98	119

Note: "-" indicates no data available.

Table 3.3: **Summary Table of Water Temperature record at Hydrometric Stations, FRO LAEMP, 2017 to 2021**

Site	2018			2019			2020			2021[a]		
	Max (°C)	Min (°C)	Mean (°C)	Max (°C)	Min (°C)	Mean (°C)	Max (°C)	Min (°C)	Mean (°C)	Max (°C)	Min (°C)	Mean (°C)
FR_UFR1[b]	-	-	-	-	-	-	-	-	-	15.3	0.3	4.3
FR_FR1[b]	-	-	-	-	-	-	-	-	-	15.9	-7.2	3.7
FR_FOUCL[c]	-	-	-	-	-	-	-	-	-	12.9	1.4	6.9
FR_FRDSCC1[b]	-	-	-	-	-	-	-	-	-	14.1	-0.1	5.2
FR_FR2	16.3	-0.1	4.5	15.0	-1.0	4.1	14.1	-0.2	4.3	17.1	-0.2	5.7
AWTF-S	8.7	-0.1	2.3	15.5	-0.2	4.1	8.1	-0.3	0.7	-	-	-
FR_FR3	16.0	-0.1	2.0	15.0	0.0	4.6	17.2	0.0	4.4	18.9	0.3	5.9
FR_SCOUTDS	-	-	-	-	-	-	-	-	-	18.3	-0.3	5.6
FR_FR4	20.8	-0.1	4.9	16.1	-1.1	5.6	17.1	-0.3	3.6	18.7	-0.3	5.6
FR_FRCP1	18.6	-0.2	5.0	14.9	-0.2	5.5	16.1	-0.3	3.9	17.8	-0.3	5.4
FR_FRCP1SW	20.3	-3.6	4.9	15.5	-5.2	5.2	17.5	-0.5	4.2	19.6	-0.5	5.6
FR_FRRD	19.6	-22.1	2.8	13.4	-30.6	1.9	12.6	-14.6	3.5	12.5	-17.1	4.3
GH_PC2	11.7	1.5	5.5	11.5	2.4	6.0	11.5	2.4	4.9	12.9	1.6	5.7
FR_FRABCH	7.5	-1.6	2.7	12.6	-5.2	4.0	10.6	-3.6	3.9	12.4	-2.3	4.7

Notes - "-" indicates no data available.
[a] Temperature record ends October 2021.
[b] Stations installed August 2020.
[c] Station installed April 2021.

extensive enough to determine any particular flow regimes and temperature patterns but a previous study of the area (McPherson and Robinson 2011) and recent observations suggest that there will be year-round surface flow with low groundwater influence in the upper portion of the northern survey at FR_UFR1, areas of seasonal drying between FR_UFR1 and upstream of the Pond Ponds outflow(FR_FRUPP), and year-round surface flow with groundwater influence between FR_FOUCL and FR_FRDSCC1 influenced by the confluence of Fish Ponds and Clode Creek.

3.2.3 Water Level and Flows

Water level and flow data will be interpreted to address Study Questions #5 and #6 (see Sections 4.5 and 4.6). Updated stage-discharge relationships were developed for each site in 2021 (Appendix Figure C.11). Using the stage-discharge relationships, mean, minimum, and maximum discharges (m^3/s) were calculated from the water level records from each station up to October 2021 (Table 3.4; Appendix Figure C.11). The data from the stations installed in 2017 only included October until the end of the year so calculated discharges for 2017 did not include freshet and were skewed to fall flows and were therefore not included in discharges summaries (Table 3.4). Stations at FR_UFR1, FR_FR1, FR_FRDSCC1, and FR_SCOUTDS were installed in August 2020. Calculated discharge for these sites were also skewed to fall seasonal flows for 2020 so were omitted from discharges summaries (Table 3.4). Peak instantaneous and mean annual discharge (maximum and mean values reported in Table 3.4, respectively) for 2021 were the second highest year on record across all sites, with 2020 having the highest average discharges at all stations except at FR_FR4. Stage-discharge relationships were reported for the first time for stations FR_SCOUTDS, FR_FRDSCC1, FR_FOUCL, FR_FR1, and FR_UFR1 (Table 3.4). Calculated discharge values for FR_FR3, FR_ SCOUTDS, FR_FRDSCC1, FR_FOUCL, FR_FR1, and FR_UFR1 are preliminary due to limited manual discharge measurements in the stage-discharge relationship.

3.3 Substrate Quality

3.3.1 Sediment

Sediment chemistry data were collected to support the questions related to BIC structure (Study Question #5; Section 4.5). The concentrations of most metals in sediment samples from biological monitoring areas within the FRO LAEMP study area have consistently been within the normal range and below upper WSQGs (or alert concentration in the case of selenium; Appendix Figures D.2 to D.13). Consistent with previous years nickel concentrations in sediment in 2021 were higher than the lower WSQGs at all mine-exposed areas, and higher than the normal range in one or more replicate at RG_FOUKI, RG_SCOUTDS, and RG_FOBCP

Table 3.4: **Summary Table of Calculated Discharge for Hydrometric Stations, FRO LAEMP, 2017 to 2021**

Site	2018			2019			2020			2021		
	Max (m^3/s)	Min (m^3/s)	Mean (m^3/s)	Max (m^3/s)	Min (m^3/s)	Mean (m^3/s)	Max (m^3/s)	Min (m^3/s)	Mean (m^3/s)	Max (m^3/s)	Min (m^3/s)	Mean (m^3/s)
FR_UFR1 [a]	-	-	-	-	-	-	-	-	-	3.845	0.016	0.500
FR_FR1 [a]	-	-	-	-	-	-	-	-	-	35.829	0.027	1.629
FR_FOUCL [a]	-	-	-	-	-	-	-	-	-	15.610	0.292	1.967
FR_FRDSCC1 [a]	-	-	-	-	-	-	-	-	-	9.938	0.181	1.134
FR_FR2	11.872	0.266	1.413	8.277	0.239	1.418	18.686	0.379	1.563	15.129	0.370	1.619
AWTF-S	0.937	0.003	0.391	5.619	0.011	1.782	-	-	-	-	-	-
FR_FR3 [a]	-	-	-	-	-	-	34.592	0.406	2.580	21.282	0.263	1.817
FR_SCOUTDS [a]	-	-	-	-	-	-	-	-	-	13.829	0.000	1.972
FR_FR4	17.364	0.010	2.912	9.376	0.105	1.667	3.363[b]	0.331	0.795	19.365	0.548	2.313
FR_FRCP1	11.642	0.000	1.202	5.049	0.010	1.251	23.517	0.127	2.023	16.893	0.233	1.619
FR_FRCP1SW	18.760	0.000	2.175	6.832	0.037	1.207	24.472	0.071	2.358	17.055	0.119	1.921
FR_FRRD	22.236	0.139	1.922	8.112	0.071	1.385	31.880	0.088	2.226	14.115	0.136	1.187
GH_PC2	18.468	0.288	2.288	8.676	0.477	44709.000	32.290	0.370	2.074	20.386	0.326	1.734

Notes: "-" indicates no data available.

[a] Calculated discharge results preliminary due to limited stage-discharge relationship.

[b] Stations missing freshet peak instantaneous discharge. Values skewed to fall seasonal flows .

(Appendix Figures D.1, D.11, and D.13; Appendix Table D.1). A similar pattern was observed for cadmium, manganese, and zinc concentrations, but concentrations were within the normal range except for the cadmium concentration in one replicate at RG_SCOUTDS and the manganese concentration in one replicate at RG_FOUKI (Appendix Figures D.1, D.11, and D.13; Appendix Table D.1). Selenium concentrations in sediment were above the alert concentration at RG_FOBCP, with some replicates above alert concentrations at monitoring areas downstream (RG_FRUPO and RG_FO22); however, all concentrations were within the normal range (Appendix Figures D.1, D.11, and D.13; Appendix Table D.1). Of the reference areas, metal concentrations were lower at RG_HENUP compared to RG_FO26 where concentrations were often similar to one or more mine-exposed area (Appendix Figure D.1).

Concentrations of many PAHs were higher than the upper and/or lower WSQGs in sediment at all the sampled mine-exposed areas in 2021 (Appendix Table D.1; Appendix Figure D.14). In most cases, PAH concentrations were above the regional normal range (where available) and showed an increasing pattern from RG_FOUKI to a peak at RG_FOBCP before decreasing in the lower study area (RG_FRUPO and RG_FO22; Appendix Table D.1; Appendix Figure D.14). Recent findings from the Regional Sediment Toxicity Report identified toxicological effects in Hyalella and Hexagenia exposed to sediments from RG_FOUKI (survival and growth), however, effects were related to ammonia generation during sample storage and in the test system and were not representative of *in situ* ammonia concentrations (Golder 2022c).

3.3.2 Calcite

Calcite data will be interpreted to address Study Question #5 (see Section 4.5). Calcite was measured in riffle habitat (i.e., concurrent with BIC sampling) in September 2021 for the FRO LAEMP and tabulated along with calcite measurements from the Regional Calcite Monitoring program where available (Appendix Table D.2). Calcite index was reported using two methods in 2021 – Calcite Index based on a binary assessment of calcite presence (CI) and calcite index based on a proportional assessment of calcite presence (CI’). In both the Regional Calcite Monitoring Program and the FRO LAEMP in 2021, CI’ was lower than CI at all monitoring areas, and both CI’ and CI was higher from RG_FOBCP downstream to RG_FOUEW compared to areas upstream (Figure 3.4; Appendix Table D.2).

Consistent with previous years, CI values measured in the FRO LAEMP monitoring areas in 2021 were below the upper limit of the regional normal range (1.0) at all areas with very little concretion but were lower than CI values from the previous year in many areas (Appendix Table D.3). Calcite Index values at reference area RG_HENUP and RG_FO26 were 0.0 and 0.1, respectively, for all replicates. Consistent with previous years, Calcite Index associated with the Regional Calcite Monitoring Program were similar to those calculated in the LAEMP. Calcite Index was

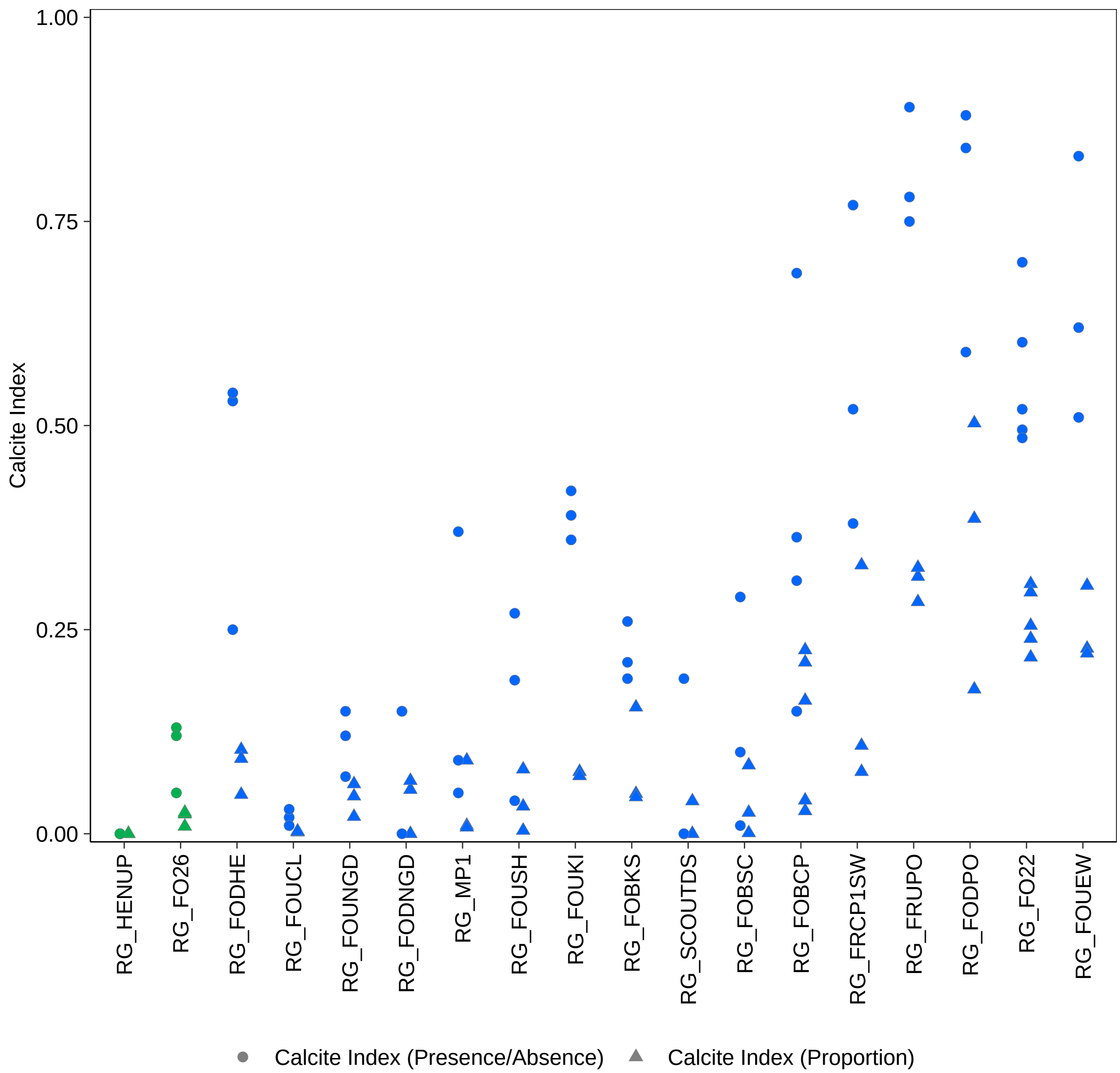


Figure 3.4: Calcite Index FRO LAEMP, 2021

Notes: Green symbols represent reference areas and blue symbols represent exposed areas. In 2021, calcite presence was measured using both a presence/absence and proportional method and both calculated indicies are presented.

below 1.0 at all reaches within the FRO LAEMP study area, except for the reach associated with FRO LAEMP monitoring area RG_FOUEW, where mean CI was 1.16 in the Regional program and 0.65 in the LAEMP (Appendix Tables D.2 and D.3). Calcite Index assessments have consistently been lower for the Regional Calcite Monitoring Program compared to CI measured within the FRO LAEMP (Appendix Table D.2). This can be attributed to differences in sampling methods, as the Regional Calcite Monitoring Program assesses 100-m-long reaches and containing a variety of habitat types (e.g., riffle, run, pool), whereas FRO LAEMP measurements are conducted within targeted riffle habitat in the immediate proximity of BIC sample collection (Lotic 2022).

3.4 Benthic Invertebrate

3.4.1 Biological Productivity

Benthic invertebrate productivity data will be interpreted to address Study Question #2 (see Section 4.2). Spatial variation in biomass and density of benthic invertebrates was observed in 2021 (Figure 3.5), but data within each monitoring area was consistent with previous years (Appendix Figures E.1 and E.2). Overall, density and biomass were lower in the middle part of the study area (RG_FOBKS, RG_SCOUTDS, and RG_FOBSC) compared to areas upstream and downstream (Figure 3.5).

Periphyton coverage scores (CABIN supporting measurement) are interpreted as a measure of primary productivity within the FRO LAEMP study area (Appendix Table G.11). Periphyton coverage ranged from a score of 1 (not slippery with no obvious coverage) to 3 (noticeably slippery with patches of thicker green to brown algae) with no areas exhibiting extensive algal growth. The highest scores (3) were observed at only several mine-exposed areas throughout the full study area (RG_FODNGD, RG_FOUKI, RG_FOBCP) as well as two reference areas (RG_HENUP and RG_FO26).

3.4.2 Benthic Invertebrate Tissue Chemistry

Benthic invertebrate tissue chemistry data will be interpreted to address Study Question #3 (see Section 4.3). Composite-taxa benthic invertebrate tissue samples were collected in June, September, and December 2021. Benthic invertebrate tissue selenium concentrations were within the reference normal range in 209 of 248 samples collected from mine-exposed areas in 2021, with the majority of samples having tissue selenium concentrations above normal ranges collected in September (Table 3.5). Tissue selenium concentrations were below the EVWQP Level 1 benchmarks for fish, benthic invertebrates, and birds throughout the FRO LAEMP study area, with some exceptions (Table 3.5; Figure 3.5). In June, one of three replicate samples

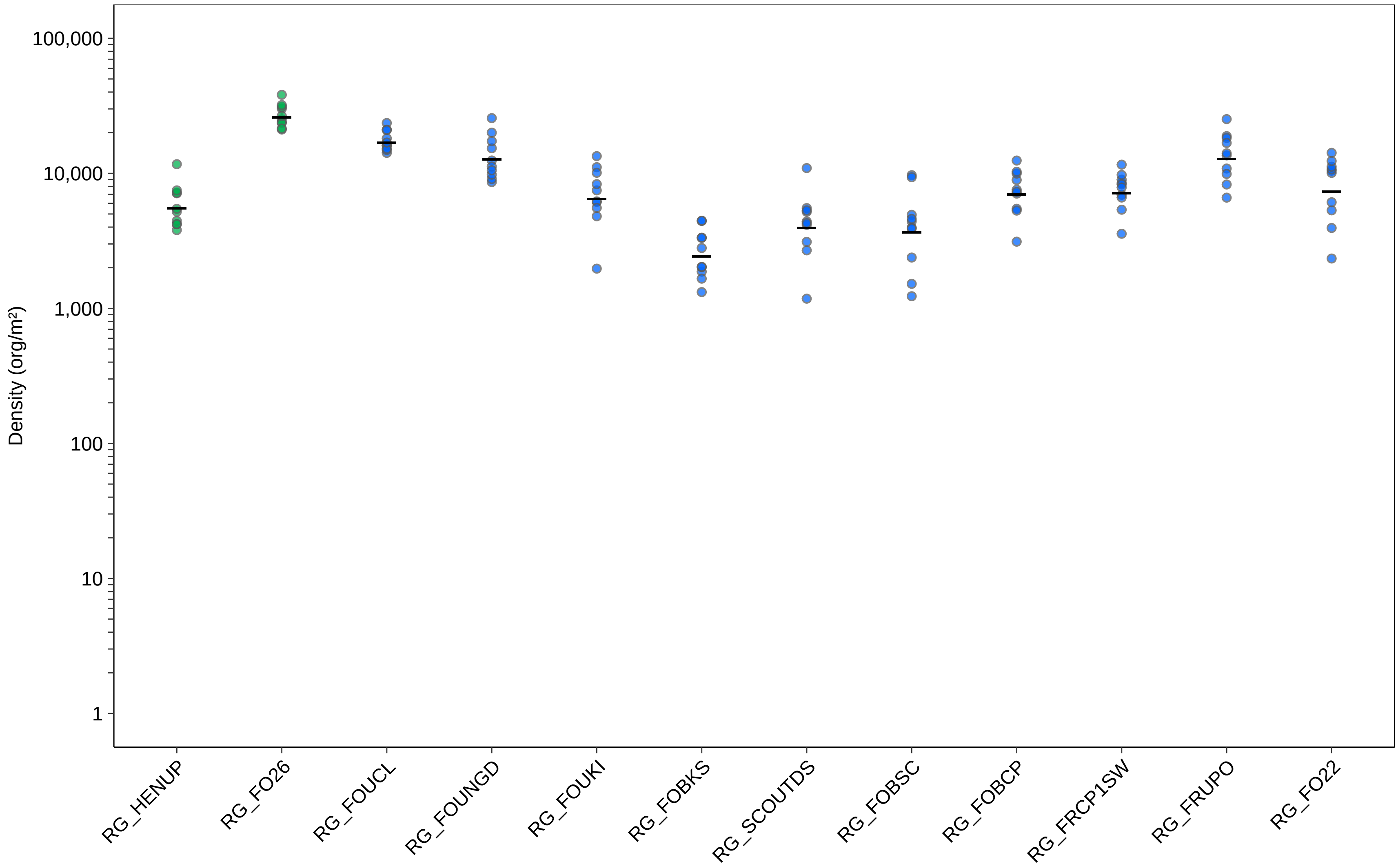


Figure 3.5: Total Benthic Invertebrate Density and Biomass (Hess Sampling) by Area, FRO LAEMP, September 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

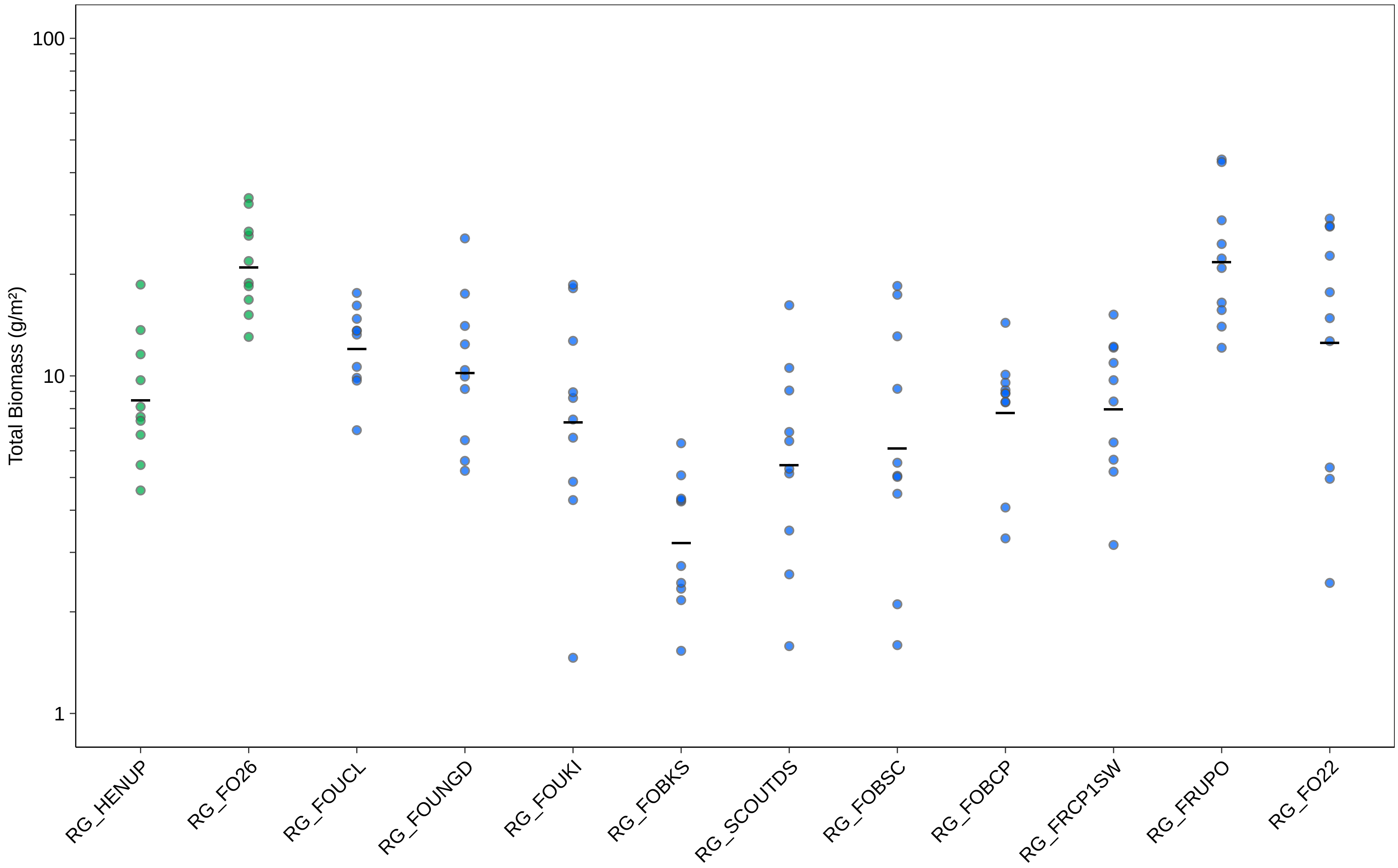


Figure 3.5: Total Benthic Invertebrate Density and Biomass (Hess Sampling) by Area, FRO LAEMP, September 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

Table 3.5: Selenium Concentration in Composite-taxa Benthic Invertebrate Tissue, FRO LAEMP, 2021

Biological Monitoring Area		Composite-taxa Tissue Selenium (µg/g dw)														
		June					September					December				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Reference	RG_HENUP	5.10	5.20	4.80	-	-	4.80	6.00	6.00	-	-	-	-	-	-	-
	RG_FO26	5.40	3.20	4.40	-	-	4.20	3.70	3.80	2.90	3.80	-	-	-	-	-
	RG_UFR1[a]	3.90	2.90	4.90	3.10	3.40	4.80	5.60	4.50	4.90	4.80	3.70	4.00	1.70	3.00	4.00
Mine-Exposed	RG_FRSCH2	-	-	-	-	-	9.60	7.30	6.70	3.50	6.70	4.40	4.40	5.10	7.40	6.70
	RG_FRGHSC	-	-	-	-	-	19.0	5.50	13.0	18.0	28.0	13.0	17.0	15.0	6.50	4.60
	RG_FODHE	4.40	3.30	5.00	-	-	7.40	7.90	12.0	-	-	7.30	7.80	5.90	-	-
	RG_FOUCL	6.10	5.40	8.70	-	-	11.0	8.80	11.0	-	-	7.30	7.50	8.70	-	-
	RG_FOUNGD	7.10	5.20	5.40	-	-	8.10	8.10	7.80	-	-	4.60	3.30	3.20	-	-
	RG_FODNGD	6.50	3.70	6.20	-	-	7.70	8.00	11.0	-	-	5.20	4.60	5.40	-	-
	RG_MP1	6.20	9.70	13.0	-	-	5.00	8.50	8.40	-	-	6.10	4.10	4.40	-	-
	RG_FOUSH	5.40	4.50	6.00	-	-	7.50	7.30	5.70	-	-	5.10	2.40	3.80	-	-
	RG_FOUKI	5.60	5.70	5.40	4.60	6.30	6.20	5.50	7.00	4.50	4.90	2.50	4.00	2.50	5.50	3.10
	RG_FOBKS	5.70	5.70	5.70	6.00	5.70	6.90	7.80	7.60	7.20	7.80	8.90	5.30	5.90	6.00	4.80
	RG_SCOUTDS	6.80	5.80	5.20	6.70	6.50	9.80	10.0	7.70	8.10	11.0	6.30	11.0	8.60	4.80	3.70
	RG_FOBSC	6.70	6.30	6.50	5.60	6.80	15.0	16.0	14.0	13.0	10.0	6.30	7.30	8.50	9.90	11.0
	RG_FOBCP	6.00	6.20	6.80	6.10	7.70	4.70	8.70	12.0	8.10	10.0	7.30	7.50	8.50	5.50	6.70
	RG_FRCP1SW	6.80	5.80	9.90	7.50	6.70	7.70	8.00	4.90	6.10	6.90	-	-	-	-	-
	RG_FRUPO	8.10	6.70	6.30	7.10	6.60	9.30	5.10	5.90	5.70	6.30	6.10	5.20	4.60	6.20	4.60
	RG_FODPO	6.00	7.50	6.40	6.20	6.80	4.90	4.60	7.50	6.80	6.10	4.70	4.40	4.90	5.40	5.40
	RG_FO22	9.60	9.60	8.50	6.90	12.0	8.70	9.20	8.60	8.90	8.30	7.40	9.30	8.10	5.60	6.50
	RG_FOUEW	7.00	7.30	6.50	7.30	7.30	8.90	11.0	6.20	7.90	8.50	5.70	5.00	6.60	7.10	5.40

Value > EVWQP Level 1 benchmark of 11 mg/kg dw for dietary effects to juvenile fish (Teck 2014).

Value > EVWQP Level 2 benchmark of 18 mg/kg dw for dietary effects to juvenile fish (Teck 2014).

Value > EVWQP Level 3 benchmark of 26 mg/kg dw for dietary effects to juvenile fish (Teck 2014).

Value > EVWQP Level 1 benchmark of 13 mg/kg dw for effects to benthic invertebrates (Teck 2014).

Value > EVWQP Level 2 benchmark of 20 mg/kg dw for effects to benthic invertebrates (Teck 2014).

Value > EVWQP Level 3 benchmark of 27 mg/kg dw for effects to benthic invertebrates (Teck 2014).

Value > EVWQP Level 1 benchmark of 15 mg/kg dw for dietary effects to juvenile birds (Teck 2014).

Value > EVWQP Level 2 benchmark of 22 mg/kg dw for dietary effects to juvenile birds (Teck 2014).

Value > EVWQP Level 3 benchmark of 41 mg/kg dw for dietary effects to juvenile birds (Teck 2014).

Value > upper limit of normal range of (8.74 mg/kg dw; Minnow 2020).

Note: '-' indicates sample that was not taken because it was not a part of the sampling design; 'x' indicates sample that was not taken because of drying and/or ice conditions.

[a] RG_UFR1 was used as a reference location in December when there was no access to RG_FO26 or RG_HENUP.

collected from the Fording River downstream of the Multiplate culvert (RG_MP1) and one of five replicate samples collected from the Fording River upstream of Chauncey Creek (RG_FO22) was above the Level 1 benchmark for juvenile fish. In September, one of three replicate samples collected from RG_FODHE and one of five replicate samples collected from RG_FOBCP was above the Level 1 benchmark for juvenile fish. Also in September, four of five replicates collected from RG_FOBSC had samples with selenium concentrations above one or more EVWQP benchmark: one of five replicate samples was above the Level 1 benchmark for juvenile birds, two of five replicates were above the Level 1 benchmark for benthic invertebrates, and one of five replicates was above the Level 1 benchmarks for juvenile fish. In addition, benthic invertebrate tissue selenium concentrations in the Greenhouse Side Channel (RG_FRGHSC) were elevated above EVWQP benchmarks in both September and December. In September, one of five replicates was above the Level 3 benchmarks for benthic invertebrates, one of five replicates was above the Level 2 benchmarks for juvenile fish, one of five replicates was above the Level 1 benchmarks for juvenile birds, and one of five replicates was above the Level 1 benchmarks for juvenile fish. In December, one of five replicates were each above the Level 1 benchmarks for juvenile birds, benthic invertebrates, and juvenile fish. All seven composite-taxa benthic invertebrate tissue samples collected at RG_FRGHSC with selenium concentrations above EVWQP benchmarks contained annelids. Benthic invertebrate tissue selenium concentrations have been consistent[19] at each monitoring area over time. Seasonal differences have been observed (i.e., highest concentrations observed in September compared to December and June) but have been consistent across the study area (Appendix Figure E.3).

Benthic invertebrate tissue selenium concentrations in June, September, and December 2021 were assessed against the biological triggers (see Appendix H). Biological triggers were evaluated for each replicate from FRO LAEMP monitoring areas with available water quality projections (i.e., six mine-exposed biological monitoring areas [RG_FODHE, RG_FOUKI, RG_FOBSC, RG_FOBCP, RG_FODPO, and RG_FO22] and one reference area [RG_FO26]; Appendix H). Except for two replicate samples at RG_FOBSC in September, no mine-exposed areas exceeded biological triggers for tissue selenium concentrations (above the 97.5th percentile of normal range and above the 95% prediction interval; Appendix H).

Biological monitoring areas (RG_FOUCL downstream to RG_FOUEW) having the highest concentrations of aqueous total selenium within the FRO LAEMP study area (Appendix Table E.2; Appendix Figure B.19), and detectible reduced forms of selenium (i.e., selenite; Appendix Table

[19] Exceptions were samples that contained annelids which differentially bioaccumulate selenium.

B.5; Appendix Figure B.20) were associated with the highest benthic invertebrate tissue selenium concentrations (Table 3.5; Figure 3.6). Paired aqueous total selenium concentrations and tissue selenium concentrations were plotted against predictions from the selenium bioaccumulation model (Golder 2020a) for 2021 only data (Figure 3.7) and for all data since 2012 (Appendix Table E.2; Appendix Figure E.4). In 2021, all values except for five replicates from RG_FRGHSC, two replicates from RG_FOBSC, and one replicate from RG_MP1 fell near or within the prediction limits, (Figure 3.7), suggesting that most tissue concentrations were expected based on the total selenium concentrations in the water. The selenium bioaccumulation tool ('B-tool;' Golder 2020b) was used to determine predicted benthic invertebrate tissue selenium concentrations based on concentrations of selenium species. The predicted benthic invertebrate tissue selenium concentrations were consistent with measured concentrations at all areas and sampling periods, except RG_FRGHSC in September and December, and RG_FODHE, RG_FOUCL, and RG_FOBSC in September (Appendix Table E.3).

3.4.3 Benthic Invertebrate Community

3.4.3.1 Spatial and Temporal BIC Endpoints

Spatial and temporal benthic invertebrate community data will be interpreted to address Study Questions #1, #5, and #6 (see Sections 4.1, 4.5, and 4.6). Benthic invertebrate community metrics calculated based on September 2021 data were plotted spatially and compared to regional normal ranges for all endpoints, and to site-specific normal ranges for total abundance, richness, and percent and total abundance for EPT and Ephemeroptera (Figures 3.8 to 3.17). Total benthic invertebrate abundance and LPL richness was within or above the regional and site-specific normal range at all FRO LAEMP areas in 2021, including areas with low % Ephemeroptera and/or % EPT (Figure 3.7).

Total Ephemeroptera abundance was within the regional and site-specific normal range throughout the study area in September 2021 (Figure 3.12), however, % Ephemeroptera was below the normal ranges in part of the middle study area and the lower study area (Figure 3.9). Percent Ephemeroptera values were below the regional normal range between RG_FOBCP and RG_FOUEW, and below site-specific normal ranges between downstream of RG_SCOUTDS and RG_FOUEW (Figure 3.9). Both Ephemeroptera abundance and % Ephemeroptera exhibited a similar spatial pattern showing an upstream to downstream decrease; the pattern was also observed in the abundance of two Ephemeroptera families: Heptageniidae and Ephemerellidae (Figures 3.14 and 3.15). Baetidae abundance, a third Ephemeroptera family within the study area, was more consistent throughout the FRO LAEMP study area (Figure 3.14).

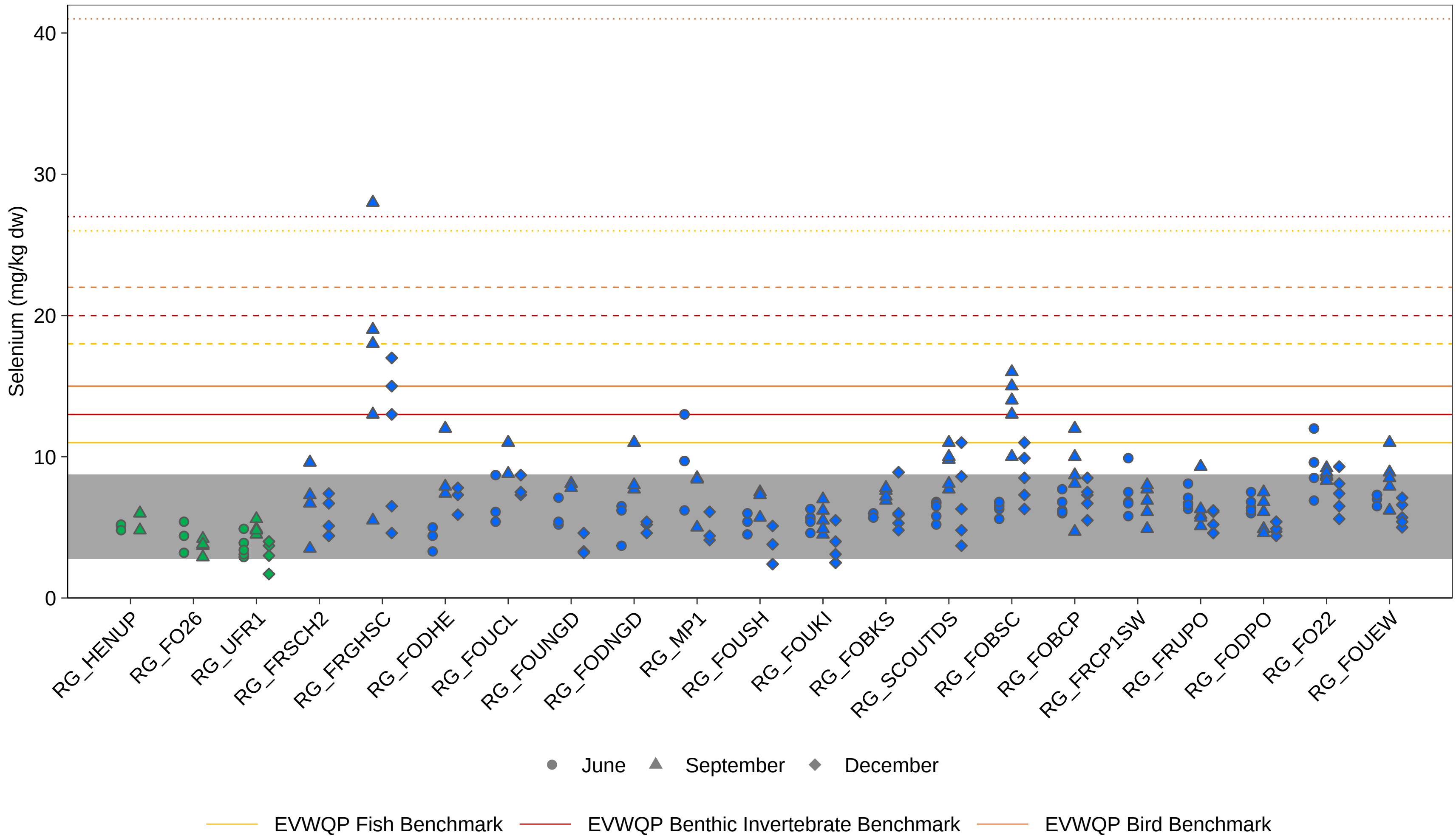


Figure 3.6: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

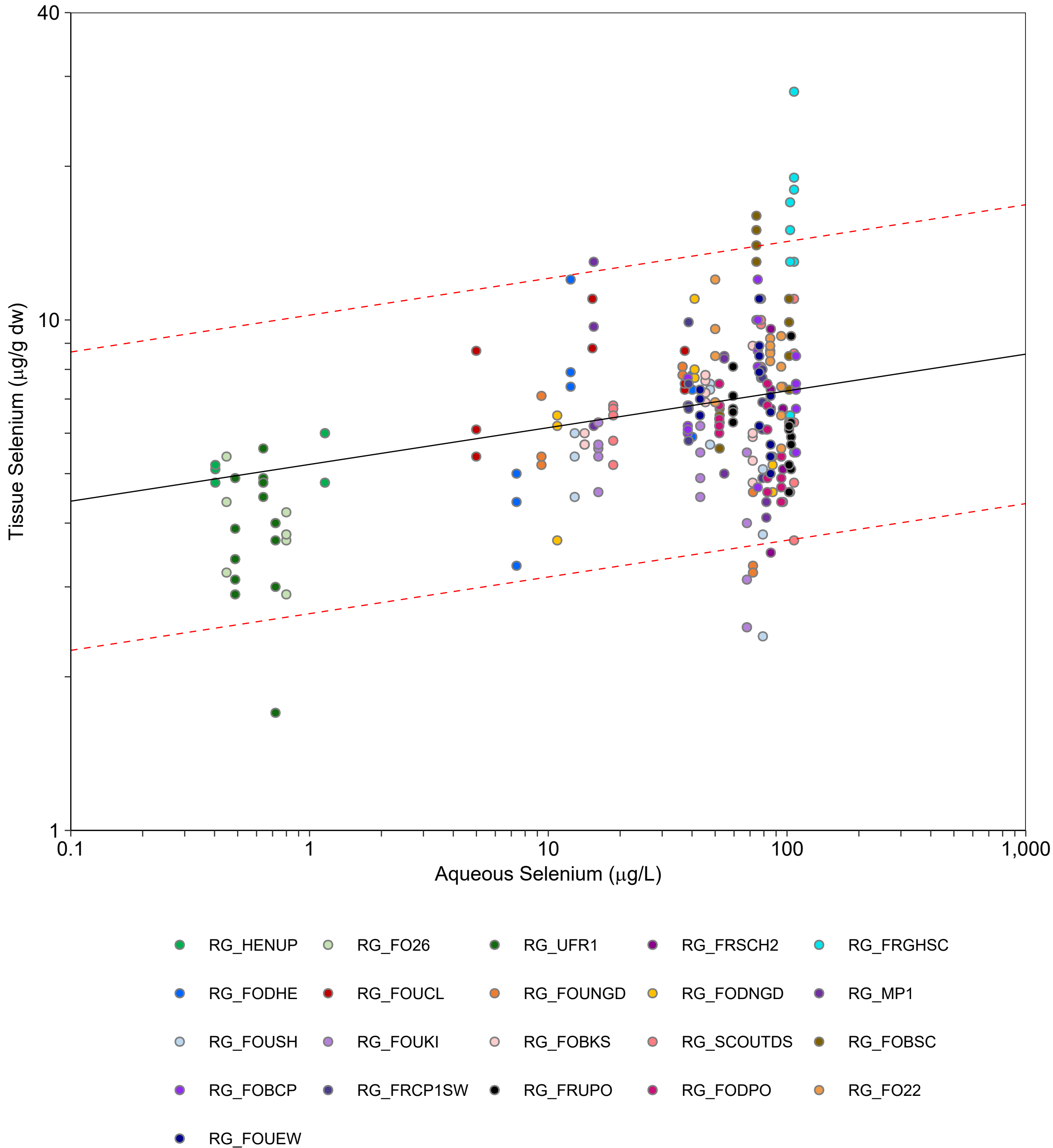


Figure 3.7: Observed and Modelled Selenium Concentrations in Benthic Invertebrate Composite-taxa Samples Relative to Aqueous Selenium Concentrations at Biological Monitoring Areas Upstream and Downstream of Fording River Operations, FRO LAEMP, 2021

Notes: Mean benthic invertebrate selenium concentrations (solid black line) were estimated using a one-step water to benthic invertebrate selenium accumulation model: log10[Se]benthic invertebrate=0.717+0.072 x log10[Se]aq (Golder 2020). The 95% prediction limits for a single value from the one-step water to benthic invertebrate selenium accumulation model are plotted as dashed red lines. Reference areas are shown in green.

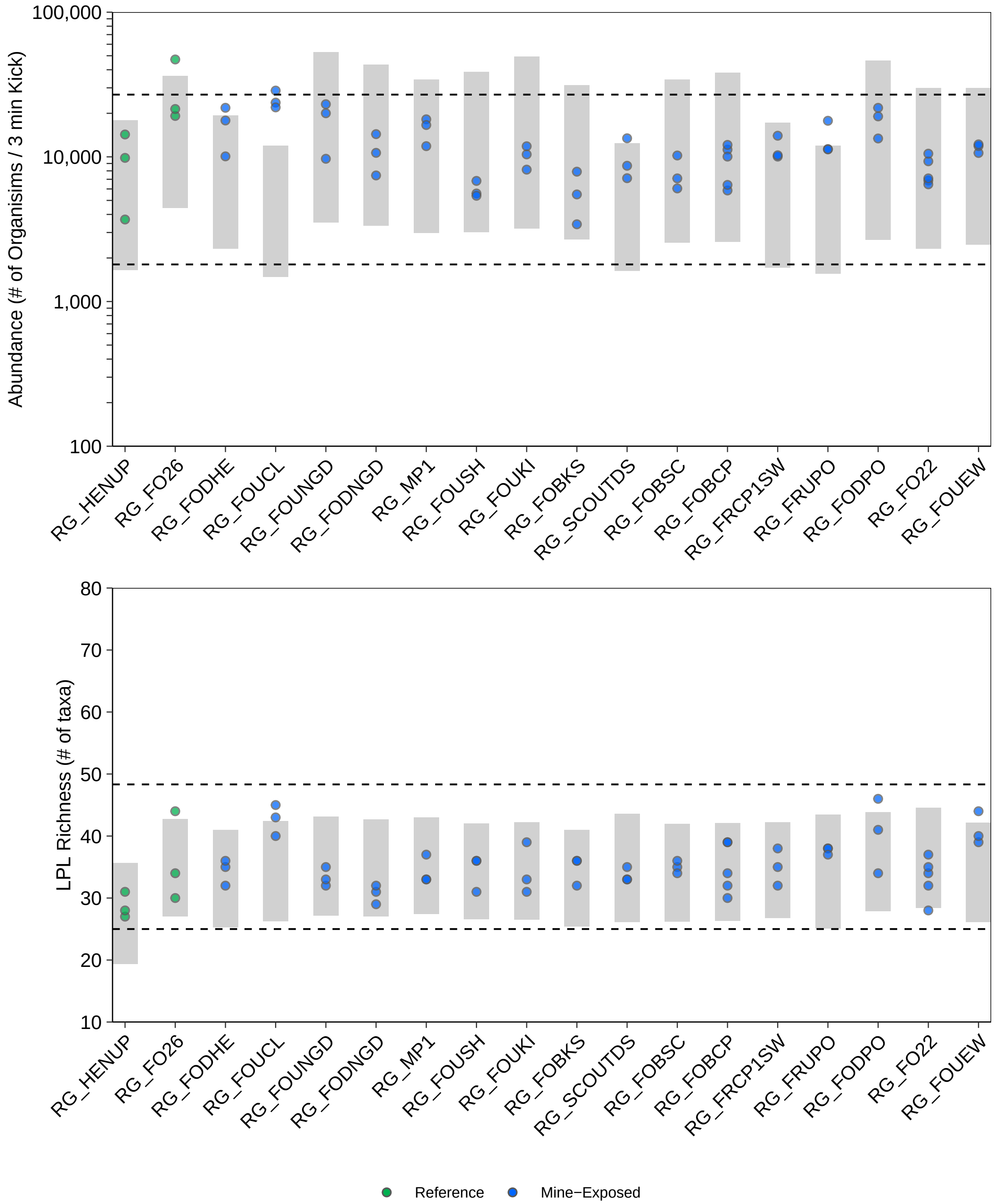


Figure 3.8: Benthic Invertebrate Abundance and Richness, FRO LAEMP, September 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

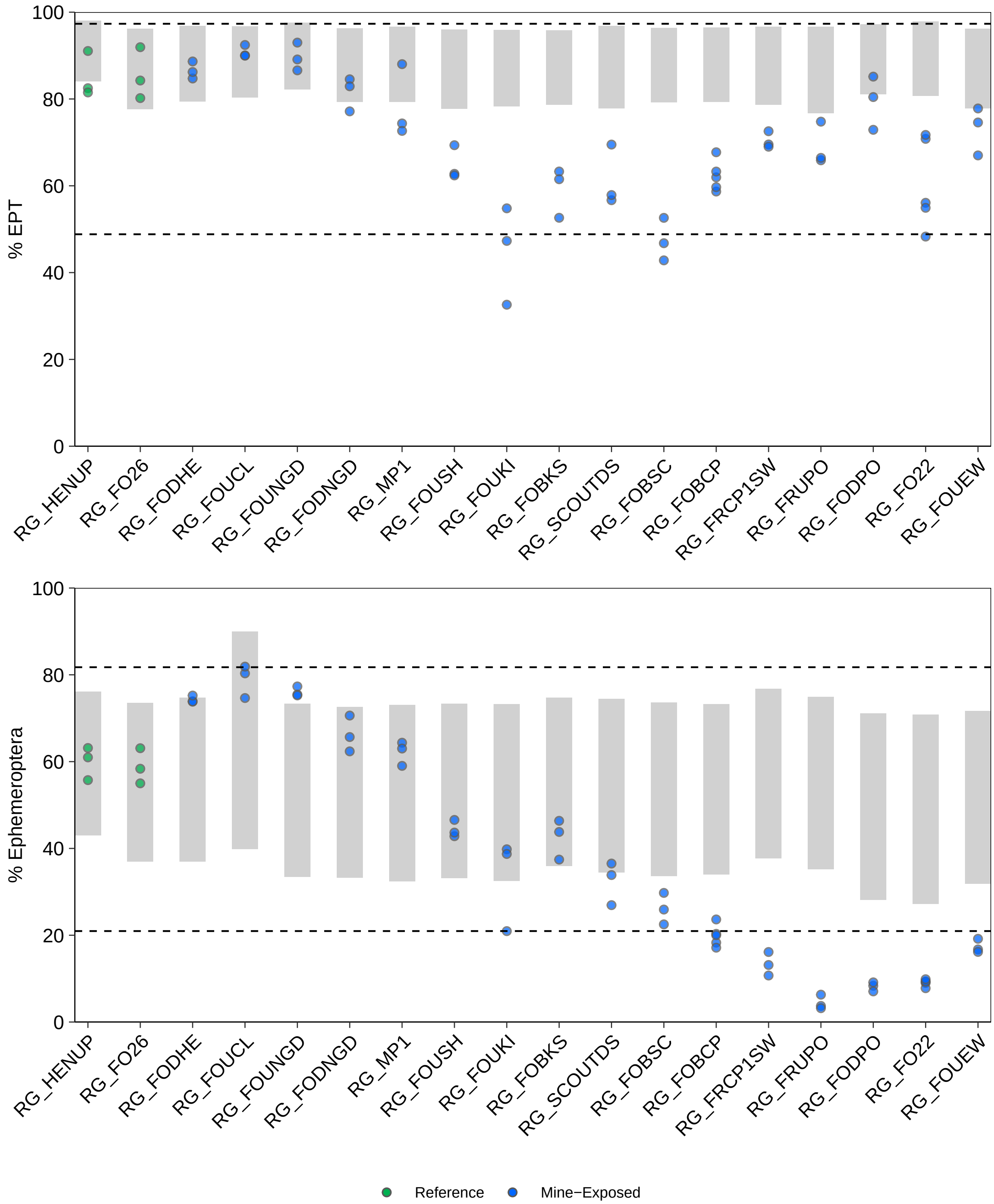


Figure 3.9: **Benthic Invertebrate % EPT and % Ephemeroptera, FRO LAEMP, September 2021**

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

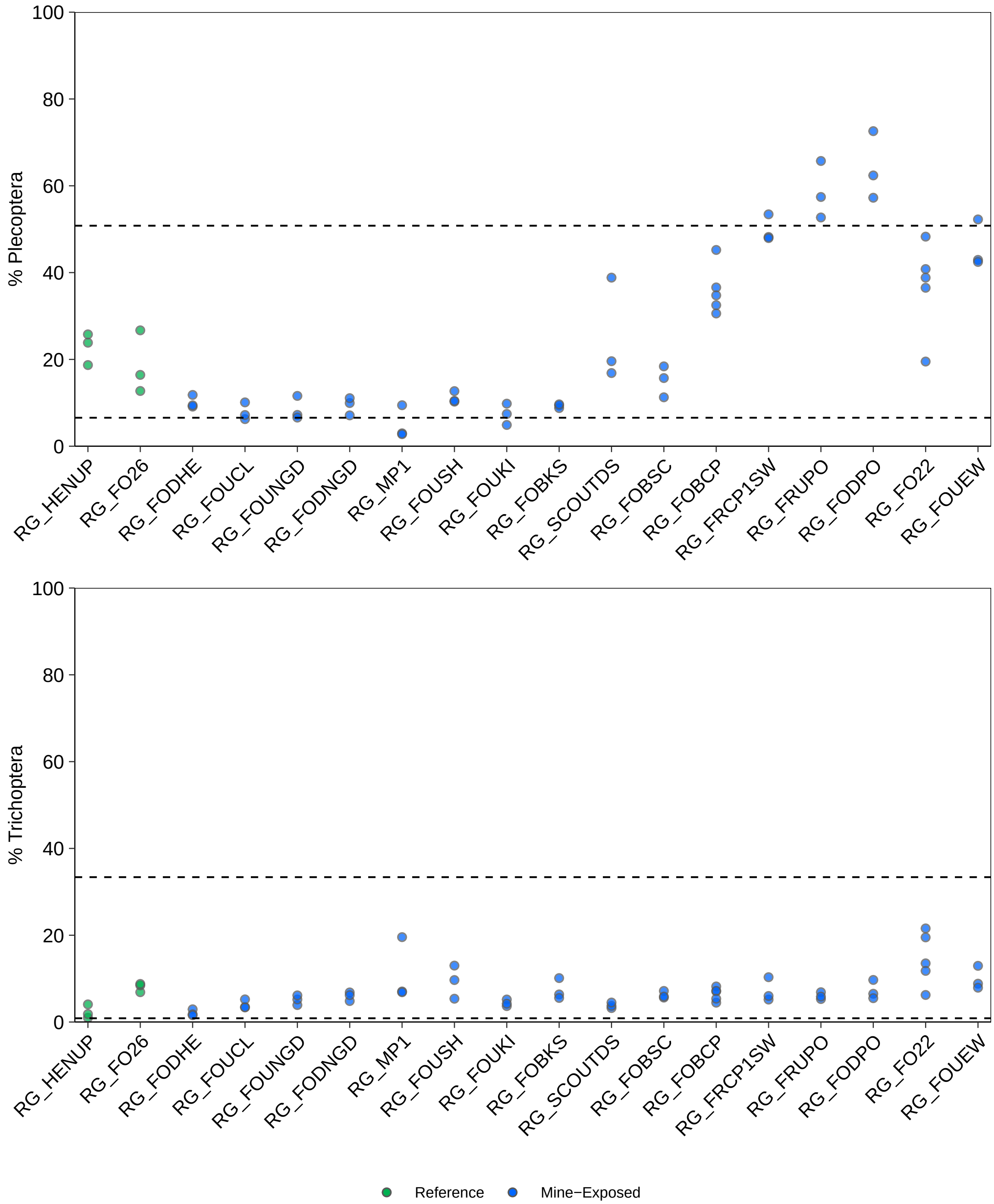


Figure 3.10: Benthic Invertebrate % Plecoptera and % Trichoptera, FRO LAEMP, September 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

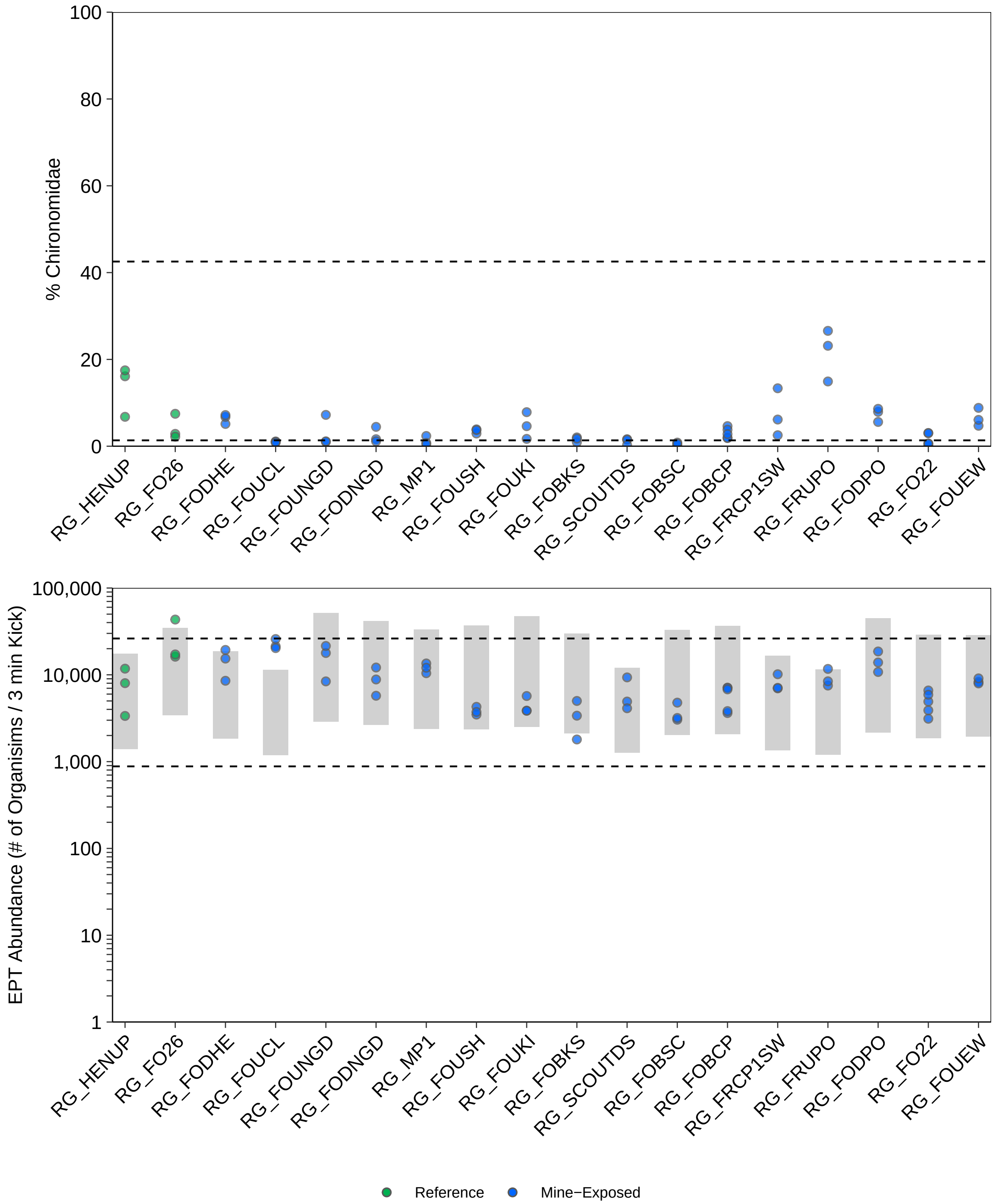


Figure 3.11: Benthic Invertebrate % Chironomidae and EPT Abundance, FRO LAEMP, September 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

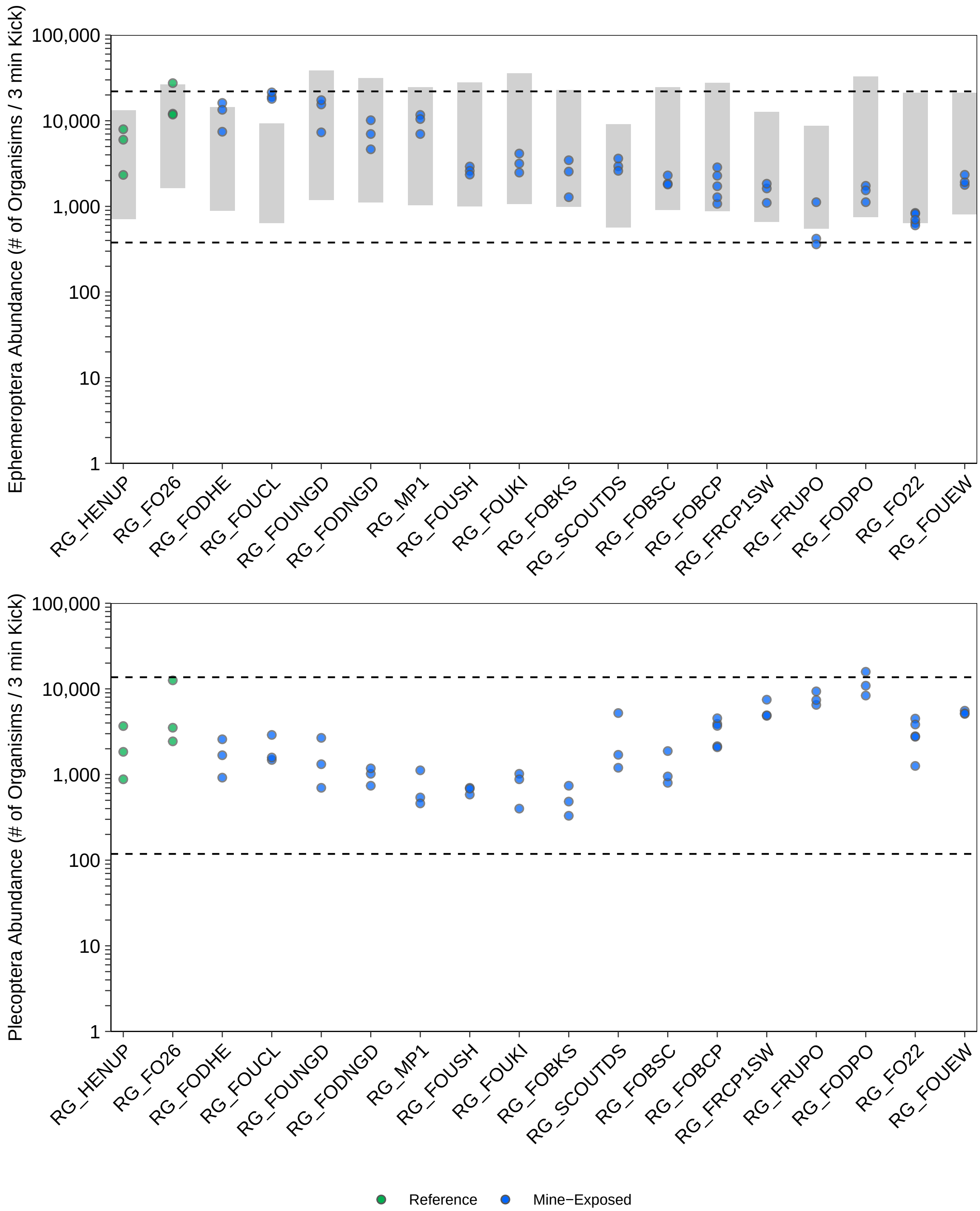


Figure 3.12: Benthic Invertebrate Ephemeroptera Abundance and Plecoptera Abundance, FRO LAEMP, September 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

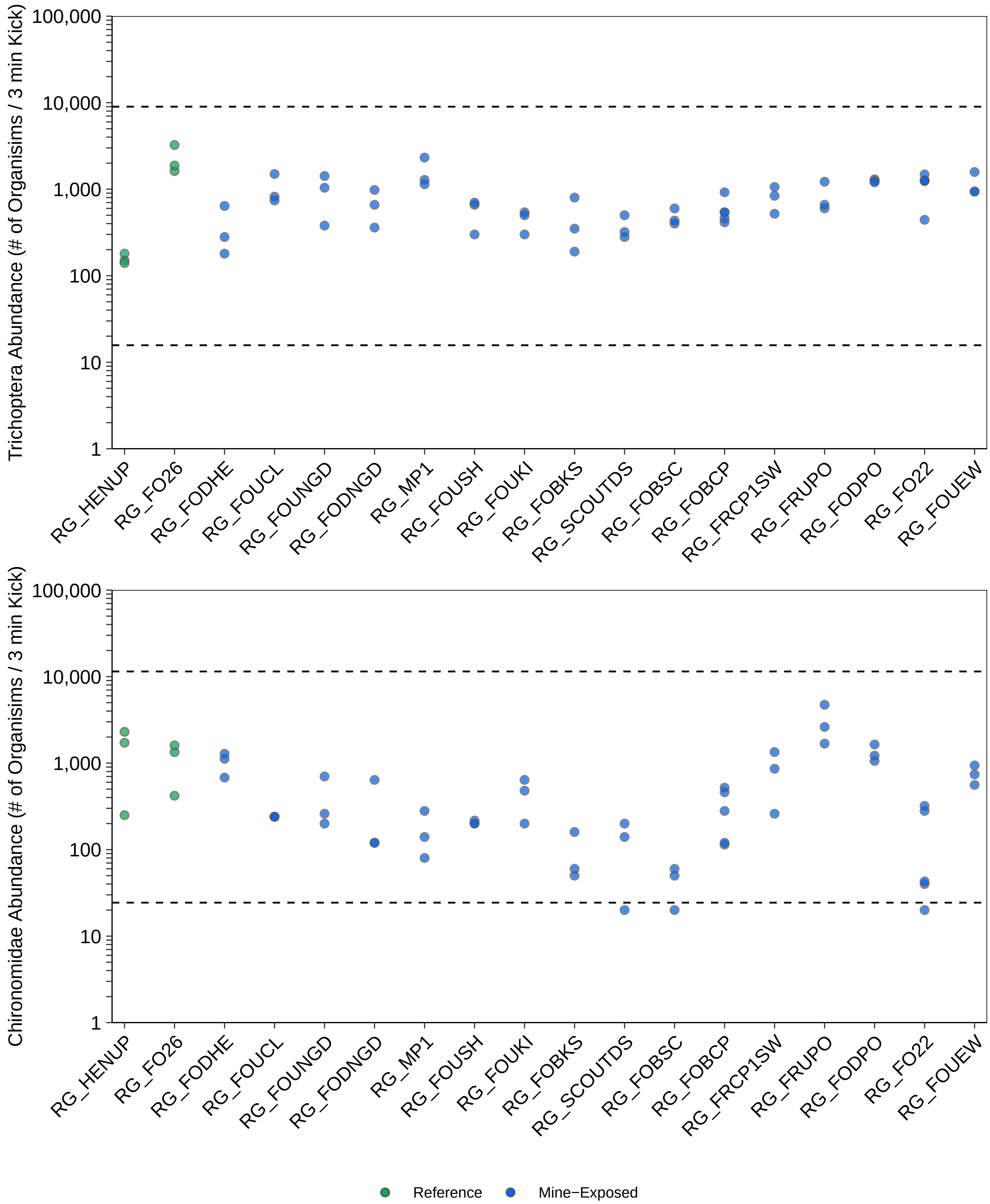


Figure 3.13: Benthic Invertebrate Trichoptera Abundance and Chironomidae Abundance, FRO LAEMP, September 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

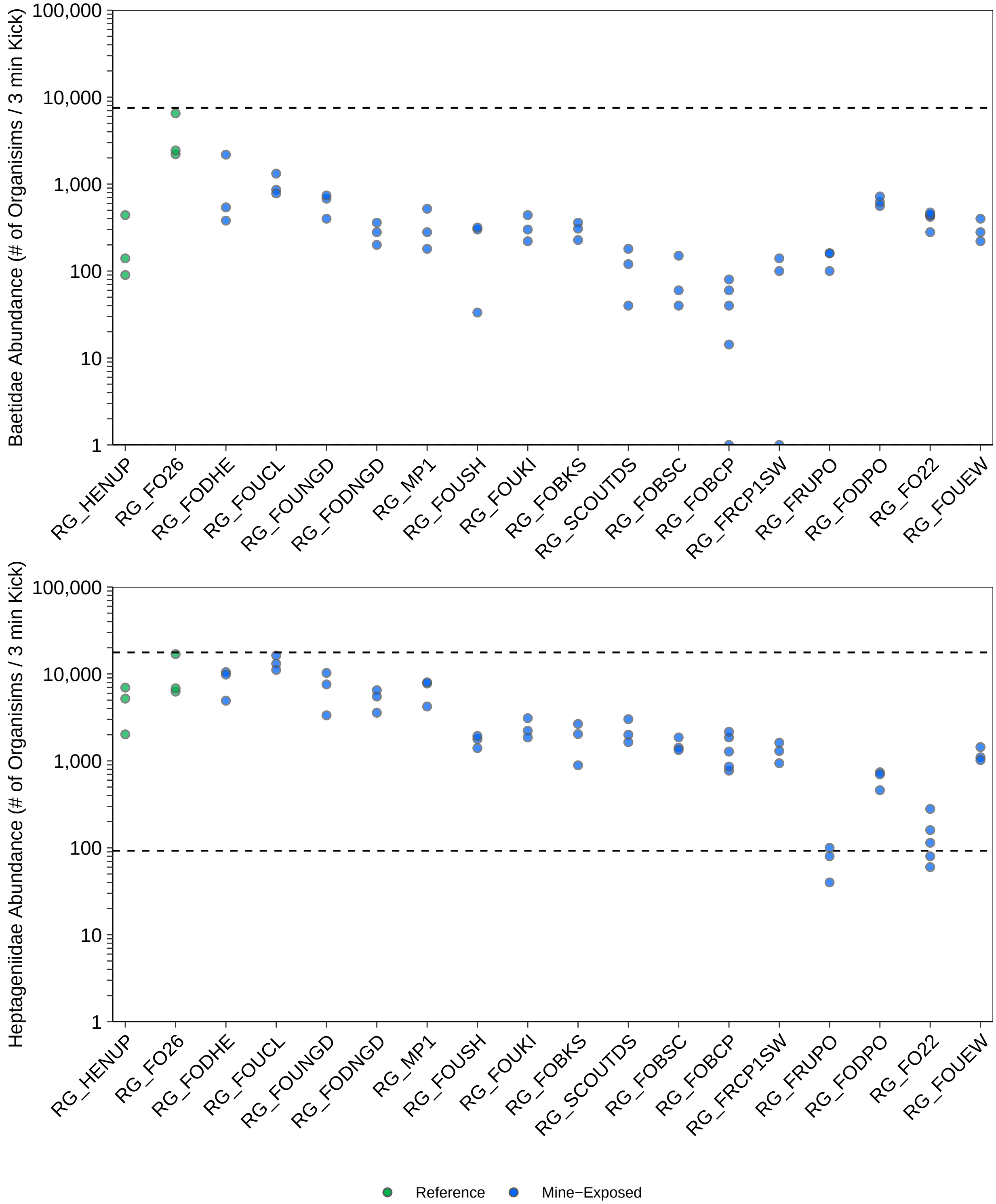


Figure 3.14: Benthic Invertebrate Baetidae Abundance and Heptageniidae Abundance, FRO LAEMP, September 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

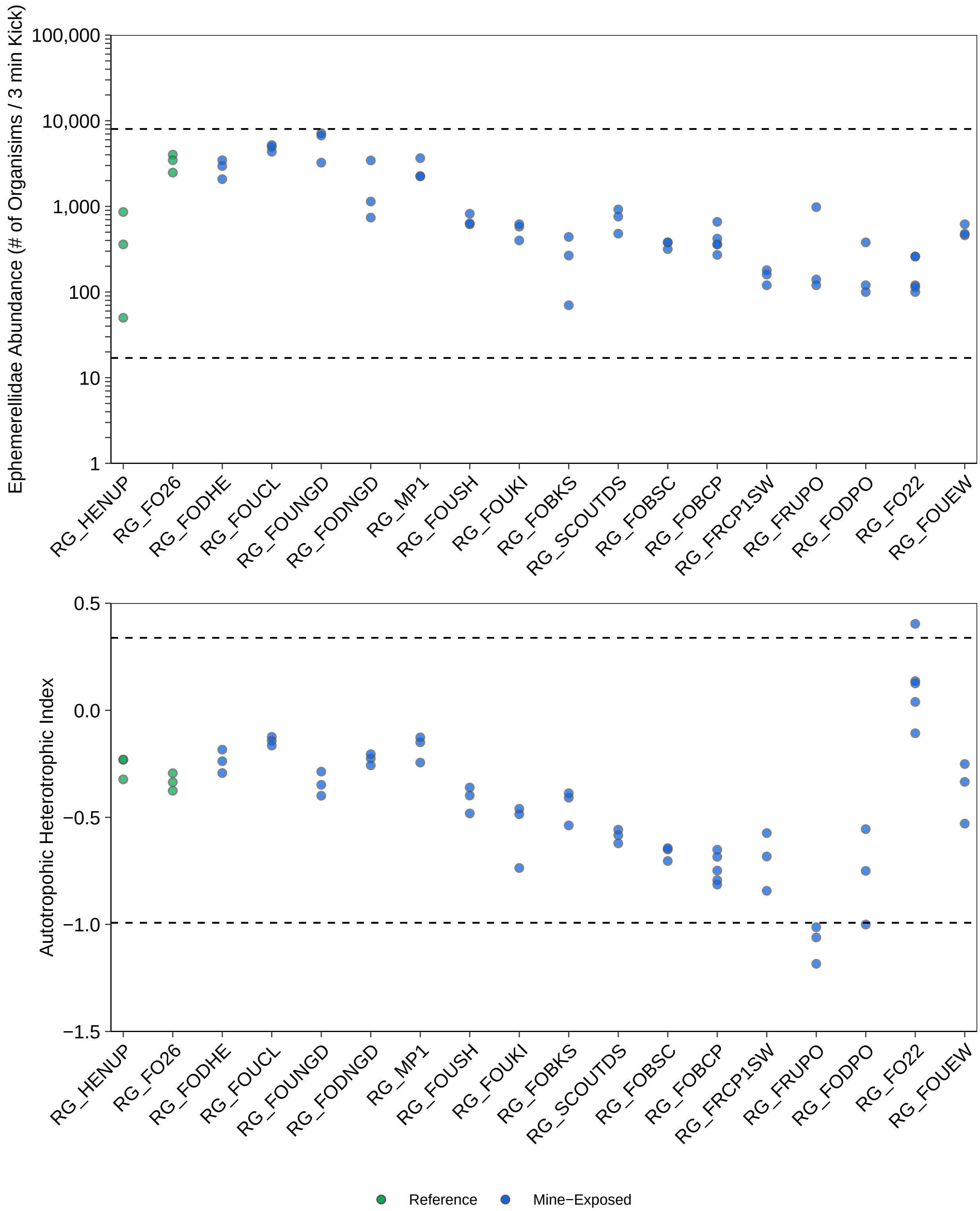


Figure 3.15: Benthic Invertebrate Ephemerellidae Abundance and Autotropohic Heterotrophic Index, FRO LAEMP, September 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

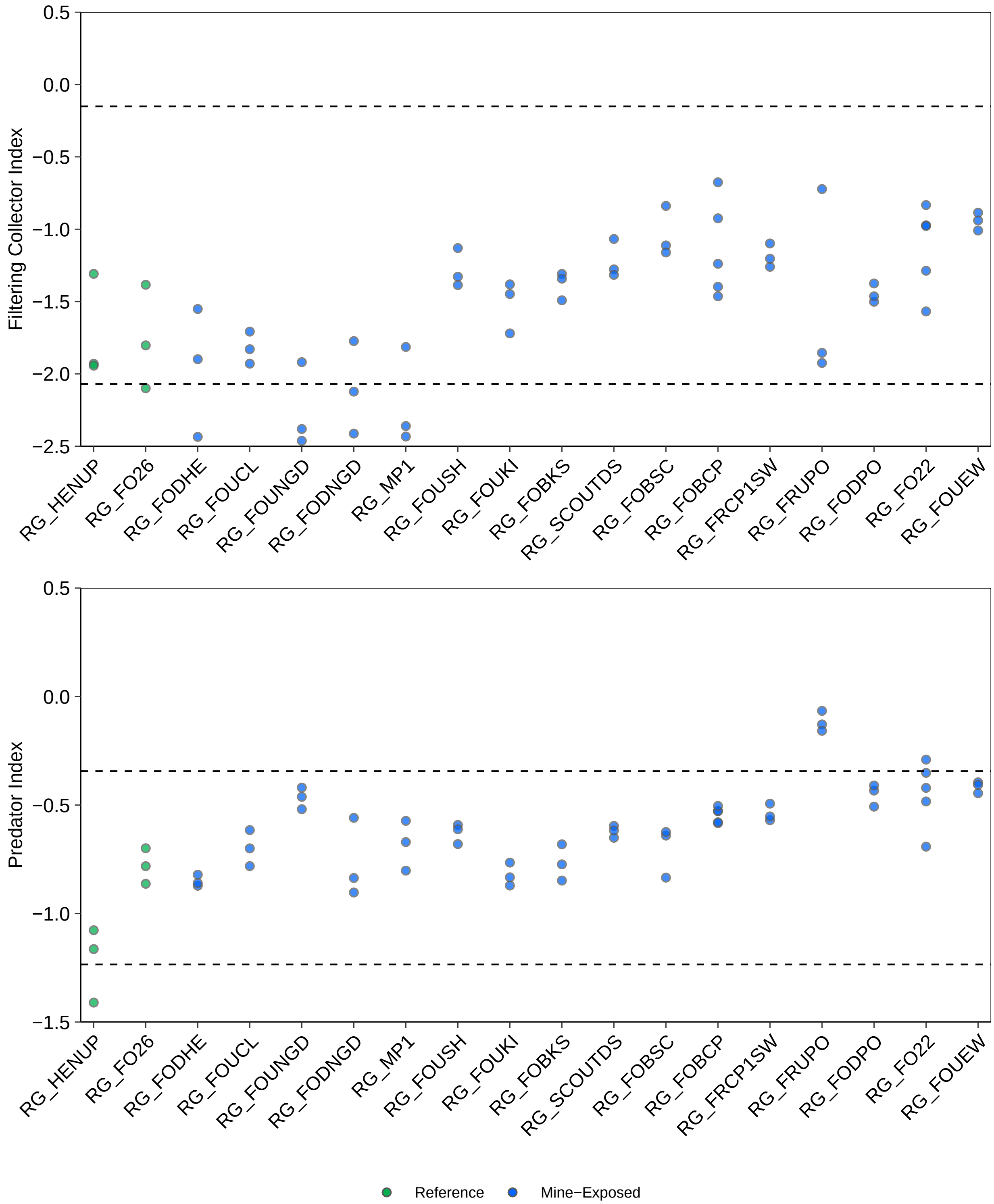


Figure 3.16: **Benthic Invertebrate Filtering Collector Index and Predator Index, FRO LAEMP, September 2021**

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

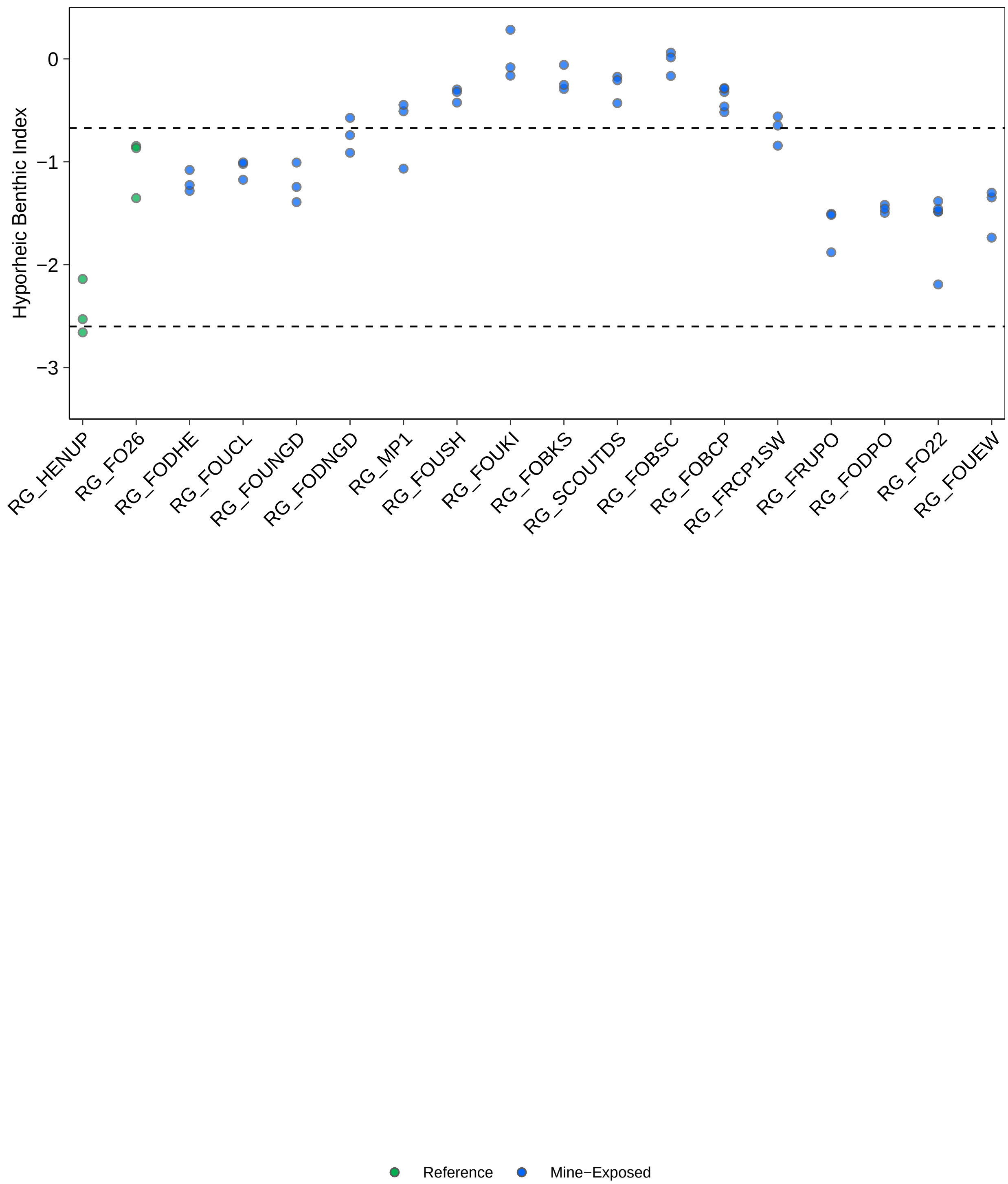


Figure 3.17: Benthic Invertebrate Benthic Hyporheic Index, FRO LAEMP, September 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

Both total Plecoptera abundance and % Plecoptera were within or above the upper limit of the regional normal range in September 2021 and were relatively high at the areas where % Ephemeroptera was low (Figures 3.9, 3.10, and 3.12). In the middle and lower study (from RG_FOBCP to RG_FOUEW), % Plecoptera accounted for approximately 40% to 65% of all benthic invertebrates, but was lower in the upper study area where Ephemeroptera was dominant (Figures 3.9 and 3.10). Total Trichoptera abundance and % Trichoptera were within the regional normal range throughout the study area (Figures 3.10 and 3.13).

Percent EPT in September 2021 was within the regional normal range throughout most of the FRO LAEMP study area due to relatively high abundance of Plecoptera and, to a lesser extent Trichoptera, in areas where Ephemeroptera relative abundance was lower than the normal ranges (Figure 3.9, 3.12, and 3.13). However, with few exceptions % EPT was below the site-specific normal range throughout most of the FRO LAEMP study area from RG_MP1 to RG_FOUEW (Figure 3.9). The low relative abundance of EPT in 2021 was related to the high abundance of Diptera from the family Psychodidae and to some extent, Chironomidae (Figure 3.18). Total abundance of EPT was within the regional and site-specific normal range throughout the study area (Figure 3.11).

Except at RG_FO22, the Autotrophic to Heterotrophic Index in September 2021 was lowest from RG_SCOUTDS to RG_FOUEW (Figure 3.15), suggesting that organisms in these areas may utilize more food sources originating from terrestrial sources (heterotrophic energy) compared to those originating from within the river and its tributaries (autotrophic energy). Filtering Collector Index was highest in the middle and lower study area, with an increase observed between RG_FOUSH and RG_FOUEW (Figure 3.16). The proportion of predators was similar throughout the FRO LAEMP study area, except at RG_FRUPO where predators were dominant in the community, and the Predator index was greater than the normal range (Figure 3.16). The Hyporheic to Benthic Index was highest from RG_FODNGD downstream to RG_FRCP1SW and was lowest at the downstream areas (RG_FRUPO downstream to RG_FOUEW; Figure 3.17). Low Hyporheic to Benthic indices in the lower part of the study area (RG_FRUPO downstream to RG_FOUEW) was likely facilitated by the deeper, slower flowing water characteristic of these areas and that favor invertebrates who burrow under the substratum.

Correspondence analysis was conducted on September family-level relative abundance BIC data for all study years (2012 to 2021), with CA axis 1 (CA1) and CA axis 2 (CA2) accounting for 20.4% and 13.5% of the variability in the community, respectively (Appendix Tables E.4 and E.5; Appendix Figures E.5 and E.6). The four most downstream areas (i.e., the lower study area RG_FRUPO, RG_FODPO, RG_FO22, and RG_FOUEW) were separated from the rest of the areas along CA1, with RG_FO22 being the most divergent area (Appendix Figure E.5), which was

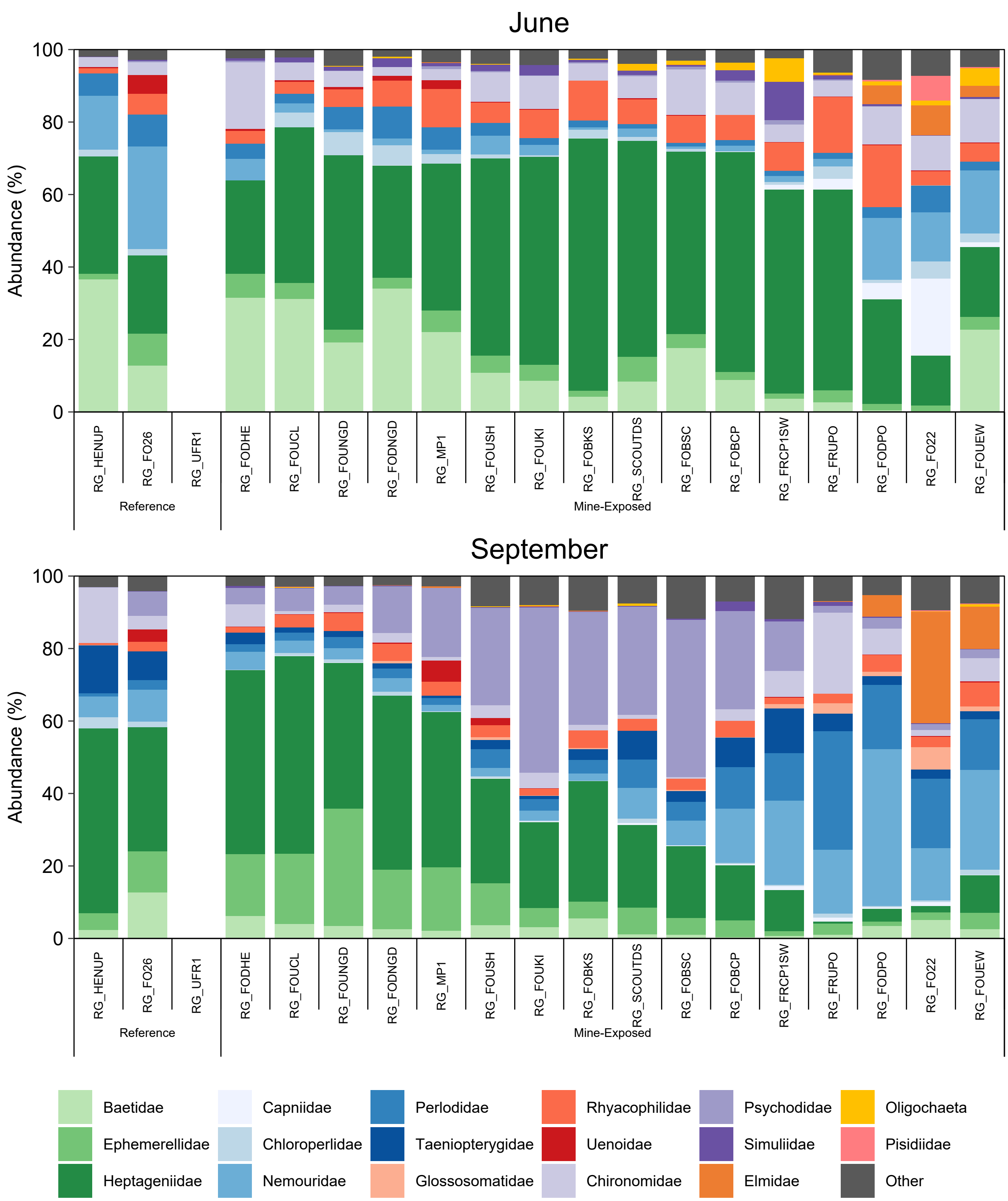


Figure 3.18: Benthic Invertebrate Community Percent Composition, FRO LAEMP, June to December 2021

Notes: Green colors represent Ephemeroptera taxa, blue colors represent Plectoptera taxa, red colors represent Tricoptera taxa, purple colors represent Chironomidae taxa, orange color represents Coleptera taxa (Elmidae), yellow color represents Oligochaeta taxa, pink color represents Bivalvia taxa (Pisidiidae) and grey color represents other remaining taxa.

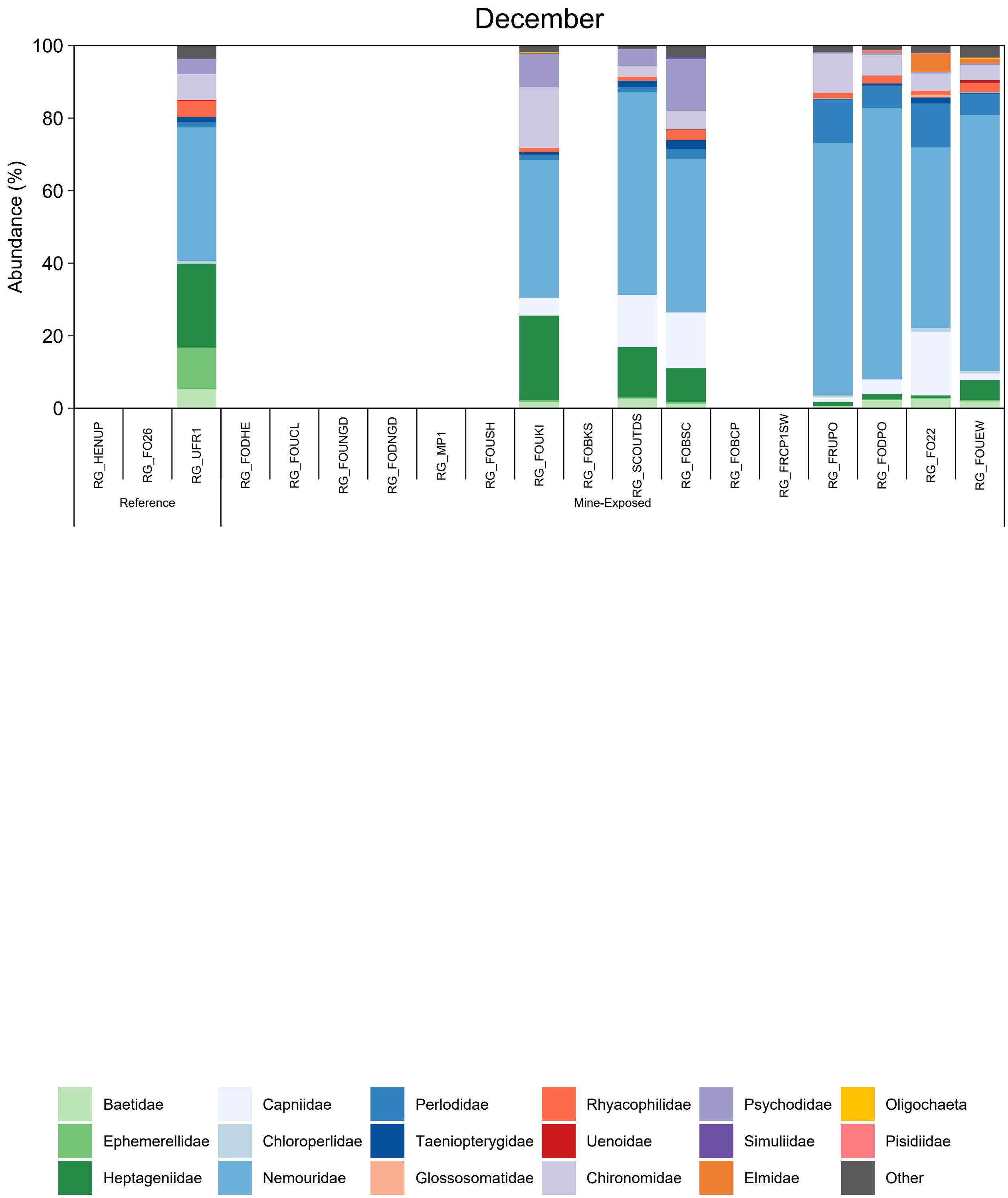


Figure 3.18: Benthic Invertebrate Community Percent Composition, FRO LAEMP, June to December 2021

Notes: Green colors represent Ephemeroptera taxa, blue colors represent Plectoptera taxa, red colors represent Tricoptera taxa, purple colors represent Chironomidae taxa, orange color represents Coleptera taxa (Elmidae), yellow color represents Oligochaeta taxa, pink color represents Bivalvia taxa (Pisidiidae) and grey color represents other remaining taxa.

similar to results from previous years (Minnow and Lotic 2019b, 2020b, 2021b). The primary taxon driving the separation in the positive direction on CA1 was the riffle beetle (Family Elmidae; Order Coleoptera), with significant influences from Limnephilidae and Glossosomatidae (Trichoptera), Capniidae (Plecoptera), and Tipulidae (Diptera; Appendix Table E.4; Appendix Figure E.5). Taxa driving CA1 in the negative direction were largely families of Ephemeroptera, such as Ameletidae, Ephemerellidae and Heptageniidae, with significant influences from Hydropsychidae and Brachycentridae (Trichoptera), Sperchontidae (Coleoptera), Psychodidae (Diptera), and Ceratopogonidae (Diptera; Appendix Table E.4; Appendix Figure E.5). Reference and mine-exposed areas were separated along CA2, which was strongly driven by Diptera (i.e, Simuliidae), Plecoptera (Capniidae and Perlidae), and Trichoptera (Brachycentridae) families in the negative direction (mine-exposed areas), and select Plecoptera (Chloroperlidae), Trichoptera (Limnephilidae) and Ephemeroptera families in the positive direction (reference areas).

Percent EPT in September 2021 was assessed against the biological trigger values (see Appendix H). This was completed for FRO LAEMP monitoring areas with available water quality projections (i.e., six mine-exposed areas [RG_FODHE, RG_FOUKI, RG_FOBSC, RG_FOBCP, RG_FODPO, and RG_FO22] and one reference area [RG_FO26]; see Appendix H for details). Except for RG_FODHE (3 of 3 replicates) and RG_FODPO (2 of 3 replicates), replicates from all mine-exposed areas had % EPT that were lower than the biological trigger. Percent EPT at these areas has previously been noted in past FRO LAEMP reports and the RAEMP based on benthic invertebrate community results (Minnow and Lotic 2020b, 2021b). Further information regarding the % EPT biological trigger as it pertains to the FRO LAEMP can be found in Appendix H and discussion of causes of lower % EPT in the study area is found in Section 4.5.

In 2021, total benthic invertebrate abundance was unchanged compared to previous years throughout the study area except at RG_FRCP1SW (increase from the base year [2017]) and RG_FO22 (decrease in 2021 compared to 2020; Appendix Table E.6; Appendix Figure E.7). Lowest practical level richness was similar in 2021 compared to previous years at all FRO LAEMP monitoring areas except at RG_MP1 (increase from the base year) and RG_FOBKS (increase from the base year; Appendix Table E.7; Appendix Figure E.8). In 2021, % EPT was significantly lower than the base year at RG_FOUKI and was significantly higher at RG_FODHE and RG_FOUSH in 2021 compared to 2020 (Appendix Table E.8; Appendix Figure E.9). Percent Ephemeroptera, however, was significantly lower than the base year at the majority of mine-exposed areas, particularly in the middle and lower study areas (Appendix Table E.9; Appendix Figure E.10). Decreases relative to the previous year (2020) were also observed in the middle and lower study areas between RG_FOBCP and RG_FOPDO, while increases were observed in the upper study area between RG_FODHE and RG_FOUSH (Appendix Table E.9; Appendix Figure E.10). Percent Plecoptera and Trichoptera have not changed over time throughout the FRO LAEMP study area, with few exceptions (i.e., Plecoptera was significantly higher than base year at RG_FOBCP but lower at RG_MP1 compared to 2020 [Appendix Table E.10; Appendix Figure E.11]; Trichoptera was higher than base year at RG_MP1, RG_FOUSH and RG_FO22 [Appendix Table E.11; Appendix Figure E.12]). Abundance and % Chironomids were significantly lower in 2021 compared to the base year and/or previous years at multiple monitoring areas throughout the full study area (Appendix Tables E.12 and E.20; Appendix Figures E.13 and E.18). Of the other endpoints evaluated, few significant differences were observed. Total abundance for key metrics (EPT, Ephemeroptera, Plecoptera, Trichoptera, Ephemeroptera families) have remained consistent over time in most areas, with significant changes occurring only intermittently throughout the study area and likely represent natural variation in benthic invertebrate communities (Appendix Tables E.13 to E.19; Appendix Figures E.14 to E.21). Benthic invertebrate community index endpoints were also plotted temporally to determine if changes in BIC represented a shift in the functional communities over time, and if they could explain differences in key BIC endpoints throughout the study area. Few changes of BIC indices were observed compared to previous years (Appendix Figures B.22 to B.25).

3.4.3.2 Seasonal

Seasonal benthic invertebrate community data will be interpreted to address Study Questions #1, #5, and #6 (see Sections 4.1, 4.5, and 4.6). Seasonal changes in BIC were visually compared using data collected in June, August, September and December 2018, February, June, September, and December 2019, and June, September, and December 2020 and 2021 to identify potential seasonal patterns. Only a subset of monitoring areas were sampled in the winter programs due to study design considerations and ice conditions (Minnow and Lotic 2019a, 2021a). Key BIC metrics were plotted over all sampling periods (Appendix Figures E.26 to E.44). Total abundance was the lowest in June and increased through September with a plateauing or decrease observed in December at most biological monitoring areas where data were available (Appendix Figure E.26). No consistent seasonal pattern in LPL richness was observed among the sampling areas (Appendix Figure E.27). Percent Ephemeroptera was lowest in September and December when % Plecoptera was highest (Appendix Figures E.29 and E.30), while % Trichoptera and % EPT showed no consistent seasonal pattern across monitoring areas (Appendix Figures E.28 and E.31). The abundance of EPT and Plecoptera was lowest in June and increased through September and December (Appendix Figures E.33 and E.35); however, the abundance of Ephemeroptera, including families within Ephemeroptera (i.e., Baetidae, Heptageniidae, and Ephemerellidae) and Trichoptera was similar or higher in

September compared to June, but lower in December at most monitoring areas (Appendix Figures E.34, E.36, and E.39 to E.40). Percent and abundance of Chironomids also showed no seasonal patterns among the monitoring areas (Appendix Figures E.32 and E.37).

Seasonal changes in BIC indices were also plotted to determine if changes in BIC represented a shift in the functional communities by season, and if they could explain differences in key BIC endpoints throughout the study area. No clear seasonal changes in BIC indices were observed (Appendix Figures E.41 to E.44).

Relative BIC composition was visually compared among the sampling periods, and across biological monitoring areas, to identify seasonal patterns (Figure 3.18). Consistent with previous years, except for the areas between Porter Creek and Chauncey Creek (RG_FODPO and RG_FO22), the FRO LAEMP study area had similar community composition in June, including areas where % Ephemeroptera has consistently been below normal ranges in September (Figure 3.18). Although families of Ephemeroptera varied in June, the relative abundance of Ephemeroptera was consistent across the study area, except between RG_FODPO and RG_FO22. In September, downstream areas having low % Ephemeroptera had relatively high proportions of Plecoptera, particularly species from the families Perlodidae and Nemouridae (Figure 3.18). Consistent with previous years, December had very low proportions of Ephemeroptera families in downstream areas (i.e., FR_FRUPO to RG_FOUEW) and were dominated by Plecoptera (i.e., Family Nemouridae) compared to upstream areas (Figure 3.18).

The relative proportion of organisms exhibiting different feeding and habitat groups were visually compared to identify patterns across areas and seasons (Appendix Figures E.45 and E.46). In September and December there was a higher proportion of shredders complimented by a lower proportion of collector-gatherers in downstream areas where % Ephemeroptera has consistently been below the normal range. The relative proportion of the different feeding groups were consistent across the study area in June, except in the Fording River between RG_FODPO and RG_FOUEW where proportions of shredders were higher compared to other areas (Appendix Figure E.45). In June, a higher proportion of swimmers were observed in the lower study area compared to upstream, while in September and December sprawlers comprised the dominant habitat group in the lower study area (Appendix Figure E.46). Burrowers were hardly present in the study area in June 2021; however, in the drier months of September and December they became more prominent, particularly in areas known to experience seasonal drying and/or low flows (see Section 4.6; Appendix Figure E.46). Sprawlers and clingers were the dominant BIC habitat groups in December (Appendix Figure E.46).

3.5 Integrated Analysis

3.5.1 Time Trend Analyses of Nitrate Concentrations and BIC

To further investigate Study Question #1, temporal comparisons of key BIC endpoints (total BIC abundance, richness, % EPT and % Ephemeroptera) and nitrate concentrations were explored. Total BIC abundance, richness, % Ephemeroptera and % EPT were plotted with nitrate concentrations across the study period to visually compare temporal patterns in BIC endpoints relative to changes in nitrate concentrations (Appendix Figures F.1 to F.4). No associations between LPL richness and changes in nitrate concentrations were observed between 2012 and 2021 (Appendix Figure F.2). Associations between decreases in the other BIC endpoints (total BIC abundance, % Ephemeroptera, and % EPT) and increases in aqueous nitrate concentrations were infrequent among monitoring areas and inconsistent over time (Appendix Figures F1, F.3, and F.4).

To statistically analyze how nitrate concentrations may have changed over time relative to BIC, a temporal trend analysis was conducted (Table 3.6). This analysis evaluated changes in nitrate concentrations and key BIC endpoints (total BIC abundance, richness, % EPT and % Ephemeroptera) at each FRO LAEMP biological monitoring area throughout the study period (2012 to 2021). Significant increases in nitrate concentrations were observed at reference location RG_FO26, RG_FOBSC, and overall (i.e., the full study area), while all other areas remained unchanged throughout the study period (i.e., 2012 to 2021; Table 3.6). The increases in nitrate concentrations at RG_FOBSC from 2012 to 2021 occurred together with increases in richness and decreases in % Ephemeroptera, however, total abundance and % EPT were unchanged. Although increases in nitrate concentrations occurred concurrently with increases in abundance and LPL richness and decreases in % EPT and % Ephemeroptera when considering the entire study area, individual monitoring areas having significantly decreased % EPT and % Ephemeroptera (i.e., a significant p-value and a negative slope) were not the same areas with significant increases in nitrate concentrations, except for % Ephemeroptera at RG_FOBSC (Table 3.6).

3.5.2 Correlation Analysis

To further investigate variations in BIC (Study Questions #1, #5, and #6; see Sections 4.1, 4.5, and 4.6), correlations between chemical and physical variables and BIC metrics were completed on the full study area, and on individual study areas (upper, middle, and lower study areas; Figure 3.19; Appendix Table F.1; Appendix Figures F.5 to F8). Annual mean water quality concentrations (2018 to 2021) calculated from four different seasons (described in Section 2.6) were used for the correlation analysis.

Table 3.6: Temporal Changes in Nitrate Concentrations and Benthic Invertebrate Community Endpoints in the FRO LAEMP, September 2012 to 2021

Station	Water Quality		Benthic Invertebrate Community							
	Nitrate		Abundance		Richness		%EPT		%E	
	Effect Size	P-Value	Effect Size	P-Value	Effect Size	P-Value	Effect Size	P-Value	Effect Size	P-Value
RG_HENUP	0.50	0.616	1.5	0.123	0.73	0.465	-0.88	0.380	-0.52	0.607
RG_FO26	2.5	0.015	4.0	<0.001	0.78	0.433	-0.45	0.652	0.25	0.805
RG_FODHE	-1.4	0.159	0.94	0.346	2.5	0.011	-2.5	0.015	-1.5	0.135
RG_FOUNGD	0.91	0.363	1.3	0.198	1.4	0.174	1.3	0.206	1.2	0.246
RG_FODNGD	-0.41	0.680	0.17	0.867	-1.1	0.278	0.27	0.791	0.73	0.464
RG_MP1	1.4	0.167	1.1	0.261	2.7	0.007	1.0	0.299	0.18	0.855
RG_FOUSH	1.5	0.151	-1.3	0.203	3.1	0.002	-2.5	0.013	-4.0	<0.001
RG_FOUKI	1.2	0.251	1.1	0.286	2.4	0.016	-3.5	<0.001	-3.8	<0.001
RG_FOBKS	1.1	0.277	1.3	0.179	3.6	<0.001	-1.3	0.199	-1.8	0.074
RG_FOBSC	5.9	<0.001	1.4	0.150	2.1	0.033	-0.98	0.327	-2.1	0.036
RG_FOBCP	0.31	0.754	2.1	0.038	2.1	0.040	-2.0	0.051	-3.4	<0.001
RG_FRCP1SW	0.022	0.983	2.9	0.004	-0.24	0.807	0.69	0.490	0.23	0.815
RG_FRUPO	0.78	0.438	0.40	0.693	0.92	0.356	-1.4	0.168	-2.2	0.030
RG_FODPO	-0.30	0.762	-0.043	0.966	4.6	<0.001	-3.4	<0.001	-1.8	0.067
RG_FO22	0.0098	0.992	-0.57	0.567	1.9	0.061	-0.26	0.799	-2.3	0.022
RG_FOUEW	0.15	0.882	1.4	0.174	1.3	0.188	-1.0	0.314	-3.2	0.001
Overall	2.6	0.012	4.3	<0.001	5.3	<0.001	-3.1	0.002	-4.7	<0.001

P-value < 0.1

Notes: Water quality parameters were analyzed with a Linear Model (LM) using log10-transformed Nitrate because there were no replicate samples taken. Benthic invertebrate communities were analyzed with Linear Mixed-Effects Models (LMM) using transformations (Abundance and Richness were log10- transformed, %EPT and %E were logit-transformed) to account for replicate samples taken for some years. Effect Sizes were calculated as regression slope coefficients (representing time) divided by the standard error of the regression coefficient from LM and LMM. P-values indicate if slopes are significantly different from zero. Only stations with a minimum of 4 years of data were included in the analysis.

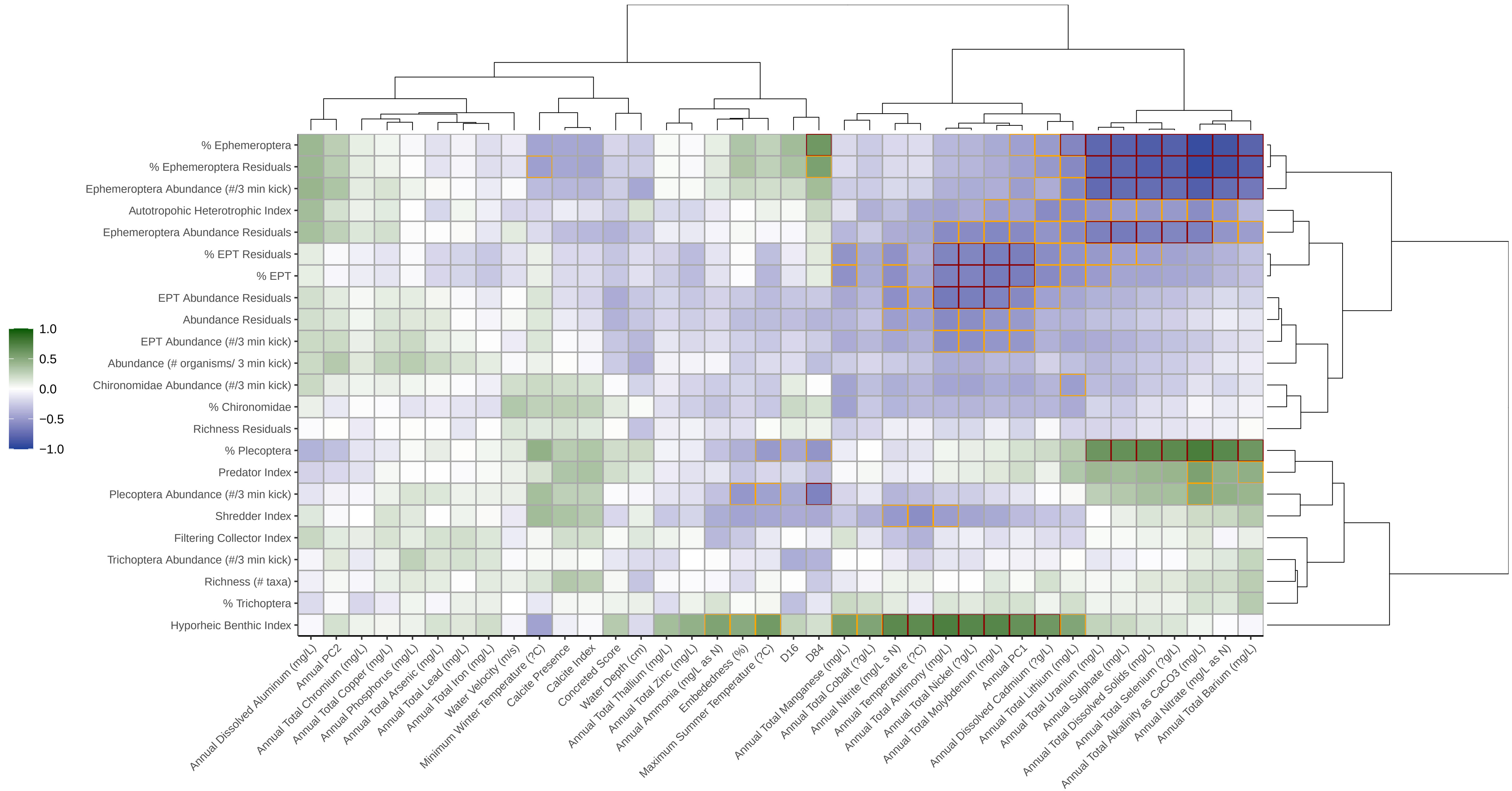


Figure 3.19: Heatmap of Spearman Correlation Coefficients of Benthic Invertebrate Community Endpoints against Physical and Chemical Parameters, Full Fording River, 2018 to 2021

Notes: Orange boxes show significant correlations (p−value < 0.05/38 for Bonferroni Correction), and red boxes show significant correlations with absolute coefficients > 0.6. Cluster diagrams on x− and y−axis represent similarities using Euclidean distances clustered according to Ward's minimum variance method.

Correlations between chemical and physical variables and BIC metrics were summarized in heatmaps of correlation coefficients for the full study area (Figure 3.19), and for the upper, middle, and lower study areas (Appendix Figure F.6 to F.8). Variables within each study area having strong ($r_s \geq |0.6|$) and significant correlations (p<0.00132; Bonforreni correction of 0.05/38 independent comparisons) were plotted (Appendix Figure F.5), and all correlations were summarized (Appendix Table F.1). For physical variables in the full study area, only D84 correlated strongly ($r_s \geq 0.6$) with BIC metrics (positively correlated with % Ephemeroptera and negatively correlated with Plecoptera abundance; Appendix Table F.1). Percent Plecoptera was positively correlated with calcite presence in the upper study area (Appendix Table F.1). In the middle study area, concretion score was the only physical parameters that had significant and strong correlations with any of the BIC metrics (positively correlated with % Plecoptera and negatively with benthic hyporheic index; Appendix Table F.1). Significant and strong positive correlations between minimum winter water temperature and abundances of Plecoptera and EPT were identified in the lower study area (Appendix Table F.1).

Many water quality constituents (alkalinity, nitrate, sulphate, TDS, total barium, total selenium, and total uranium) correlated strongly with key BIC metrics (i.e., negative correlations with % Ephemeroptera, Ephemeroptera abundance, as well as their residuals, and positive correlations with % Plecoptera) in the full study area (Appendix Table F.1; Appendix Figure F.5). In the upper study area, total nickel correlated significantly and strongly (negative) with Ephemeroptera abundance and its residuals, however, positive correlations were observed between total nickel and the benthic hyporheic index and between PC1 and % Trichoptera (Appendix Table F.1; Appendix Figure F.5). Multiple water quality constituents (alkalinity, total antimony, total molybdenum, and total nickel) correlated negatively with % Ephemeroptera, while others (alkalinity, sulphate, TDS, total antimony, total nickel, total selenium, and total uranium) correlated positively with % Plecoptera in the middle study area (Appendix Table F.1; Appendix Figure F.5). No water quality constituents correlated significantly and strongly with BIC endpoints in the lower study area (Appendix Table F.1; Appendix Figure F.5).

Hierarchical clustering showed groupings of variables that correlated similarly with BIC endpoints for each study area. Water quality constituents that clustered together and had the strongest correlations with key BIC metrics in the full study area were total barium, nitrate, total alkalinity, total selenium, TDS, sulphate, total uranium, and total lithium for one major cluster, and total antimony, total nickel, total molybdenum, and PC1 in another cluster (Figure 3.19). Percent Ephemeroptera, Ephemeroptera abundance, % EPT, and their residuals from the habitat model, as well as the autotrophic-heterotrophic index clustered together in the full study area (Figure 3.19). Although the upper, middle, and lower study areas clustered similarly to the full study area primarily based on water quality constituents, there were very few strong correlations

(Appendix Figures F.6 to F.8). Mine-related constituents including total selenium, alkalinity, TDS, total uranium, and sulphate clustered together in all three individual study areas, while nitrate, total nickel, dissolved cadmium, and PC1 clustered together in the upper and middle study areas, but less so in the lower study area (Appendix Figures F.6 to F.8). Some other notable variables that clustered with mine-related water quality constituents in individual study areas were calcite concretion score in the middle study area and minimum winter water temperature and annual water temperature in the lower study area (Appendix Figures F.7 and F.8).

3.5.3 Canonical Correspondence Analysis

Canonical Correspondence Analysis (CCA) will be interpreted to further address Study Questions #1, #5, and #6 (see Sections 4.1, 4.5, and 4.6). Benthic invertebrate community samples were collected at all FRO LAEMP monitoring areas in June and September (2018 to 2021) and were used to assess potential effects of habitat and water chemistry on BIC variation within each sampling period throughout the full study area and in individual study areas (upper, middle, lower; Figure 3.20; Appendix Table F.2; Appendix Figures F.9 to F.12).

The Correspondence Analysis (CA) showed an upstream to downstream gradient across the first axis, and a temporal separation of samples (primarily separating 2021 data) on the second axis (Appendix Figures F.9). This pattern was consistent in both June and September. The separation of 2021 data was quite distinct in September (driven largely by very high abundances of Cinygmula, a Heptageniidae). The separation was present in June as well, but was less distinct, and driven by a larger group of taxa. The CAs within individual study areas showed strong temporal patterns on the first axis in both June and September (Appendix Figures F.9). The CA of the upper study area showed an upstream to downstream gradient along the second CA axis in September, except at the monitoring area downstream of the North Tailings Pond (RG_FOUSH) which was more centralized in the plots than would be expected from its location along the Fording River within the upper study area. This pattern was less apparent in the June CA. The middle study area was more strongly temporally divided in both June and September (Appendix Figures F.9), with September showing a trend along the first axis from 2018 to 2021. The second axis approximately followed a gradient in water chemistry, with RG_FOUKI and RG_FOBKS in the upstream portion of the study area separated from the more impacted downstream areas. The CAs for the lower study areas showed a strong temporal separation in September along the first axis (primarily separating 2021 from other years), with an upstream to downstream gradient along the second axis; except RG_FO22 (Fording River upstream of Chauncey Creek) being most dissimilar from the upstream areas and RG_FOUEW being a bit more similar to the upstream areas. The June CA showed an even stronger spatial separation along the first axis, with temporal differences on the second axis. The arrangement of

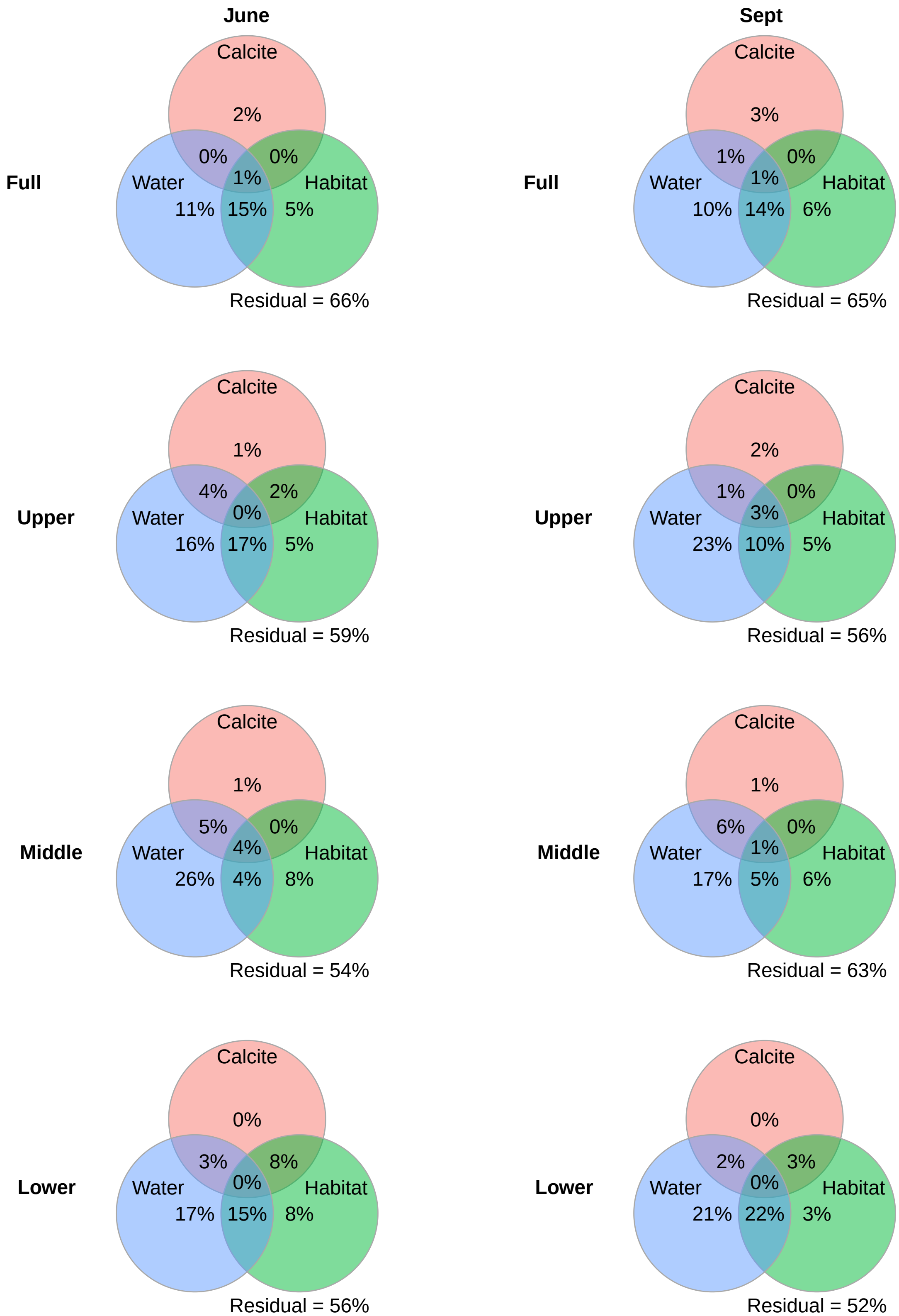


Figure 3.20: Variance Partitioning Between Habitat, Water and Calcite Using Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

monitoring areas along the first axis of the June CA suggested the BIC at RG_FOUEW (Fording River upstream of Ewin Creek) was even more similar to the upstream RG_FRUPO then in September, suggesting potentially complex interactions among habitat and stressor gradients in this part of the study area.

Canonical Correspondence Analysis were used to explain variation in BIC using habitat, calcite and water chemistry predictors. Overall, habitat and water chemistry had more significant and stronger effects on BIC in September compared to June (Figure 3.20; Appendix Table F.2). Therefore, only the September results are summarized in detail. In September, within the full study area, 35% of variation in BIC was explained by habitat, water, and calcite predictor groups, but a relatively large percent (16%) was shared between the three predictor groups (Figure 3.20). After removing the shared variation, only 6%, 10%, and 3% was uniquely associated with habitat, water, and calcite, respectively. The unexplained residuals accounted for 65% of the overall variation in September BIC within the full study area. Sources of unexplained variation may include unexplored habitat predictors, natural temporal variability, annual climatic variation, and variation in organism life cycles. Separating the data into individual study areas (i.e., upper, middle, and lower) resulted in predictor variables explaining more variation in BIC (i.e., total explained variation in BIC ranged from 37% and 48% for individual study areas in September; Figure 3.20). Although the percent of variation in BIC explained by habitat and calcite remained relatively low (3% to 6%, and 0% to 2%, respectively) within individual study areas, the percent of variation in BIC explained by water increased (17% to 23%; Figure 3.20). Similar patterns of explained variance were observed in June BIC data (Figure 3.20).

Constraining the BIC data by habitat variables maintained the upstream to downstream gradient across the full study area in both June and September on the first axis (Appendix Figure F.10). This pattern was consistent with that observed in the unconstrained ordination, however the second axis of the habitat constrained CCA did not separate out 2021 samples as strongly as the unconstrained ordination (Appendix Figure F.9), indicating the overall differences in BIC observed in 2021 were not well predicted by the habitat alone. Catchment area was the most important habitat predictor (largest F-Statistic; Appendix Table F.2) followed by substrate sizes, then depth in both June and September. These were most important as both single (individual importance), and marginal (importance after all other habitat terms were included in the model) terms. The CCA for the upper study area separated 2021 data in both June and September (similar to unconstrained ordination), with the separation largely driven by smaller substrate sizes in 2021 (in both June and September) and wider stream widths (in September). This was confirmed by the importance of these habitat predictors in the ANOVA analysis (Appendix Table F.2). This may be the result of a smaller spring freshet (failing to move small substrates downstream) in 2021 compared to previous years, or fine sediments being deposited into the stream. The habitat constrained CCA of the middle study area also separated 2021 data, but along the second axis, suggesting it has weaker gradients than in the unconstrained ordination for this study area. The primary drivers separating 2021 in June and September were also smaller substrate sizes, as well as lower water velocities in June, and higher velocities in September. These patterns were also supported by ANOVA analysis (Appendix Table F.2), with these predictors having highest the F-Statistics. The habitat constrained CCA for the lower study area did not separate 2021 from other years in either June or September, unlike the unconstrained CA for this region. Instead, the first axis largely followed an upstream to downstream gradient, except the furthest downstream area (RG_FOUEW) which was pulled a little closer to the upstream areas due larger substrates. The most important habitat predictors identified by the ANOVA for this area was substrate sizes, slope, gradient, and catchment area (Appendix Table F.2). Overall, the habitat CCAs showed the observed patterns in BIC community variation can largely be explained by habitat features, including the unique communities overserved in 2021; however, the temporal patterns are clearer in the upper and middle study area than the lower study area, suggesting that the differences in the 2021 BIC at the lower study area were not explained by the habitat variables included in this study.

Constraining the BIC data by water chemistry and calcite (stressors) resulted in similar upstream to downstream patterns in June and September (Appendix Figure F.11) as those observed in the unconstrained and habitat constrained ordinations (Appendix Figure F.9 and F.10). The second axis strongly separated 2021 data in September, but not June in the full study area dataset. The BIC in the middle and lower study areas had higher concentrations of most water chemistry analytes. The September 2021 BIC are primarily separated from other years by having lower calcite presence than previous years. Most water chemistry predictors had a stronger effect on BIC in September than in June. Selenium and sulphate had the strongest effects in September and June, while uranium, alkalinity, TDS, and nitrate all had stronger effects in September (Appendix Table F.2). The stressor constrained CCA of the upper study area separated 2021 along the first axis in both June and September, with the second axis reflecting similar patterns as the unconstrained ordination (Appendix Figure F.11). Similar to the full study area, low calcite presence separated the 2021 samples from other years. The secondary gradient (second axis) across areas mainly separated RG_FODHE and RG_FOUCL from other upper study area sites by having lower concentrations of nearly all water chemistry constituents in both June and September. The ANOVA results suggested nitrate, selenium, sulphate, uranium and TDS are the strongest drivers of these separations, with September communities responding more strongly to these constituents than June communities (as shown by higher F-Statistics, both singly and marginally; Appendix Table F.2). The middle study area showed very similar patterns to the unconstrained ordination, separating 2021 across the first axis (Appendix Figure F.11).

Both RG_FOUKI and RG_FOBKS (located upstream and downstream of Kilmarnock Creek in the Fording River, respectively) separated from the more impacted downstream areas (i.e., downstream of the Swift-Cataract diversion) in September by having lower concentrations of most constituents. The September 2021 samples were associated with lower calcite (presence and concretion), lower barium, and higher manganese and the relationships between the BIC communities and water chemistry were less consistent in June than September. Overall, fewer water chemistry constituents had strong relationships with BIC in June in the middle study area (Appendix Table F.2), and the gradients of effects (vectors on the CCA plot) were less consistent. The stressor constrained CCA for the lower study area did not separate 2021 from other years in June but did in September (similar to unconstrained CA for this region). In June, RG_FO22 (Fording River upstream of Chauncey Creek) was separated from the remaining areas by a higher concentration of selenium, sulphate, TDS, barium and uranium, with the remaining areas higher in cadmium, molybdenum, and manganese. The BIC communities in September 2021 were separated by higher selenium, sulphate, TDS, cadmium, and nitrate concentrations compared to previous years. The remaining upstream to downstream gradient was driven by increases in manganese and calcite from upstream to downstream, but a drop in molybdenum. These patterns are supported by correspondingly high F-Statistics from ANOVAs on both single and marginal terms (Appendix Table F.2). Overall, the stressor constrained CCAs show the observed patterns in BIC community variation could largely be explained by stressor gradients, including the unique communities observed in 2021. The temporal patterns are stronger in the stressor constrained CCA than the habitat constrained one, especially in September. This suggests that the differences in the 2021 BIC at the lower study area was better explained by stressor variables than habitat alone.

Both stressor and habitat constrained CCAs were able to explain observed gradients in BIC, however, different predictor groups appeared to explain observed patterns slightly better in different study areas. The variance partition (Figure 3.20) identified a large degree of overlap in explained variation by these predictor datasets. This was verified with pCCA to understand the effects of water chemistry and calcite stressors on BIC variation after controlling for habitat (i.e., removing the shared variation of habitat and stressor variables; Appendix Table F.2; Appendix Figure F.12). After accounting for habitat, most water quality and calcite predictors still explained statistically significant amounts of variation in BIC in both June and September (though the magnitude of the F-Statistics are much smaller, indicating these predictors explained a smaller fraction). Among individual study areas, the upper and middle study areas had the most water quality stressors affecting residual BIC variation after accounting for habitat, and some of the highest effects (denoted by size of F-statistic value) were from total barium, nitrate, total selenium, and sulphate (Appendix Table F.1). The lower study area had the fewest number of stressors affecting BIC variation among the individual study areas (Appendix Table F.1), despite having some of the highest concentrations of mine-related constituents. The pCCA scatterplots (Appendix Figure F.12) did not separate BIC spatially within the full study area in June or September and spatial separation within individual study areas was also limited for both seasons. This resulted in few clear patterns of water quality and calcite stressors as they relate to variation in BIC (Appendix Figure F.12), indicating that the residual variation in the BIC that was being explained was minor and limited to differences in individual samples, and not large-scale patterns.

3.6 Fish Sampling in the Upper Fording River

3.6.1 Westslope Cutthroat Trout Tissue Chemistry

Westslope Cutthroat Trout tissue chemistry data will be interpreted to address Study Question #6 (see Section 4.6). Westslope Cutthroat Trout muscle tissue samples were collected from three reference (RG_MOYIE, RG_BULL, and RG_FH) and two mine-exposed (RG_MP1 and RG_FODGH) areas within the FRO LAEMP study area in 2018 and 2021 under the RAEMP (Figure 3.21; Appendix I.1). Tissue selenium concentrations were similar in 2018 and 2021 at both mine-exposed areas and the Bull River reference area (RG_BULL; Figure 3.21). Westslope Cutthroat Trout collected at the Multiplate culvert (RG_MP1) and between Chauncey Creek and Greenhills Creek (RG_FODGH) had muscle tissue selenium concentrations that were higher than the B.C. selenium guideline and the reference area normal range but were lower than the EVWQP muscle-equivalent benchmark for selenium concentrations in WCT muscle tissue (Figure 3.21).

Tissue (dorsal muscle and whole body) sampled due to incidental mortalities (i.e., opportunistic samples) were collected from Clode Creek (FR_CC1), the Lake Mountain Outfall (FR_NGD1), and the Fording River downstream of the Henretta confluence (FR_FRDSHC1), downstream of the Concrete Arch (RG_FOUNGD), and upstream of the FRO-S AWTF outfall (FR_FR3) in 2021 (Figure 3.22; Appendix Table I.2). Westslope Cutthroat Trout tissue selenium concentrations were highest in opportunistic samples collected from mortalities following a fish salvage at Clode Creek and lowest (i.e., below the B.C selenium guideline) in the Fording River downstream of the Henretta Creek confluence (FR_FRDSHC1; Figure 3.22). Selenium concentrations in the remaining opportunistic samples were higher than the reference normal range (Figure 3.22).

Muscle plugs were also collected from female WCT that were in spawning condition in June 2021 from Clode Flats (RG_CLFL) and from the Fording River S6 oxbow (RG_FROXB) within the FRO LAEMP study area to meet the Environment and Climate Change Canada (ECCC) direction (Figure 3.23; Appendix Table I.3). Although WCT tissue collected from both areas had

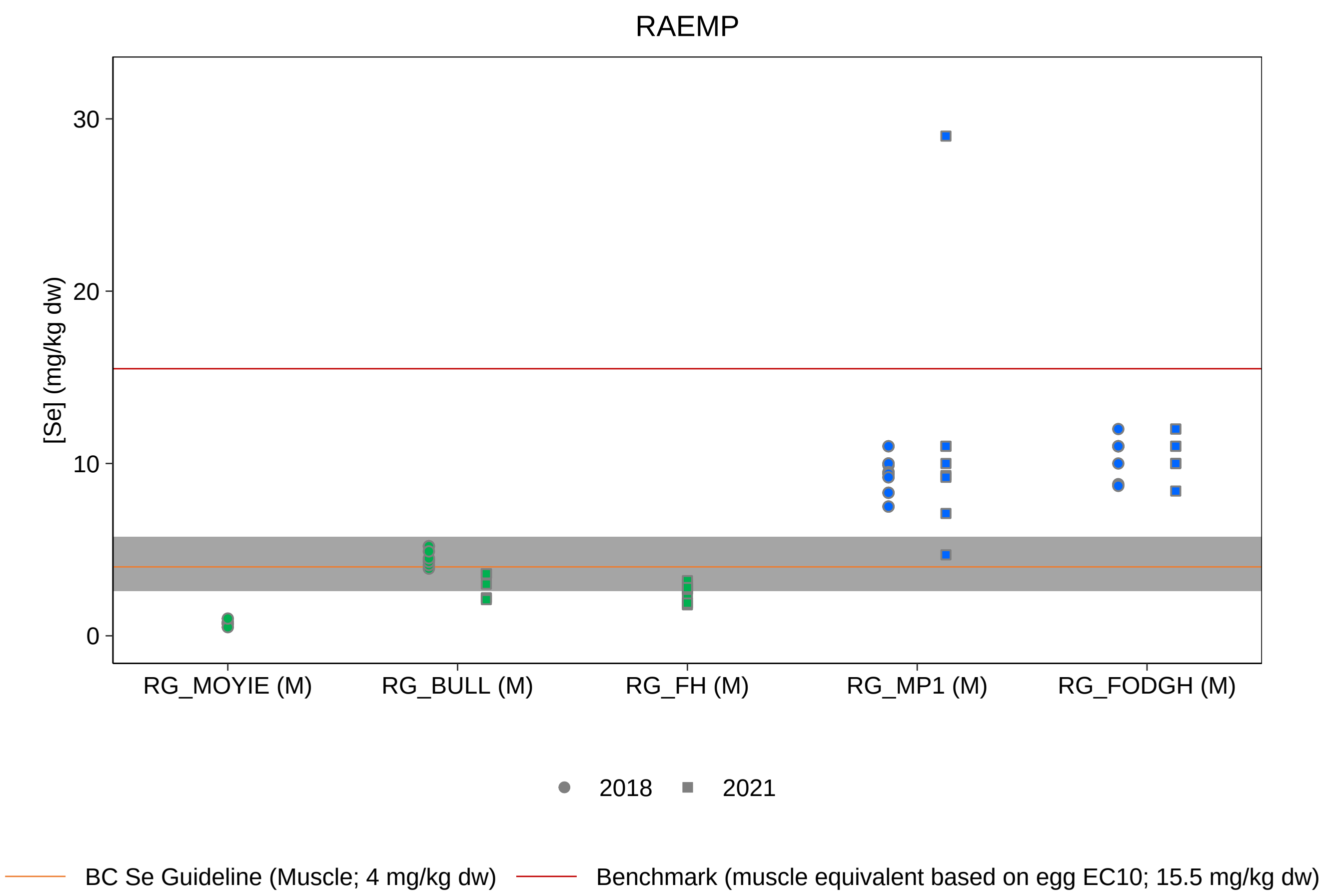


Figure 3.21: Westslope Cutthroat Trout Muscle Selenium Concentrations, FRO LAEMP, 2018 and 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. M = Mainstem, T = Tributary.

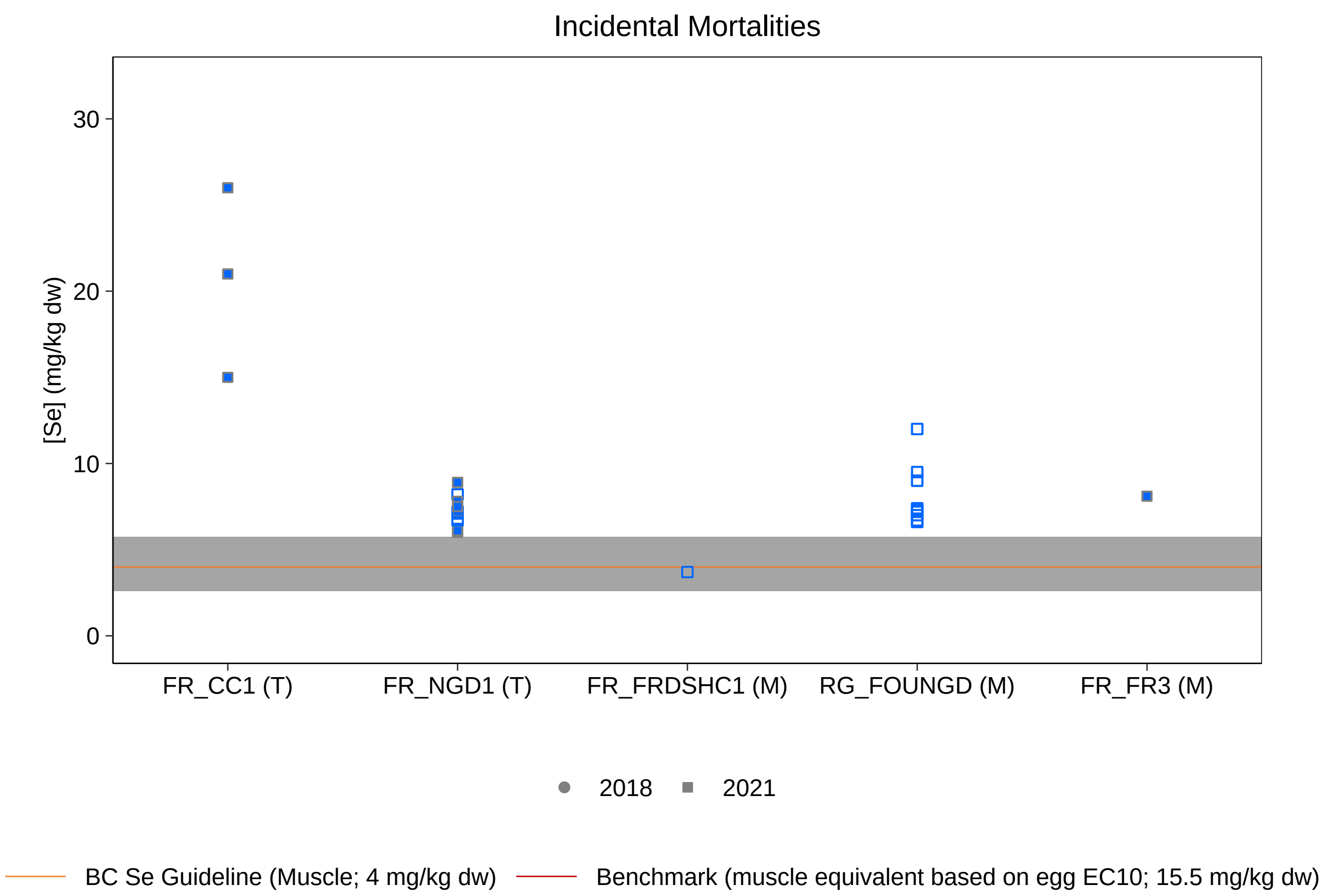


Figure 3.22: Westslope Cutthroat Trout Muscle Selenium Concentrations, FRO LAEMP, 2018 and 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Muscle samples are plotted with an filled sample and whole body samples are plotted with an open symbol. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. M = Mainstem, T = Tributary.

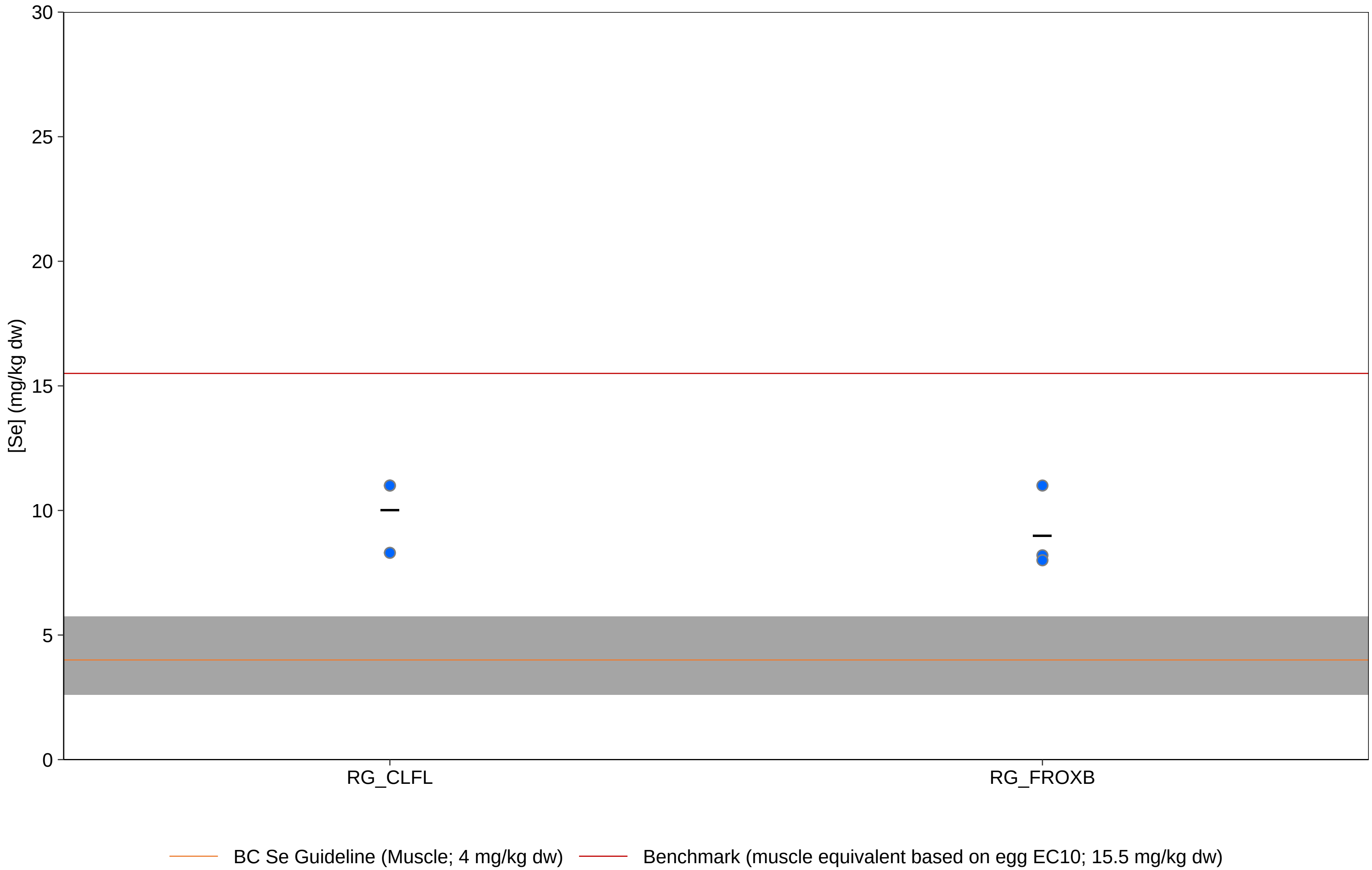


Figure 3.23: Selenium Concentration in Female West Slope Cutthroat Trout, Fording River, June 2021

Notes: Black horizontal bars indicate means. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP muscle selenium concentrations above the regional normal range and the B.C. selenium guideline, all samples were below the EVWQP WCT muscle-equivalent selenium benchmark (Figure 3.23).

3.6.2 Fish Condition Factor

Fish condition factor data will be interpreted to address Study Question #6 (see Section 4.6). Westslope Cutthroat Trout collected for tissue samples under the RAEMP, including ECCC requirements (see Section 3.6.1), were also assessed for meristics and anomalies (Appendix Tables I.1 and I.3). Of all the WCT captured within mine-exposed areas in the upper Fording River under the RAEMP in 2021 (22 total fish), only one fish at the Fording River S6 oxbow (RG_FROXB) had an anomaly (minor caudal fin erosion; Appendix Tables I.1 and I.3). Fulton's Condition Factor was calculated from meristics data for fish caught under the RAEMP, except for the fish caught for the ECCC requirement (Figure 3.24; Appendix Table I.1). Overall, fish condition was similar or higher at mine-exposed areas compared to reference areas (Figure 3.24; Appendix Table I.1). Anomalies and fish condition were not assessed for fish sampled opportunistically from incidental mortalities because of varying levels of deterioration when fish were found. Results of fish sampling in 2021 are summarized in this report as outlined in the 2021-2023 FRO LAEMP Study design. Additional alignment with Teck's regional fish monitoring framework approach will be further included in the 2022 FRO LAEMP reporting (including adjusting the assessment of fish condition to align with other fish monitoring programs).

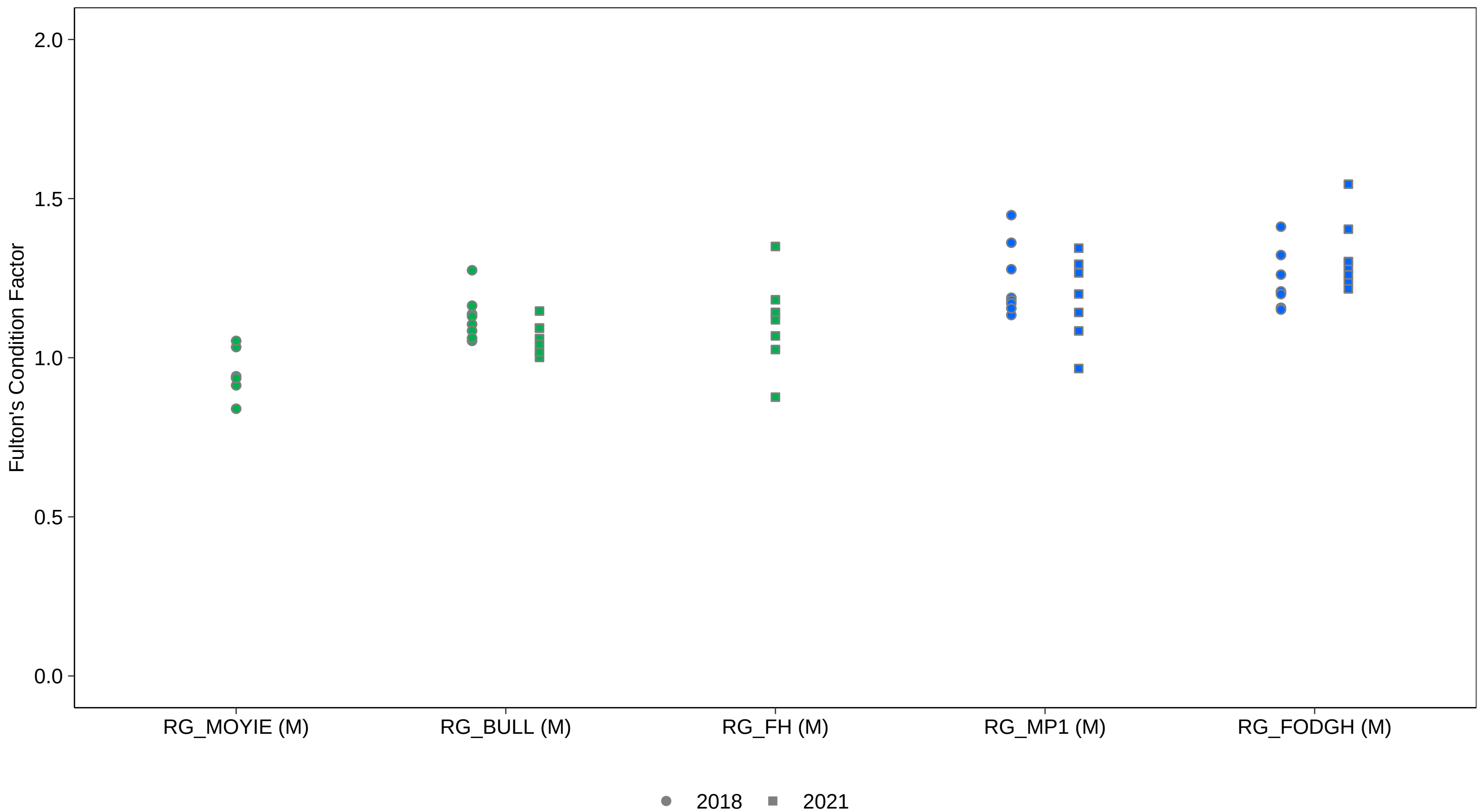


Figure 3.24: Westslope Cutthroat Trout Condition, FRO LAEMP, 2018 and 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. M = Mainstem, T = Tributary.

4 DATA EVALUATION AND DISCUSSION

4.1 Study Question #1

4.1.1 Overview

Study Question #1 (Are nitrate concentrations increasing in the study area changing and do they have the potential for adverse effects on biota?) was developed because the EVWQP Regional Water Quality Model (RWQM) projected increases in nitrate concentrations throughout the FRO LAEMP study area over time (Teck 2014). Previous FRO LAEMP reports have demonstrated that, contrary to original projections (Teck 2014), nitrate concentrations have not increased significantly over time, although they are greater than EVWQP effects benchmarks in some areas (Minnow and Lotic 2019b, 2020b, 2021b). While nitrate concentrations have been at levels that may lead to effects on BIC, other water quality constituents as well as site-specific habitat conditions are also likely contributing to variations in BIC throughout the study area (Minnow and Lotic 2019b, 2020b, 2021b). To address Study Question #1, aqueous nitrate concentration and BIC data were collected throughout the FRO LAEMP study area in 2021. In addition, chronic toxicity testing completed under the Chronic Toxicity Program (Golder 2022b) on water from several locations within the FRO LAEMP study area has been considered in the context of Study Question #1.

4.1.2 Nitrate Concentrations

Updated model projections in 2022 identified an increasing pattern in projected nitrate concentrations between 2014 and 2021 at both the former (FR_FRCP1) and current (FR_FRABCH) FRO Compliance Point but decreasing concentrations at the Fording River Order Station (GH_FR1; Figure 3.1; Golder 2022b). Measured nitrate concentrations were similar to model predictions throughout the study period, except for seasonally low flow periods in the late fall and winter months when concentrations were above predictions (Figure 3.1; Golder 2022a). Although nitrate concentrations have remained consistent with previous years at most areas monitored under the FRO LAEMP, several areas, particularly from the FRO-S AWTF outfall location upstream to the Multiplate culvert, have increased significantly relative to historical values.

4.1.3 Biota in Relation to Nitrate Concentrations

Nitrate concentrations in the FRO LAEMP study area have increased relative to previous years from the Multiplate Culvert (RG_MP1) downstream to upstream of Kilmarnock Creek (RG_FOUKI), downstream of the FRO-S AWTF outfall location (RG_SCOUTDS), and the monitoring area located upstream of Chauncey Creek (RG_F022). Abundance and richness values, however, were within site-specific and regional normal ranges and have not changed over time. Relative proportion endpoints (% EPT, % Ephemeroptera) that have historically been below normal ranges, especially in the lower study area, were unchanged relative to recent years at monitoring areas where nitrate has increased. A statistical comparison[20] of temporal changes in BIC endpoints with temporal changes in nitrate concentrations did not identify any consistent associations between changes in nitrate concentrations and changes in BIC metrics for individual biological monitoring areas; however, strong negative correlations between nitrate and % Ephemeroptera, Ephemeroptera abundance, and % EPT were identified. In addition, constrained ordinations have suggested that spatial variations in BIC are partially explained by a number of water quality constituents including nitrate, but a large amount of shared variation exists among water quality, habitat, and calcite that remains difficult to tease apart (see Section 4.5).

Nitrate concentrations were not directly associated with adverse effects to biota in 2021 chronic toxicity testing, except for one test on rainbow trout survival with a possible adverse effect in water from FR_FRCP1 (former FRO Compliance point); however, the result was potentially confounded by microbial contamination (Golder 2022a) and occurred with water collected in Q4, which is not a season associated with early life stages of WCT in the upper Fording River (Evaluation of Cause Team 2021). Nitrate concentrations in the study area, however, are high enough to cause toxicity in invertebrates based on the EVWQP effects benchmarks (Teck 2014) and thresholds identified in the literature. Mean nitrate concentrations in 2021 at areas (RG_SCOUTDS to RG_FOUEW) exhibiting lower % Ephemeroptera and % EPT ranged from 15.4 to 27.6 mg/L, while maximum concentrations ranged from 29.4 to 48.9 mg/L. The EVWQP Level 1 benchmark was exceeded in 54% to 100% of samples, and the Level 2 benchmark was exceeded in 31%[21] to 79% of samples collected between RG_SCOUTDS and RG_FOUEW, with the highest proportion of samples exceeding benchmarks in the lower study area, particularly at RG_FRUPO. Level 1 and Level 2 benchmarks correspond to approximately 10% and 20% response effects to sensitive aquatic invertebrates (water flea and amphipod; Golder 2014b); however, the EVWQP benchmarks were not developed using toxicity data for specific benthic invertebrate taxa (e.g., Ephemeroptera, Plecoptera, Trichoptera, Diptera) present and abundant in the FRO LAEMP study area, which makes direct comparisons to benchmarks difficult. Although adverse effects of water collected in the upper Fording River were identified with water fleas and amphipods, nitrate was never identified as a leading contributing factor (Golder 2022a).

[20] Temporal model was designed to detect concurrent changes between the nitrate concentrations and BIC endpoints at individual biological monitoring areas and across the study areas but was not correlative.

[21] RG_FRCP1SW had 0% of samples exceeding EVWQP Level 2 benchmarks but only two samples were taken at this area in 2021 and one was taken during peak freshet.

Moreover, although many Ephemeroptera families, including families Ephemerellidae and Heptagenidae, have demonstrated some sensitivity to nitrate (Beketov 2004), covariation with other water quality and habitat variables affecting BIC makes the effect of nitrate difficult to separate.

4.1.4 Summary

Overall, although nitrate concentrations have increased at some areas within the study area in previous years, these changes were not commensurate with changes in BIC community at individual study areas. Taken together, while nitrate should not be considered the sole cause of observed effects to BIC endpoints, evidence suggests that nitrate is contributing to variations in benthic invertebrate community structure within the study area, and sensitive taxa (i.e., Ephemeroptera and EPT endpoints) are the lowest in areas where nitrate concentrations are the highest, supporting a link between nitrate concentrations and BIC structure based on monitoring data. Chronic toxicity testing has not demonstrated a link between nitrate concentrations and adverse responses to fish endpoints, particularly during early life stages of WCT. Water treatment was commissioned in the study area at the end of 2021 with the intent of significantly reducing nitrate and selenium loads into the upper Fording River. Evaluation of BIC following an improvement in water quality, as well as the use of BIC predictive modelling tools currently being developed under the RAEMP (Minnow 2021) will aid in the interpretation of monitoring data to support answering Study Question #1.

4.2 Study Question #2 (Current Condition)

4.2.1 Overview

Study Question #2 (Is water treatment affecting biological productivity downstream in the Fording River?) was developed to understand how water treatment may affect biological productivity downstream of the FRO-S AWTF and FRO-N SRF outfall locations as a result of potentially increased phosphorus loads into the upper Fording River due to treatment processes. To address the study question, aqueous nutrient (total phosphorus and orthophosphate) concentrations and benthic invertebrate biomass and density data were collected within the study area. Benthic invertebrate biomass and density were utilized as the proxy for primary productivity because they are less variable compared to periphyton (Minnow 2018). Results from 2021 represent the conditions prior to commissioning.

4.2.2 Nutrient Concentrations and Benthic Invertebrate Biomass and Density

Measurements of productivity (nutrient concentrations and biological productivity) have been consistent over time in the study area prior to commissioning of the FRO-S AWTF and FRO-N SRF. Total phosphorus and orthophosphate concentrations were similar across years

(2012 to 2021) at all mine-exposed biological monitoring areas included in the FRO LAEMP, and no clear spatial patterns were identified. Benthic invertebrate biomass and density has remained consistent within each biological monitoring area throughout the study period (2017 to 2021 for most locations).

4.3 Study Question #3 (Current Condition)

4.3.1 Overview

Study Question #3 (Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent within predictions, and if not, why?) was developed to understand how FRO-S AWTF and FRO-N SRF commissioning and operation may affect benthic invertebrate tissue selenium concentrations downstream of water treatment. The FRO-S AWTF and the FRO-N SRF were designed to remove up to 50% and 26% of total selenium downstream in the Fording River, respectively (Teck 2019c; Teck 2022c), which should result in reduced tissue selenium concentrations downstream (Golder 2020a). Although the AWTF was designed to mitigate generation of reduced selenium with the addition of Advanced Oxidation Process to the treatment process (Teck 2019c; Teck 2022c), there remains a possibility that water treatment from both the FRO-S AWTF and the FRO-N SRF may increase concentrations of the more bioavailable selenium species. Study Question #3 was developed to assess changes in selenium concentrations downstream of treatment, and aqueous selenium (total selenium, dissolved selenium and speciated selenium) concentrations and composite-taxa benthic invertebrate tissue selenium data were collected pre-commissioning of the FRO AWTF- S and the FRO-N SRF.

4.3.2 Benthic Invertebrate Tissue Selenium Concentrations

Benthic invertebrate tissue selenium concentrations were highest in areas that had the highest aqueous total and reduced selenium concentrations. In particular, benthic invertebrate tissue samples from areas located directly downstream from the Swift-Cataract diversion had among the highest selenium concentrations in the study area, but concentrations decreased quickly with distance downstream. Water entering the Fording River through the diversion is influenced by Swift Ponds, and current understanding of selenium speciation in sedimentation ponds suggests that concentrations are the highest immediately downstream, but as smaller tributaries enter larger main stem areas, dilution occurs quickly and the spatial extent is small (ADEPT 2022). Water from the Swift-Cataract diversion, as well as Kilmarnock Creek, will be treated by the FRO-S AWTF, and is expected to result in decreases in both aqueous selenium and benthic invertebrate tissue selenium concentrations in 2022.

Benthic invertebrate tissue selenium concentrations were within the prediction limits of the selenium bioaccumulation model (Golder 2020a) throughout most of the study area in 2021, with the exception of five replicates from the Greenhouse Side Channel (RG_FRGHSC), two replicates from RG_FOBSC (downstream of the Swift-Cataract diversion, upstream of the old Cataract Creek channel), and one replicate from the Multiplate Culvert (RG_MP1). The five replicates above prediction limits at RG_FRGHSC were a result of the presence of annelid worms within the composite-taxa samples (i.e., common in the Greenhouse side-channel), as annelids have been identified as bioaccumulating more selenium than other taxa typically present in composite samples from lotic areas in the Elk River watershed (Luoma 2021). Annelids were present in seven of ten tissue samples (four in September and three in December) collected from RG_FRGHSC in 2021. The Greenhouse Side Channel is groundwater-fed with no upstream surface water connection to the Fording River, and has a semi-lentic habitat (i.e., slower flowing waters with relatively small substrate) known to be more favorable to annelids (Pan et al 2012) compared to the erosional habitat more typical to lotic areas within the FRO LAEMP study area. The two replicates (in September) above prediction limits at RG_FOBSC did not contain annelids and the B-tool, which predicts tissue selenium concentrations from concentrations of reduced aqueous selenium species, predicted lower tissue selenium concentrations than what was observed at RG_FOBSC in September 2021. This suggested aqueous reduced selenium concentrations may have had a limited role in concentrations observed in these replicates; however, selenium speciation can be temporally variable, so it is possible that the concurrent sampling did not reflect typical exposure conditions at that area. Nevertheless, most replicates from RG_FOBSC in 2021 and previous years have been within bioaccumulation model prediction limits and below EVWQP benchmarks. The single replicate (of fifteen replicates total for 2021) above the upper prediction limit at RG_MP1 in June 2021 was likely a result of natural variation in selenium concentrations, as total and reduced aqueous selenium concentrations were relatively low in this area of the Fording River and all other replicates from RG_MP1 were well below prediction limits and EVWQP benchmarks. The remaining 2021 samples throughout the FRO LAEMP study area were within prediction limits for the bioaccumulation model, and most were below EVWQP benchmarks.

4.3.3 Summary

Benthic invertebrate tissue selenium concentrations within the FRO LAEMP study area were as expected based on water chemistry in most areas in 2021, except in the Greenhouse Side Channel, downstream of the Swift-Cataract diversion, and the Multiplate Culvert. Elevated tissue selenium concentrations at RG_FRGHSC were explained by the presence of annelids in composite-taxa samples; however, the cause of elevated tissue selenium concentrations at RG_FOBSC and RG_MP1 are not clearly understood. Tissue selenium concentrations were highest at monitoring areas where total and bioavailable (reduced) selenium species were detected at the highest concentrations. Overall, few samples had selenium concentrations greater than EVWQP effects benchmarks in 2021. Future sampling will continue to monitor tissue selenium concentrations in the study area, and current data will be used as a basis for comparison post commissioning of the FRO AWTF- S in Q4 2021.

4.4 Study Question #4 (Current Condition)

4.4.1 Overview

Study Question #4 (How is temperature changing over time in the FRO LAEMP study area? 4a. Is water temperature measurably different (greater than 1 degree Celsius) downstream of the AWTF and/or SRF effluent discharge relative to the upstream baseline condition? 4b. If changes in water temperature are observed, are these changes attributed to mitigations (i.e., AWTF and/or SRF)? was developed to understand how water temperatures may change throughout the study area over time, particularly in relation to water treatment. To address the study question, continuous water temperature data has been collected at locations throughout the study area upstream and downstream of the FRO-S AWTF and FRO-N SRF outfall locations. Results from 2021 represent conditions prior to commissioning.

4.4.2 Water Temperature

Water temperature in the Fording River was similar to previous years and continued to be influenced by groundwater in the lower study area (i.e., downstream of the Greenhouse Side Channel [FR_FRRD] to upstream of the Porter Creek confluence [GH_PC2; SNC Lavalin 2021]), which led to higher temperatures compared to areas upstream in the winter (i.e., temperatures remained greater than zero), and lower compared to areas upstream in the summer. Water temperatures upstream (both the upper and middle study areas) have larger seasonal ranges as they have significantly less groundwater influences and are therefore largely affected by ambient temperatures. Temperature data gathered prior to treatment will be used as a basis for comparison following the commissioning of the FRO-S AWTF and FRO-N SRF and will also be used to track potential changes in temperature in the study area not related to treatment.

4.5 Study Question #5

4.5.1 Overview

Study Question #5 (What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP?) was developed to address variations in BIC observed throughout the FRO LAEMP study area (Minnow 2017a, Minnow and Lotic 2018, 2019b, 2020b, 2021b). Previous FRO LAEMP reports identified that decreases in % Ephemeroptera have not been associated with losses in taxa but a shift in community structure, whereby areas with low % Ephemeroptera compared to normal ranges have had correspondingly higher abundances of Plecoptera and Trichoptera, resulting in fewer effects on % EPT (Minnow and Lotic 2018, 2019b, 2020b, 2021b). Correlation analyses conducted in previous FRO LAEMP reports found that several water quality parameters correlated negatively with abundance and % Ephemeroptera and positively with % Plecoptera (Minnow and Lotic 2019b, 2020b, 2021b). Additional analyses (multivariate constrained ordinations) found significant covariation among habitat variables and water quality stressors, and after removing the variation in BIC shared by both habitat and water quality (i.e., the variation that could not be separated), the water stressors alone could not fully explain BIC differences among monitoring areas (Minnow and Lotic 2020b, 2021b).

Analysis and interpretation of data collected in 2021 has furthered the understanding of the BIC in the upper Fording River at monitoring areas included in the FRO LAEMP. Data has indicated that multiple factors are influencing the variation in BIC in the study area (i.e., changes in BIC are due to both mine-related water quality stressors and habitat differences among monitoring areas), and the variability attributed to each change throughout the study area but overall is difficult to separate based on current understanding, but interpretive ability may improve with the addition of treatment as well as the finalization of the BIC predictive models. Work to date has highlighted that the factors affecting the BIC vary depending on the location within the study area, and as such, each area (full and individual [upper, middle, and lower] study area, which were defined by spatial differences of habitat and water quality) were analyzed and discussed separately. The following sections interpret the BIC data as it relates to habitat and water quality in the study area.

4.5.2 Upper Study Area

The upper study area extends from downstream of the Henretta Creek confluence (RG_FODHE) to upstream of Shandley Creek and the South Tailings Pond (RG_FOUSH) and is generally characterized by steep gradients (Ecofish 2022) facilitating shallow, fast flowing water with relatively coarse substrate compared to other areas, resulting in a low proportion of benthic invertebrates that burrow in the substrate. Water temperatures in the upper study area are typically lower in the winter and higher in the summer compared to the lower study area as a result of the shallower water depths and minimal groundwater influence (SNC Lavalin 2021). Habitat characteristics in the upper study area help facilitate growth of periphyton and other autochthonous energy sources (Vannote et al. 1980; Cummins 2019) utilized by obligate and facultative scrapers such as Heptageniidae and Ephemerellidae (Cummins 2019) and supports the high abundance of these Ephemeropteran families and high autotrophic to heterotrophic index in the upper study area. Moreover, the relatively large substrate in the upper study area likely has a significant influence on BIC structure (Peckarsky 1979; Kaller and Harman 2003;

Leszczynska et al. 2017), potentially favoring Ephemeroptera. Recent drying surveys (see Section 3.2) have determined that the northern part of the upper study area is prone to seasonal drying, which may temporarily affect BIC through reduced habitat diversity (Dewson et al. 2007; Herbst et al. 2019).

Concentrations of mine-related water quality constituents are consistently lower throughout the upper study area compared to downstream study areas, but increase from upstream to downstream as additional mine inputs (e.g., Clode Creek, Grassy Creek, Lake Mountain Creek) are added to the system. Although concentrations of nitrate were frequently (13% to 78% of samples) above EVWQP benchmarks throughout the upper study area in 2021, concentrations of other Order constituents were infrequently (total selenium and sulphate) or never (dissolved cadmium) above EVWQP benchmarks. Comparison to EVWQP benchmarks helps identify potential responses of sensitive aquatic organisms (water flea and amphipod) to each benchmark threshold (e.g., Level 1 benchmark equates to a 10% response effect); however, the benchmarks have limitations as they were developed for organisms (water flea and amphipod) not related to benthic invertebrate taxa (e.g., Ephemeroptera, Plecoptera, Trichoptera, Diptera) present and abundant in the FRO LAEMP study area.

Benthic invertebrate communities, including % Ephemeroptera, in the upper study area have consistently been within both the site-specific and regional normal range with a few exceptions. Community shifts towards relatively low % EPT with subsequent increases in % Chironomids occurred at RG_FODHE (Fording River downstream of Henretta Creek) and RG_FOUSH (Fording River upstream of Shandley Creek) in 2019 and 2020; however, community structure returned to within historic levels in 2021 at both areas. The decreases in % EPT at RG_FODHE has likely been related to habitat changes associated with increased braiding following recent freshets (Minnow and Lotic 2021b), which has changed the channel making it shallower, more dispersed, and more prone to temperature swings (i.e., less thermal mass) compared to previous years, leading to changes in BIC (Dewson et al. 2007; Herbst et al. 2019). These habitat changes may have also influenced the duration and spatial extent of seasonal drying around RG_FODHE as the area was observed dry during December 2020 sampling, and the spatial extent of drying was larger in winter 2020/2021 compared to winter 2019/2020. Water chemistry at RG_FODHE has remained consistent throughout this period. The cause of reduced % EPT at RG_FOUSH during in 2019 and 2020 is currently unknown as habitat has remained relatively unchanged, and visual inspection of water chemistry data did not suggest changes in concentrations of key constituents in 2019 to 2021 compared to previous years. However, water chemistry data is limited to concurrent biological monitoring prior to 2020, except for 2018 when sampling was monthly.

4.5.3 Middle Study Area

The middle study area begins upstream of Kilmarnock Creek (RG_FOUKI) and extends downstream of the former FRO Compliance Point (RG_FRCP1SW). This area is generally characterized by shallower gradients (Ecofish 2022) facilitating more slow flowing and deeper water compared to the upper study area, which supports finer substrate and higher proportions of burrowing benthic invertebrates. The middle study areas, however, is also prone to extensive season drying, particularly between upstream of RG_FRCP1SW downstream to the Greenhouse Channel confluence, where river gradients become more level (Ecofish 2022) and subsurface flows (SNC Lavalin 2021) and braiding causes water depths to become shallow, particularly during low flow seasons. The upstream Side Channel #2 confluence with the Fording River begins in the lower extent of the middle study area and reconnects with the Fording River in the lower study area upstream of Porter Creek. It has habitat that transitions from relatively shallow riffle habitat that also dries seasonally to deeper waters and pools consistent with habitat in the lower study area. Like the upper study area, seasonal water temperatures in the middle study area fluctuate compared to the lower study area. Concentrations of mine-related water quality constituents (e.g., total selenium, sulphate, total nickel, dissolved cadmium) are the highest within the middle study area compared to the rest of the FRO LAEMP study area, particularly in the area downstream of the Swift-Cataract diversion (i.e., FRO-S AWTF outfall [uncommissioned in the present report]; Minnow and Lotic 2019b, 2020b).

Habitat and water quality vary considerably from upstream to downstream through the middle study area and are associated with gradual changes in BIC structure. Fewer differences in BIC structure among monitoring areas were observed in June compared to September, suggesting that effects of habitat and water quality on BIC differed by season. This was supported by more limited (fewer and weaker) significant effects of habitat and water chemistry on BIC in June compared to September identified in the CCA. In September, however, while abundance metrics (EPT, Ephemeroptera, Plecoptera, Trichoptera, Chironomidae) were within regional and site-specific (where available) normal ranges, % EPT was below the site-specific normal ranges through most of the middle study area. A spatial pattern of decreasing % Ephemeroptera, and to a lesser extent Ephemeroptera abundance, particularly families Heptageniidae and Ephemerellidae, from upstream to downstream was also identified, with values at the monitoring areas in the lower portion of the middle study area (i.e., RG_SCOUTDS, RG_FOBSC, RG_FOBCP, RG_FRCP1SW) below the site-specific normal ranges for % Ephemeroptera. Abundance and relative abundances of Plecoptera, on the other hand, followed an opposite spatial pattern, with the lowest values observed in the upper portion of the middle study area, and the highest values observed in the lower portion of the middle study area.

While a single cause of the shift in community within the middle study area cannot clearly be identified, changes in riverbed topography coupled with higher concentrations of mine-related constituents are likely influencing BIC structure, particularly in the areas downstream of the FRO-S AWTF outfall location (RG_SCOUTDS). Both water quality and habitat variables influenced the separation of monitoring areas between the FRO-S AWTF outfall (RG_SCOUTDS) and the lower extent of the middle study area (RG_FRCP1SW) from upstream areas in the CCA. Changes in topography can influence habitat variables such as water depth and velocity, substrate size, and station gradients, all of which have been identified as contributing significantly to BIC variation within the middle study area, which is consistent with other studies (Dewson et al. 2007; Kuchapski and Rasmussen 2015; Alvarez-Cabria et al. 2017; Leszczynska et al. 2017; Herbst et al. 2019). In addition, concentrations of mine-related constituents (e.g., nitrate, selenium, sulphate, total nickel) have historically been elevated relative to EVWQP benchmarks (and interim screening values for nickel; Teck 2017) in areas downstream of the future FRO-S AWTF outfall location (RG_SCOUTDS) as a result of inputs from Cataract Creek and from the Fording River upstream. These constituents and others (nitrate, sulphate, total selenium, total uranium, and dissolved cadmium) have also been identified as correlating significantly with key BIC endpoints and may be contributing to BIC variation within the middle study area. In particular, Ephemeroptera families present in the middle study area (Heptageniidae and Ephemerellidae) are known to be sensitive to anthropogenic contamination, including metals (Clements et al. 2000; Clements 2004; Pond et al. 2008; Cormier et al. 2013). Plecopterans tended to be more abundant in the middle study area and may be more tolerant to elevated concentrations of mine-related water quality constituents than Ephemeropterans (Clements 1999; Clements 2004; Boehme et al. 20016) and have a preference for the smaller substrate (Peckarsky 1979) in the middle study area, particularly downstream of the former Compliance Point (RG_FRCP1SW). Moreover, the highly abundant and predaceous stonefly family Perlodidae may opportunistically consume Ephemeroptera in these areas, contributing to the lower abundance of Ephemeroptera (Peckarsky 1979; Kiffney 1996; Cummins 2019). Overall, consistent with results from previous FRO LAEMP reports, both habitat variables and water chemistry have been identified as important contributors to BIC variation in the middle study area, indicating that no one single causal factor is responsible for observed effects on BIC in this area.

4.5.4 Lower Study Area

The lower study area begins downstream of the Greenhouse Side Channel (upstream of Porter Creek; RG_FRUPO) and extends downstream to Ewin Creek (RG_FOUEW) in the Fording River and has habitat characteristics markedly different from the upper and middle study areas. Most of the lower study area (areas upstream of Chauncey Creek) is influenced by the Chauncey Creek alluvial fan, and is characterized by slow flowing, deep water, and small substrate as a result of an upward sloping riverbed gradient at the confluence of Chauncey Creek in the Fording River, slowing water down and allowing for more deposition upstream (Ecofish 2022). As a result, the habitat conditions within the lower study area support a different BIC structure with a higher proportion of sprawlers compared to upstream study areas. These areas also tend to have more allochthonous food sources (i.e., leaves, woody debris, particulate organic matter from upstream) ideal for shredders common to Plecopteran families (Cummins 2019). The lower study area is also characterized by water temperatures that have smaller seasonal fluctuations that typically result from ambient cold and warm temperatures in the winter and summer, respectively, leading to a distinct temperature regime compared to the upper and middle study areas. These unique water temperatures are a result of groundwater influences (SNC Lavalin 2021) and overall water depths of the lower study area. Groundwater influences in the lower study area (SNC Lavalin 2021) have consistently maintained warmer (up to 4°C) winter water temperatures and cooler summer temperatures compared to areas upstream.

Abundance endpoints (EPT, Ephemeroptera, Trichoptera, Chironomidae) were within the site-specific (where available) and/or regional normal range throughout the lower study area; however, the relative abundances of EPT and Ephemeroptera remained below the site-specific and/or the regional normal range in September, while abundances and relative abundances of Plecoptera were high (Minnow 2017a, Minnow and Lotic 2018, Minnow and Lotic 2019b, 2020b, 2021b). High relative abundances of the riffle beetle from the family Elmidae have also consistently been elevated in the lower study area compared to areas upstream (Minnow and Lotic 2019b, 2020b, 2021b). Low % Ephemeroptera in the study area was related to lower abundances of two Ephemeroptera families, Heptageniidae and Ephemerellidae, compared to other areas within the FRO LAEMP study area, particularly in September (Minnow and Lotic 2020b, 2021b).

There are a number of factors that may be contributing to the different BIC structure in the lower study area. Relatively cool waters throughout the summer in the lower study compared to the upper and middle study areas may hinder an abundant Ephemeroptera community, as many species have a preference for warmer summer temperature (Brittain and Saltveit 1989; Pritchard et al. 1996; Haidekker and Hering 2008). Plecopterans tend to prefer cooler summer temperatures and warmer winter temperatures such as those observed in the lower study area (Haidekker and Hering 2008). In addition, the two families of Ephemeroptera showing a decline in the lower study area are particularly sensitive to high concentrations of metals (Clements et al. 2000; Clements 2004; Pond et al. 2008) and nitrate (Beketov 2004). Similar to the middle study area, elevated concentrations of mine-related constituents, especially nitrate in this area, are potentially influencing BIC structure. Ephemeroptera in particular are known to be sensitive to nitrate, and % Ephemeroptera and Ephemeroptera abundance correlate negatively with concentrations of nitrate. Plecopterans, however, seem to be less sensitive to elevated concentrations of mine-related constituents (Clements 1999; Clements 2004; Boehme et al. 2016), so, coupled with favorable habitat conditions (e.g., smaller substrate, deeper water, cooler summer temperatures, warmer winter temperatures; Peckarsky 1979, Haidekker and Hering 2008), may be better suited to thrive in the lower study area. In addition, of the Plecoptera community in the lower study area, a large proportion are from the family Perlodidae. Family Perlodidae is primarily composed of obligate predators that prey on the smaller Ephemeropterans (Cummins 2019); this dynamic may also be contributing to lower Ephemeroptera abundance in the lower study (Peckarsky 1979; Kiffney 1996; Clements 1999).

Together, water chemistry, habitat, and predator-prey dynamics are likely simultaneously suppressing populations of Ephemeroptera but increasing Plecoptera populations in the lower study area. Especially in the lower study area, covariability between mine-related water quality constituents and habitat variables continues to make it difficult to separate the individual contributions of factors affecting BIC variation.

4.5.5 Full Study Area

The full study area encompasses the simultaneous effects of changes to habitat and water quality on BIC structure observed from upstream to downstream throughout the FRO LAEMP study area and described above for individual study areas. Overall, larger data gradients for BIC endpoints and habitat and water quality variables in the full study area resulted in more significant and strong correlations and effects on BIC variation in the CCA when compared with individual study areas. In the CCA, almost every habitat and water quality variable effected BIC variation and was likely related to higher relative abundances of Ephemeroptera in upstream portions of the FRO LAEMP study area and higher relative abundances of Plecoptera in lower portions. This result highlighted the difficulty in separating the individual contributions of important variables on BIC structure over a large habitat and water quality gradient. Results from chronic toxicity testing at various locations throughout the study area have demonstrated adverse effects of water chemistry on water flea reproduction and amphipod dry weights, particularly during lower flow seasons, with nickel concentrations showing the greatest evidence as a potential contributor to effects (Golder 2022b); however, these tests do not consider habitat variables or community dynamics within the study area, nor are they conducted on benthic invertebrate taxa (e.g., Ephemeroptera, Plecoptera, Trichoptera, Diptera) present and abundant in the FRO LAEMP study area.

4.5.6 Summary

It is clear through the evaluation of the BIC data in the FRO LAEMP study area that both habitat and water quality factors are affecting variation in BIC communities, and although it remains difficult to separate the effect of individual contributions of each variable to the observed effects on BIC, the weight of evidence suggests that the key factors influencing shifts in BIC in the middle and lower study areas are elevated nitrate concentrations (middle and lower study area) and total nickel concentrations (middle study area), changes in substrate size and station gradient related to the Chauncey Creek alluvial fan (lower study area), and seasonal differences in water temperature and other habitat variables related to groundwater influence among areas. Abundance metrics (total, EPT, Ephemeroptera, Plecoptera, Trichoptera, Chironomidae) were within the normal ranges and have remained consisted over time. Percent EPT was below the site-specific normal ranges throughout the middle and lower study areas, while % Ephemeroptera exhibited a decreasing spatial pattern from upstream to downstream, with values within the normal ranges in the upper study area, below the site-specific normal ranges but within the regional normal range for most of the middle study area, and below both the site-specific and regional normal ranges in the lower study area. Several key habitat variables were identified as significantly contributing to the variation in BIC, including water velocity, water depth, water temperature, substrate size, embeddedness, station gradient, watershed slope, and watershed area. Variations in these habitat characteristics were apparent from upstream to downstream and occurred simultaneous with increases in the aqueous concentrations of mine-related constituents, making it difficult to identify the contribution of individual variables to the variation in BIC. Benthic invertebrate communities in the middle study area are simultaneously impacted by concentrations of mine-related constituents as well as dynamic changes in water flow related to subsurface flow and riverbed gradients that effect habitat characteristics, especially at and downstream from the former Compliance point (associated with RG_FOBCP). The lower study area is also largely affected by riverbed gradients that affect habitat characteristics (water depth, velocity, temperature, station gradient, watershed slope, substrate size), which, together with elevated levels of mine-related constituents, influence BIC. Specifically, from RG_FOBCP downstream to the lower extent of the full study area, low abundances and relative abundance of Ephemeroptera corresponded with high abundances and relative abundances of Plecoptera, which was a result of habitat preferences, potential water quality tolerance, and potential predator-prey dynamics. Continued evaluation of BIC following an improvement in water quality related to the commissioning of the FRO-S AWTF, as well as the use of BIC predictive modelling tools currently being developed under the RAEMP (Minnow 2021a) will aid in the interpretation of monitoring data to support answering Study Question #5.

4.6 Study Question #6

4.6.1 Overview

Study Question #6 (What are the factors influencing fish health and population in the upper Fording River?) was added to the FRO LAEMP in 2021 as a way to summarize key findings collected under different fish monitoring programs in response to the observation of a significant decline in the upper Fording River WCT population in 2019 compared to population estimates from 2017. Following the detailed Evaluation of Cause, the decline was attributed to an "interaction of extreme ice conditions (due to extreme, prolonged, cold air, temperatures; seasonal, winter low flows, and lower winter snowpack), sparse overwintering habitats, and restrictive fish passage conditions during the preceding migration period in fall 2019" (Evaluation of Cause Team 2021). To address Study Question #6, key findings from fish studies in the upper Fording River (i.e., UFR WCT Population Monitoring Program, FRO-S AWTF Flow Related Monitoring and Assessment Plan) were summarized, as applicable, with relevant data (seasonal drying, benthic invertebrate tissue chemistry, and water chemistry) from the FRO LAEMP and the RAEMP (WCT muscle selenium concentrations, condition factor, and observations of external anomalies) to bring together a summary of WCT monitoring data within the FRO LAEMP study area.

4.6.2 WCT Monitoring Data

Routine monitoring under the RAEMP evaluates fish health in the upper Fording River on a three-year cycle. Westslope Cutthroat Trout health endpoints assessed under the RAEMP included tissue selenium concentration, external anomalies such as deformities, erosions, lesions, tumours, injuries, infections, and/or parasites, and Fulton's condition factor as a general measure of fitness.

Measurement of selenium in eggs or ripening ovaries is the most direct way to evaluate potential effects of selenium on fish reproduction compared to measurement of selenium in water or other tissue types (Janz et al. 2010; Golder 2014; USEPA 2016). For this reason, a site-specific benchmark was derived based on the EC10 for fish egg/ovary concentrations (25 mg/kg dw; Nautilus and Interior Reforestation, 2011). Non-lethal expression of eggs is not always possible, therefore, monitoring of selenium in fish has often involved non-lethal collection of muscle plugs for selenium analysis and compared to the site-specific benchmark converted to a muscle-equivalent based on the muscle:egg selenium concentration ratio of 1:1.6 in WCT (Nautilus and Interior Reforestation 2011). Typically, non-lethal muscle sampling is conducted during the same timeframe just prior to spawning, however, a comparison of WCT muscle selenium concentrations from May (i.e., prior to spawning) and late August/September (i.e., post-spawning) in 2015 under the RAEMP showed no differences among seasons (Minnow 2018a).

In 2021, WCT were sampled (non-lethal muscle plug) prior to spawning in the upper (Clode Flats [RG_CLFL]) and lower (Fording River Oxbow S6 [RG_FROXB]) parts of the upper Fording River in accordance with direction from ECCC under the RAEMP (Minnow 2021, Minnow 2022). All tissue selenium concentrations (8.2 to 11 mg/kg dw) of pre-spawning WCT were below the site-specific benchmark (15.5 mg/kg dw) indicating low potential risk of effects to WCT egg and embryo development.

Selenium concentrations in muscle samples from WCT captured at mine exposed areas for the RAEMP at the Multiplate culvert (RG_MP1) and the Fording River between Chauncey Creek and Greenhills Creek (RG_FODGH) in 2018 and 2021 were consistently below (4.7 to 12 mg/kg dw) the EVWQP benchmark (15.5 mg/kg dw; muscle equivalent based on egg EC10; Nautilus and Interior Reforestation 2011), except for one replicate at RG_MP1 (29 mg/kg dw) in 2021. The cause of the elevated tissue selenium concentrations in the replicate at the Multiplate culvert is unknown (i.e., selenium concentrations in water and benthic invertebrate tissue could not explain the elevated selenium concentration in fish muscle) but could be a result of fish migration from an area having higher selenium concentrations.

Incidental mortalities of Westslope Cutthroat Trout found during routine monitoring or fish salvage programs within the FRO LAEMP study area in 2021 were opportunistically sampled. If fish were in good condition, dorsal muscle or whole-body tissue was analyzed for selenium concentrations. Fish sampled from incidental mortalities generally had tissue selenium concentrations similar to or less than those sampled under the RAEMP, except for three fish from Clode Creek with selenium concentrations ranging from 15 to 26 mg/kg dw. The WCT sampled from Clode Creek were associated with mortalities occurring during a fish salvage immediately downstream of the Clode Sedimentation Pond. Aqueous concentrations of mine-related constituents (including selenite and methylseleninic acid) are elevated in Clode Creek, and selenium concentrations in benthic invertebrate tissue samples ranged from 13 to 25 µg/g dw in September 2021 (Minnow 2022).

Westslope Cutthroat Trout caught for the RAEMP in June and September were assessed for external anomalies. No anomalies were observed in WCT caught at mine-exposed areas (RG_MP1 and RG_FODGH) in September 2021, while one fish caught in June had minor caudal fin erosion; however, caudal fin erosion can naturally occur with fish as a result of physical trauma and is not likely a mine effect. Overall, only one of twenty-two WCT captured in mine-exposed areas had anomalies in 2021, suggesting good overall health.

Fish condition factor in WCT captured under the RAEMP indicated that fish in the upper Fording River were in good health (condition factor was similar to or higher than in fish from reference areas). Similar results were observed in the UFR WCT Population Monitoring study, which indicated body condition "has been near or above average in the past three years of monitoring" but that increases in body condition may be associated with less density dependent pressure on fish (Thorley et al. 2022 in preparation).

Chronic toxicity of water collected from stations throughout the upper Fording River indicated that concentrations of mine-related constituents were unlikely to cause toxicity to fish. No adverse effects were observed for rainbow trout survival, viability, length, and weight in Q2 or Q4 with water from all stations in the upper Fording River (Golder 2022a), with one exception for survival in water in Q4 from the former Compliance point (FR_FRCP1). Further assessments determined that the possible adverse effect may have been a result of nitrate concentrations; however, results may have been confounded by microbial contamination. No adverse effects were observed for fathead minnow hatch, survival, biomass, length, or development in Q3, and while there were likely adverse effects to fathead minnow survival in water from FR_F2 and FR_FRCP1 in Q1, no water quality constituent was associated with these effects. Adverse effects to both rainbow trout and fathead minnow were only observed in Q1 and Q4 which do not align with seasons when WCT early life stages are expected to be present in the upper Fording River (Evaluation of Cause Team 2021). Chronic toxicity testing was conducted on 30-d early life stage rainbow trout and fathead minnow, and observed adverse effects are not expected to translate to other life stages present during Q1 and Q4.

4.6.3 Fish Population

Since the WCT population decline in 2019, additional work has been completed to identify the key fish population metrics that should be quantified for the UFR WCT population monitoring design. A regional approach to fish population monitoring has been designed to answer 14 secondary questions to guide monitoring approach, provide inter-watershed consistency, and improve interpretation of population dynamics to guide recovery efforts. Detailed approaches and 2021 results will be reported in detail in the 2021 UFR WCT Population Report and UFR Population Study Design (Thorley et al. 2022 in preparation).

In the two years of focused monitoring since the decrease in subadult and adult abundance, (sub)adult populations of WCT have increased at a rate of about 125% per year, and data suggests densities of (sub)adult populations may have increased locally as a result of habitat offsetting measures to improve degraded habitat from mining operations (Thorley et al. 2022 in preparation). "Overall, the available fish monitoring data is consistent with a relatively large, diverse, productive population of genetically pure WCT with a range that currently includes about

52 km of the mainstem upper Fording River and 36 km of connected tributaries" (Thorley et al. 2022 in preparation).

Fish abundance and distribution monitoring was completed for the FRO-S AWTF Flow Related Monitoring and Assessment Plan (Suzanne et al. 2021) from September 2021 until April 2022. The objective of the surveys was to monitor whether FRO-S AWTF operations cause fish to hold or aggregate in the vicinity of the AWTF outfall during the fall or overwintering period to support assessment of the potential for the FRO-S AWTF to adversely affect fish due to alterations to fish behaviour. Results of surveys in 2021 will be reported in the FRO-S AWTF Flow Related Monitoring and Assessment Plan annual report and summarized in the 2022 FRO LAEMP report.

The Evaluation of Cause determined that sparse overwintering habitats combined with restrictive fish passage from seasonal drying and extreme ice conditions were the primary reasons for WCT population declines (Evaluation of Cause Team 2021). Primary overwintering habitats have been identified as the pools around the Greenhills confluence with the Fording River, Segment 6 pools upstream of Chauncey Creek, the Multiplate culvert/Clode Flats area and Henretta Lake, although fish may overwinter in other areas as well (Cope et al. 2016). As such, monthly drying surveys are being used to identify potential limitations to fish migration, particularly during fall migration to overwintering habitat in September and October (Cope et al. 2016). Drying survey results indicated that drying in the southern survey area disconnected the Fording River in the third week of December in 2021. In the northern survey drying occurred in early October in 2021, which may have impacted overwintering migration in that section of the upper Fording River.

4.6.4 Summary

Westslope Cutthroat Trout in the FRO LAEMP study area were in good condition and had a general absence of external anomalies based on the 2021 fishing efforts under the RAEMP. Data on anomalies from the UFR Population study in 2021 are being compiled and will be incorporated into future FRO LAEMP reports. Muscle selenium concentrations were lower than the site-specific effects benchmark for WCT in all fish caught in the Fording River mainstem in 2021 except one (i.e., at the Multiplate culvert) and concentrations were consistent with previous years. Fish sampled opportunistically from Clode Creek, which received mine-influenced water from Clode Sedimentation Ponds, however, did have higher muscle selenium concentrations compared to other areas. Drying in the study area has varied spatially and temporally but annual drying usually occurs in the northern and southern drying sections between early October and late December each year, respectively, and may represent barriers to fish migration to key overwintering areas in the northern survey area. The WCT population appears to be recovering rapidly from the steep population decline in winter 2018/2019 and annual population monitoring will continue to track recovery. .

5 CONCLUSIONS

The current report represents pre-commissioning (existing) conditions within the FRO LAEMP study area[22]. Data was collected in 2021 to assess current productivity and water temperature conditions prior to commissioning (Study Questions #2 and #4), and to evaluate study questions related to nitrate concentrations (Study Question #1), benthic invertebrate tissue selenium concentrations (Study Question #3), variability in BIC (Study Question #5), and WCT health and population (Study Question #6; Table 5.1).

Nitrate concentrations in the FRO LAEMP study area have increased at some areas compared to previous years, but these changes have not been commensurate with changes in BIC community. Results have indicted that nitrate concentrations are strongly associated with patterns in BIC endpoints in general, but the individual contribution of nitrate to the observed effects in BIC (i.e., Ephemeroptera and Plecoptera endpoints) continues to be confounded by the covariation of nitrate concentrations with other mine-related constituents and habitat variables within the FRO LAEMP study area.

Benthic invertebrate tissue selenium concentrations were highest in areas where aqueous total and reduced selenium concentrations were elevated. Most benthic invertebrate tissue samples taken in 2021 were within prediction limits of the selenium bioaccumulation model and the majority of samples above predictions (i.e., in the Greenhouse Side Channel) contained annelids. Of the few samples above predictions that could not be explained by sample composition, the cause could not be conclusively determined (i.e., selenium speciation did not explain the variation)

Spatial decreases in % Ephemeroptera from upstream to downstream, between downstream of the historical Cataract Creek confluence and upstream of Ewin Creek, were commensurate with increases in abundance and relative abundance of Plecoptera. The gradual shift in community structure throughout the middle study area and continuing downstream to Ewin Creek in the lower study area can be attributed in part to simultaneous increases in water quality from upstream to downstream (with a peak for most constituents in the middle study area), but habitat variation within the study area also plays an important role in the BIC structure. This was especially apparent in the shift from a river dominated by Ephemeroptera to a river dominated by Plecoptera, which was likely related to gradient and habitat (water velocity and depths, substrate size, seasonal differences in water temperature) changes associated with the Chauncey Creek alluvial fan in the lower study area. The weight of evidence suggests that the key factors influencing shifts in BIC in the middle and lower study areas are elevated nitrate concentrations (middle and

[22] The FRO-S AWTF was commissioned in December 2021, so the current report summarizes the final year of baseline data prior to commissioning. The FRO-N SRF is scheduled to be commissioned in Q4 2022.

Table 5.1: Summary of Results (Study Questions #1, #3, #5, and #6), FRO LAEMP, 2021

Evaluation	Assessment Endpoint	Indicator Type	Measurement Endpoint	Evaluation Criteria	Results	Conclusion
Are nitrate concentrations in the study area changing and do they have the potential for adverse effects on biota?	Benthic invertebrate abundance and assemblage	Direct	Benthic invertebrate community (BIC) endpoints	Benthic invertebrate community relative to nitrate concentrations in the upper Fording River	BIC endpoints did not change concurrently with changes in nitrate concentrations when analyzed with a temporal trend model designed to detect concurrent changes between the two measures. Strong negative correlations of key BIC endpoints (% and abundance of Ephemeroptera, residuals of % Ephemeroptera) occurred with nitrate; however, significant covariation among water quality constituents and habitat variables make the effects of nitrate concentrations on BIC hard to elucidate.	Nitrate concentrations have increased over time in parts of the FRO LAEMP study area, and were higher than EVWQP benchmarks in most areas where %Ephemeroptera was below normal ranges; however, temporal increase in nitrate have not been observed in in areas with decteasing trends in BIC endpoints. Nitrate concentrations likely contribute to observed BIC variation but is not the only factor. Covariation among water quality and habitat variables makes contributions from nitrate alone difficult to determine.
		Semi-indirect	Chronic Toxicity Testing	*Ceriodaphnia dubia, Hyalella azteca, Oncorhynchus mykiss,* and *Pimephales promelas* relative to water samples at FR_MULTIPLATE, FR_FR2, FR_FR4, the former Compliance Point (FR_FRCP1), FR_FRRD, and the current Compliance Point (FR_FRABCH).	Chronic toxicity tests only identified nitrate as causing possible adverse effects to Rainbow Trout survival in Q4 at the former Compliance Point (FR_FRCP1) but results were confounded by microbial contamination.	
		Indirect	Surface water nitrate concentrations	Evaluate nitrate concentrations relative to predictions in the EVWQP, benchmarks, and past observations	Nitrate concentrations were consistent with predictions from EVWQP modelling and updated models show increasing concentrations since 2014 at both the former (FR_FRCP1) and current (FR_FRABCH) Compliance points but decreasing concentrations at the Fording River Order Station (GH_FR1). Nitrate concentrations were higher than EVWQP benchmark(s) at most mine-exposed areas.	
Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent with predictions, and if not, why?	Benthic invertebrate tissue selenium concentrations	Direct	Benthic invertebrate tissue selenium concentrations	Benthic Invertebrate tissue selenium concentrations relative to selenium bioaccumulation model predictions	Tissue selenium concentrations were above the prediction limits of the selenium bioaccumulation model in five replicates from the Greenhouse Side Channel (RG_FRGHSC), two replicates from RG_FOBSC, and one replicate from RG_MP1	Benthic invertebrate tissue selenium concentrations were above predictions in the Greenhouse Side Channel (RG_FRGHSC) because the composite-taxa samples contained annelids. Replicate samples at RG_FOBSC (two of fifteen replicates) and RG_MP1 (one of nine) were also greater than predictions but the cause could not be attributed to composition of the sample or selenium speciation.
		Indirect	Aqueous total and reduced selenium concentrations	Benthic Invertebrate tissue selenium concentrations relative to selenium Bioaccumulation Tool (B-tool) predictions	Benthic invertebrate tissue selenium concentrations that were above predictions from the selenium bioaccumulation model could not be explained by the B-tool (i.e., selenium speciation), as B-tool predicted benthic invertebrate tissue selenium concentrations were lower than those measured.	
What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?	Benthic invertebrate abundance and assemblage	Direct	Benthic invertebrate community endpoints (abundance, richness [LPL taxonomy], percent [%] and total abundance of Ephemeroptera-Plecoptera-Trichoptera [EPT], Ephemeroptera, Plecoptera, Trichoptera, and Chironomidae, total abundance of key Ephemeroptera families [Baetidae, Heptageniidaie, Ephemerellidae])	Spatial and temporal comparisons to site-specific and regional normal ranges for September, and seasonal assessments for June, September, and December.	% Ephemeroptera was below the regional normal range from RG_FOBCP downstream to RG_FOUEW, and below the site-specific normal range from RG_SCOUTDS downstream to RG_FOUEW. Ephemeroptera abundance was within the regional normal range throughout the study area, but a decrease from upstream to downstream was observed which was driven by decreases in families Heptageniidae and Ephemerellidae, similar to previous years. Plecoptera (% and abundance) was higher where Ephemeroptera was low, keeping % EPT within regional normal ranges but below site-specific normal ranges at most monitoring areas. Downstream areas having low % Ephemeroptera were dominated by two Plectoptera families (Perlodidae and Nemouridae) in September.	Consistent with previous years, % Ephemeroptera was below normal ranges in the lower study area as a result of lower abundances of Heptageniidae and Ephemerillidae families. Gradual shifts from Ephemeroptera dominated communities to ones having high abundances and relative abundances of Plecoptera begin in the mid-portion of the middle study area (i.e., downstream of the FRO AWTF-S outfall location) and continue downstream to Ewin Creek. These shifts in community were associated with simultaneous changes in habitat and water quality, which was supported by correlations and constrained multivariate ordination (CCA) as well as the literature.
			Benthic invertebrate community feeding and habitat indices	Spatial and temporal comparisons to site-specific and regional normal ranges for September, and seasonal assessments for June, September, and December.	Benthic invertebrate community feeding and habitat index patterns were not consistent with patterns of high and low % Ephemeroptera but helped explain differences in BIC as a result of habitat differences throughout the study area.	
			Community Composition	Correspondence analysis (CA) to assess difference in community structure among areas from 2012 to 2021.	Similar to previous years, CA1 identified a clear difference in community composition in areas experiencing low % Ephemeroptera related to higher proportions of taxa other than Ephemeroptera (e.g., Elmidae, Limnephilidae, Glossosomatidae, Tipulidae, and Capniidae). CA2 separated reference from mine-exposed areas.	

Note: NR = Normal Range. BIC = Benthic Invertebrate Community. CA = Correspondence Analysis. CI = Calcite Index. EPT = Ephemeroptera,-Plecoptera-Trichoptera. EVWQP = Elk Valley Water Quality Plan. FRO = Fording River Operations. LPL = Lowest Practical Level. PCA = Principal Component Analysis. TDS = Total Dissolved Solids. CCA = canonical correspondence analysis. WCT = Westslope Cutthroat Trout.
Study Questions #2 and #4 were not included in the summary table because the FRO AWTF-S was not commissioned in 2021.

Table 5.1: Summary of Results (Study Questions #1, #3, #5, and #6), FRO LAEMP, 2021

Evaluation	Assessment Endpoint	Indicator Type	Measurement Endpoint	Evaluation Criteria	Results	Conclusion
What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?	Benthic invertebrate abundance and assemblage	Semi-indirect	Chronic Toxicity Testing	*Ceriodaphnia dubia, Hyalella azteca, Oncorhynchus mykiss,* and *Pimephales promelas* relative to water samples at FR_MULTIPLATE, FR_FR2, FR_FR4, the former Compliance Point (FR_FRCP1), FR_FRRD, and the current Compliance Point (FR_FRABCH).	Chronic toxicity tests identified nickel as causing possible or likely adverse effects to *C. dubia* reproduction and *H. azteca* dry weight at several station in the study area, mostly in low flow seasons (Q3 and Q4).	Consistent with previous years, % Ephemeroptera was below normal ranges in the lower study area as a result of lower abundances of Heptageniidae and Ephemerillidae families. Gradual shifts from Ephemeroptera dominated communities to ones having high abundances and relative abundances of Plecoptera begin in the mid-portion of the middle study area (i.e., downstream of the FRO AWTF-S outfall location) and continue downstream to Ewin Creek. These shifts in community were associated with simultaneous changes in habitat and water quality, which was supported by correlations and multivariate analyses (CCA) as well as the literature.
		Indirect	Tissue selenium concentrations	Concentrations relative to normal ranges, EVWQP effect benchmarks, past observations, and models.	Most benthic invertebrate tissue samples were below regional normal ranges and EVWQP benchmarks in June and December. Four of five benthic invertebrate tissue samples were above EVWQP benchmarks in the Greenhouse Side Channel (RG_FRGHSC) and the area upstream of the old Cataract Creek channel and downstream of the future FRO AWTF-S outfall location (RG_FOBSC), but all four samples taken within the Greenhouse Side Channel contained annelids, which disproportionately bioaccumulate selenium.	
			Surface water chemistry	Concentrations of mine-related constituents relative to EVWQP effect benchmarks, interim screening values, and past observations.	Concentrations of water quality constituents were highest in winter months. Nitrate concentrations exceeded Level 2 benchmark at most stations in the study area and have increased from FR_MULTIPLATE downstream to FR_SCOUTDS, relative to historical values. Sulphate concentrations were above the EVWQP Level 1 benchmark from FR_FRABEC1 downstream to FR_FRRD. Total selenium was above the Level 1 benchmark at all stations downstream of FR_FR1. Total nickel was above the Level 1 interim screening value from FR_FRABEC1 downstream to FR_FRRD. Total dissolved solids were above the Level 1 screening value at FR_SCOUTDS downstream to GH_PC2. Concentrations of sulphate, total selenium, total nickel, and total dissolved solids were similar to previous years at most stations, with increases that varied spatially for each constituent and no real overall pattern.	
				Principal component analysis (PCA) to assess contributions of various water quality variables to PCA1 and PCA2	The majority of variability in water quality was explained by PC1 (50%) and PC2 (26%) and PC1 had strong positive correlations with all mine-related constituents.	
			Temperature and Flow	Continuous Monitoring of temperature and discharge at FR_UFR1, FR_FR1, FR_FRDSSC1, FR_FR2, FR_FR3, FR_SCOUTDS, FR_FR4, FR_FRCP1, FR_FRCP1SW, FR_FRRD, GH_PC2, FR_FRABC evaluated over time	The lower study are (FR_FRRD and GH_PC2) were warmer in the winter and cooler in the summer compared to areas upstream. Flow velocities were lowest in the lower study area as a result of changing river bottom gradients from the Chauncey Creek alluvial fan.	

Note: NR = Normal Range. BIC = Benthic Invertebrate Community. CA = Correspondence Analysis. CI = Calcite Index. EPT = Ephemeroptera,-Plecoptera-Trichoptera. EVWQP = Elk Valley Water Quality Plan. FRO = Fording River Operations. LPL = Lowest Practical Level. PCA = Principal Component Analysis. TDS = Total Dissolved Solids. CCA = canonical correspondence analysis. WCT = Westslope Cutthroat Trout.
Study Questions #2 and #4 were not included in the summary table because the FRO AWTF-S was not commissioned in 2021.

Table 5.1: Summary of Results (Study Questions #1, #3, #5, and #6), FRO LAEMP, 2021

Evaluation	Assessment Endpoint	Indicator Type	Measurement Endpoint	Evaluation Criteria	Results	Conclusion
What are the factors contributing to the variations in percent Ephemeroptera?	Benthic invertebrate abundance and assemblage	Indirect	Calcite	Calcite index relative to known or suspected effect levels and past observations	Calcite indices varied throughout the study area but were generally similar to or lower than the previous year and below 1.0 at each area.	Consistent with previous years, % Ephemeroptera was below normal ranges in the lower study area as a result of lower abundances of Heptageniidae and Ephemerillidae families. Gradual shifts from Ephemeroptera dominated communities to ones having high abundances and relative abundances of Plecoptera begin in the mid-portion of the middle study area (i.e., downstream of the FRO AWTF-S outfall location) and continue downstream to Ewin Creek. These shifts in community were associated with simultaneous changes in habitat and water quality, which was supported by correlations and multivariate analyses (CCA) as well as the literature.
			Correlations between physical and chemical factors, and BIC metrics	Physical: CI, Calcite %, Concretion Score, embeddedness, pebble size, water velocity, water depth, minimum winter temperature, maximum summer temperature; Chemical: PC1, PC2, individual constituents; BIC metrics: total abundance, richness, % Ephemeroptera, Plecoptera, Trichoptera, EPT, and Chironomidae, Abundance Ephemeroptera, Plecoptera, Trichoptera, EPT, and Chironomidae, Habitat Model Residuals for Abundance, Richness, % Ephemeroptera, and % EPT, Feeding and Habitat Indices	Full study area water correlations: % Ephemeroptera and % Ephemeroptera residuals were negatively correlated with alkalinity, nitrate, selenium, sulphate, total dissolved solids, uranium, barium, while % Plecoptera was positively correlated; Ephemeroptera abundance was negatively correlated with selenium, total dissolved solids sulphate, uranium and alkalinity; Individual study area water correlations: few correlations in upper and lower study areas, but correlations were similar in middle study area and full study area Full study area habtitat correlations: % Ephemeroptera and % Plecoptera were positively and negatively correlated with D84, respectively; upper study area calcite presence positively correlated with % Plecoptera; middle study area concretion score positively correlated with % Plecoptera, lower study area Plecoptera and EPT abundance positively correlated with minimum winter water temperature	
			Canonical Correspondence Analysis	Habitat Variables: bankfull width, mean depth, mean velocity, embeddedness, substrate size D16, D84, % Watershed greater than 30% slope, watershed area, station gradient; Stressor Variables: calcite presence, calcite concretion, total barium, total manganese, total molybdenum, nitrate, total selenium, sulphate, alkalinity, total dissolved solids, total uranium, dissolved cadmium	Habitat and water quality parameters, along with calcite, explained 35% of the BIC variation in September but 16% was shared by all three predictor groups. Predictor variables had more significant and strong effects on BIC variation in September compared to June. Almost every habitat and water quality stressor affected BIC variation in the full study area because of larger data gradients. Habitat and water quality stressors affected BIC variation differently within individual study areas, but after removing the shared variation of both habitat and water quality stressors, most mine-related constituents affected BIC variation the most in the middle study area.	
What are the factors influencing fish health and population in the upper Fording River?	WCT health and population	Direct	WCT population	WCT populations within the study area, including rates of population increase or decrease (Thorley 2022)	Westslope Cutthroat Trout (sub)adult population are estimated to have increased at a rate of ~125% per year since the population decline of 2019. Habitat offsetting measures to improve degraded habitat may have increased local (sub)adult densities.	Westslope Cutthroat Trout captured within the study area show signs of good health, indicated by low observations of external anomalies and condition factor similar or higher than that of reference areas. The WCT population is recovering since the steep population decline of 2019 (currently increasing at a rate of ~125% per yea)r. Evidence suggests that habitat offsetting measures to restore degraded habitat may have increased local (sub)adult densities. Fall migrations to overwintering habitat has not been inhibited in the southern drying survey area over the past two years, however, there may be some limitations to fall migrations to Henretta Lake overwintering habitat as a result of drying in the northern survey area.
		Indirect	Seasonal drying	Determination of timing and spatial extent of drying within the Fording River	Seasonal drying varies temporally and spatially and surveys from recent years suggest that drying in the southern survey area has occurred from mid-October to late December, which would not inhibit WCT fall migrations to overwintering habitat. In the northern survey area, there are two areas that dry seasonally, one in the downstream portion of the survey area and one more upstream. The downstream area has been connected year round via a side channel, despite seasonal drying in the mainstem Fording River; however, the area upstream that dries annually became dry in mid-October in 2020 but early October in 2021. This upstream area of the northern survey area was disconnected during the last couple of weeks of the fall migration, which could prevent upstream migration of WCT to Henretta Lake overwintering habitat.	
		Direct	WCT anomalies	Observation of external anomalies on WCT captured for muscle tissue sampling	Only one of twenty two fish captured in the study area in 2021 had anomalies.	
		Indirect	WCT condition factor	Observation of overall fitness in WCT caught for muscle tissue sampling	WCT condition at mine-exposed areas was similar or higher than those caught at reference areas in 2018 and 2021.	
		Indirect	WCT tissue selenium concentrations	Muscle selenium concentrations of WCT caught at mine-exposed areas within the upper Fording River	Muscle selenium concentrations in WCT sampled in 2021 under the RAEMP were below the site-specific effects benchmark	

Note: NR = Normal Range. BIC = Benthic Invertebrate Community. CA = Correspondence Analysis. CI = Calcite Index. EPT = Ephemeroptera,-Plecoptera-Trichoptera. EVWQP = Elk Valley Water Quality Plan. FRO = Fording River Operations. LPL = Lowest Practical Level. PCA = Principal Component Analysis. TDS = Total Dissolved Solids. CCA = canonical correspondence analysis. WCT = Westslope Cutthroat Trout.
Study Questions #2 and #4 were not included in the summary table because the FRO AWTF-S was not commissioned in 2021.

lower study area) and total nickel concentrations (middle study area), changes in substrate size and station gradient (lower study area), and seasonal differences in water temperature and other habitat variables related to groundwater influence among areas. Improvement in water quality from commissioning of water treatment, as well as the BIC predictive modelling tool being developed under the RAEMP, will likely provide an opportunity to better separate the covariation in the factors contributing to BIC structure throughout the study area.

Assessment of health metrics in WCT from the upper Fording River have indicated that fish in the mainstem are in good condition with respect to muscle selenium concentrations below the effects benchmark, body condition, and the presence of external anomalies. Seasonal drying occurred in early October in the northern survey area and may represent a possible barrier to overwintering migration. Drying did not occur until December in the southern survey area. The WCT population appears to be rapidly recovering since the population decline in 2019, and habitat offsetting measures to improve degraded habitat may been contributing to locally increased (sub)adult densities.

The results from the FRO LAEMP were summarized (Table 5.2) to support Teck's Adaptive Management Program (Teck 2018). The results from this study also supported the evaluation of biological triggers which are intended to identify unexpected monitoring results that may lead to responses under the AMP response framework. Of the areas within the FRO LAEMP assessed for biological triggers, only the monitoring areas downstream of Henretta Creek (RG_FODHE) and downstream of Porter Creek (RG_FODPO) in the Fording River had replicates not reach biological triggers for % EPT (Table 5.3; Appendix H). Uncertainty remains around the cause of biological responses associated with the change in % EPT at the areas identified by the biological triggers, so this trigger, along with other BIC endpoints, will continue to be monitored as part of the 2022 FRO LAEMP and the RAEMP. Other efforts are also currently underway (i.e., BIC predictive modeling) to resolve uncertainty around effects of mine-related stressors on BIC endpoints (further information regarding the response for these biological triggers can be found in Appendix H). Except for two of five replicates at the monitoring area located upstream of the old Cataract Creek channel and downstream of the future FRO-S AWTF outfall location (RG_FOBSC), benthic invertebrate tissue selenium concentrations did not exceed the biological triggers (Table 5.3; Appendix H). The two benthic invertebrate samples exceeding biological triggers at RG_FOBSC may be a result of natural variation in data as the thirteen other replicates from 2021 were below triggers; monitoring in 2022 will be conducted post-commissioning of the AWTF. Overall, results of the biological trigger evaluation were consistent with the findings of the data evaluation conducted under the 2021 FRO LAEMP. Given that current biological triggers were sufficient to identify monitoring areas where biological responses are occurring, no additional biological triggers are recommended at this time.

Table 5.2: Summary of Findings, Responses and Adjustments Related to the FRO LAEMP in 2021

Program Name	Study Question(s)	Data Evaluation Process	Outcome(s)	Responses & Adjustments in 2021	EMC Engagement
FRO LAEMP	1. Are nitrate concentrations in the study area changing and do they have the potential for adverse effects on biota?	Evaluate nitrate concentrations relative to projections in the EVWQP.	Nitrate concentrations have increased over time in parts of the FRO LAEMP study area, and were higher than EVWQP benchmarks in most areas where %Ephemeroptera was below normal ranges; however, temporal increases in nitrate have not been observed in in areas with decreasing trends in BIC endpoints. Nitrate concentrations likely contribute to observed BIC variation but is not the only factor. Covariation among water quality and habitat variables makes contributions from nitrate alone difficult to determine.	There were no responses and adjustments in 2021	- Draft data package of 2017 results submitted to EMC Feb 15, 2018; Additional results for early 2018 presented May 3 and submitted October 23, 2018 - Report of 2017 results submitted to ENV/EMC May 31, 2018 - 2018 Study design submitted to ENV/EMC May 31, 2018 - In-person meetings on Feb 22 and May 2; and conference call on March 27, 2018 - Written input from EMC received between June 1 and July 18, 2018 - Draft data package of additional 2018 results submitted to EMC March 22, 2019 and discussed at in-person meeting March February 22, 2019 -Report of 2018 results submitted to ENV/EMC May 31, 2019 -Second FRO LAEMP study design (2019-2020) submitted May 31, 2019 -Written input from 2018 FRO LAEMP report received July 2019 -Draft data package of 2019 FRO LAEMP report data submitted March 3, 2020 -Written input from 2019 FRO LAEMP data package received March 17, 2020 -Report of 2019 results submitted to ENV/EMC May 31, 2020 -Study design amendment letter for the 2019-2020 FRO LAEMP Study Design submitted to ENV/EMC June 1, 2020 -Conference call December 3, 2020 to discuss study question and study design updates for next FRO LAEMP cycle -Written input from EMC about study question and study design updates received December 17, 2020 -Conference call February 3, 2021 to discuss study question and study design updates for next FRO LAEMP cycle -Written input from EMC about study question and study design updates received February 18, 2021 -Conference call February 23, 2021 to discuss study question and study design updates for next FRO LAEMP cycle -Third FRO LAEMP study design (2021-2023) submitted April 1, 2021 -Draft data package data package of 2020 FRO LAEMP report data submitted April 8, 2021 -Written input from 2020 FRO LAEMP data package received April 22, 2021 -Report of 2020 results submitted to ENV/EMC May 31, 2021 -Draft data package of 2021 FRO LAEMP report data submitted April 6, 2022 -Follow up call to discuss FRO LAEMP data package April 12, 2022 -Written input from 2021 FRO LAEMP data package received April 20, 2022
		Determine if benthic invertebrate community endpoints are outside of site specific and regional normal ranges or moving away from normal ranges in accordance with observed nitrate concentrations.			
		Determine if benthic invertebrate community results correspond with expectations based on nitrate concentrations in water relative to the site-specific benchmark for nitrate.			
	2. Is water treatment affecting biological productivity downstream in the Fording River?	FRO AWTF-S and FRO-N SRF have not yet been commissioned. Data collection in 2021 continues to represent pre-water treatment conditions so they can be compared to post-commissioning conditions.	Data were summarized and reported.	There were no responses and adjustments in 2021	

Notes: ATWF = Active Water Treatment Facility; LAEMP = Local Aquatic Effects Monitoring Program; EMC = Environmental Monitoring Committee; ENV = Ministry of Environment and Climate Change Strategy; FRO = Fording River Operation; EVWQP = Elk Valley Water Quality Plan; BIC = Benthic Invertebrate Community; CCA = Canonical Correspondence Analysis; EPT = Ephemeroptera-Plectoptera-Trichoptera; WCT = Westslope Cutthroat Trout

Table 5.2: **Summary of Findings, Responses and Adjustments Related to the FRO LAEMP in 2021**

Program Name	Study Question(s)	Data Evaluation Process	Outcome(s)	Responses & Adjustments in 2021	EMC Engagement
FRO LAEMP	3. Are benthic invertebrate tissue selenium concentrations downstream of FRO water treatment consistent with predictions, and if not, why?	Evaluate benthic invertebrate tissue selenium concentrations relative to selenium bioaccumulation model and the selenium bioaccumulation tool (B-tool).	Benthic invertebrate tissue selenium concentrations were above predictions in the Greenhouse Side Channel (RG_FRGHSC) because the composite-taxa samples contained annelids. Replicate samples at RG_FOBSC (two of fifteen replicates) and RG_MP1 (one of nine) were also greater than predictions but the cause could not be attributed to composition of the sample or selenium speciation.	There were no responses and adjustments in 2021	-
	4. How is temperature changing over time in the FRO LAEMP study area? 4a. Is water temperature measurably different (greater than 1 degree Celsius) downstream of the AWTF and/or SRF effluent discharge relative to the upstream baseline condition? 4b. If changes in water temperature are observed, are these changes attributed to mitigations (i.e., AWTF and/or SRF)?	FRO AWTF-S and FRO-N SRF have not yet been commissioned. Data collection in 2021 continues to represent pre-water treatment conditions so they can be compared to post-commissioning conditions.		There were no responses and adjustments in 2021	
	5. What are the factors contributing to the variations in benthic invertebrate communities in the FRO LAEMP study area?	Determine if benthic invertebrate community endpoints, particularly Ephemeroptera and associated families, are outside of site-specific and regional normal ranges or moving away from the normal ranges.	Consistent with previous years, % Ephemeroptera was below normal ranges in the lower study area as a result of lower abundances of Heptageniidae and Ephemerellidae families. Gradual shifts from Ephemeroptera dominated communities to ones having high abundances and relative abundances of Plecoptera begin in the mid-portion of the middle study area (i.e., downstream of the FRO AWTF-S outfall location) and continue downstream to Ewin Creek. These shifts in community were associated with simultaneous changes in habitat and water quality, which was supported by correlations and constrained multivariate ordination (CCA) as well as the literature.	-analyzed data for full study area, upper study area, middle study area, and lower study area separately for correlations analysis; Included additional BIC endpoints in correlation analysis	
		Investigate connection between benthic invertebrate community variation and water chemistry and habitat within the study area.		-analyzed data for full study area, upper study area, middle study area, and lower study area separately for Canonical Correspondence Analysis (CCA); adjusted CCA to remove shared variation of habitat and water quality on BIC variation to further develop the integrated analysis	

Notes: ATWF = Active Water Treatment Facility; LAEMP = Local Aquatic Effects Monitoring Program; EMC = Environmental Monitoring Committee; ENV = Ministry of Environment and Climate Change Strategy; FRO = Fording River Operation; EVWQP = Elk Valley Water Quality Plan; BIC = Benthic Invertebrate Community; CCA = Canonical Correspondence Analysis; EPT = Ephemeroptera-Plectoptera-Trichoptera; WCT = Westslope Cutthroat Trout

Table 5.2: Summary of Findings, Responses and Adjustments Related to the FRO LAEMP in 2021

Program Name	Study Question(s)	Data Evaluation Process	Outcome(s)	Responses & Adjustments in 2021	EMC Engagement
FRO LAEMP	6. What are the factors influencing fish health and population in the upper Fording River?	Evaluate WCT health through tissue selenium concentrations, observed external abnormalities and condition factor of fish caught.	Westslope Cutthroat Trout captured within the study area show signs of good health, indicated by low observations of external anomalies and condition factor similar or higher than that of reference areas. The WCT population is recovering since the steep population decline of 2019 (currently increasing at a rate of ~125% per year). Evidence suggests that habitat offsetting measures to restore degraded habitat may have increased local (sub)adult densities. Fall migrations to overwintering habitat has not been inhibited in the southern drying survey area over the past two years, however, there may be some limitations to fall migrations to Henretta Lake overwintering habitat as a result of drying in the northern survey area.	There were no responses and adjustments in 2021 under the FRO LAEMP. Responses and adjustments under other programs are reported therein.	-
		Determine potential limitations to overwintering habitat during fall migration as a result of seasonal drying.			
		Estimate any changes in WCT population, including population densities.			

Notes: ATWF = Active Water Treatment Facility; LAEMP = Local Aquatic Effects Monitoring Program; EMC = Environmental Monitoring Committee; ENV = Ministry of Environment and Climate Change Strategy; FRO = Fording River Operation; EVWQP = Elk Valley Water Quality Plan; BIC = Benthic Invertebrate Community; CCA = Canonical Correspondence Analysis; EPT = Ephemeroptera-Plectoptera-Trichoptera; WCT = Westslope Cutthroat Trout

Table 5.3: Summary of Biological Trigger Analysis for Percent EPT and Selenium Benthic Invertebrate Tissue, FRO LAEMP, 2021

Waterbody	Area		% EPT [a]		Selenium BIT [b]	
			Number Replicates Evaluated	Number of Replicates Reaching Biological Trigger [c]	Number Replicates Evaluated	Number of Replicates Reaching Biological Trigger [d]
Fording River	RG_FO26	Reference	3	0	8	0
	RG_FODHE	Mine-exposed	3	0	9	0
	RG_FOUKI		3	3	15	0
	RG_FOBSC[e]		3	3	20	0
	RG_FOBCP		5	5	15	2
	RG_FODPO		3	1	15	0
	RG_FO22		5	5	15	0

Notes: % EPT = Percent EPT (Ephemeroptera ([mayflies], Plecoptera [stoneflies], and Trichoptera [caddisflies]); Selenium BIT = Selenium concentrations in benthic invertebrate tissue (mg/kg dw).

[a] Biological Trigger analysis for %EPT was for the September sampling event.

[b] Biological Trigger analysis for Selenium BIT was for the June, September, and December sampling events.

[c] Number of Replicates Reaching Biological Trigger for % EPT refers to those replicates which were below both triggering steps (i.e., below the lower 2.5th percentile of the habitat-adjusted normal range and expectations [as based on predicted ADIT Scores]. See section H.2.2 for more details.

[d] Number of Replicates Reaching Biological Trigger for Selenium BIT refers to those replicates which were above both triggering steps (i.e., above the upper 97.5th percentile prediction limit of the regional normal range and expectations [as based on the predicted 95% percentile from the water to benthic invertebrate selenium bioaccumulation model]). See section H.2.3 for more details.

[e] BIT samples were collected at this location in November 2020 to support a scope outside the FRO LAEMP, however, BIT samples were screened against biological trigger values.

6 UPDATES TO 2021 TO 2023 FRO LAEMP STUDY DESIGN

Permit 107517 was amended in March 2021 to include the third cycle of FRO LAEMP monitoring, and Section 8.3.2 outlines the LAEMP requirements for any changes to the approved 2021 to 2023 study design as follows:

> 8.3.2: The permittee must complete to the satisfaction of the director a study design for a LAEMP which will focus on the upper Fording River for 2021 to 2023 by April 1, 2021. The study design must be reviewed by the EMC and be designed to an appropriate temporal scale to capture short term, local effects to the immediate receiving environment. Any changes to the approved study design must be reported in the annual LAEMP report.

1. Several adjustments to the approved FRO LAEMP 2021 to 2023 study design have been made based on learnings from the LAEMP, input from the EMC, and monitoring needs associated with the future commissioning of the FRO-N SRF Benthic invertebrate community will no longer be sampled in June and December (Table 6.1); data has shown that the largest variations in BIC occur in September across the largest spatial extent, In addition, a large historical and reference dataset is available for September and thus provides the most information for evaluating FRO LAEMP study questions.
2. Benthic invertebrate community sampling will be added at the monitoring area in the Fording River Side Channel #2 (RG_FRSCH2) in September because this side channel is becoming an important flow path in this section of the Fording River (Table 6.1).
3. The FRO-N SRF commissioning sampling plan (Table 6.2) will be added to the study design for 2022 and 2023 monitoring to help understand any potential changes to water and tissue chemistry as a result of commissioning, which is scheduled for Q4 2022 (Teck 2022).
4. Replicates of five benthic invertebrate tissue samples will be collected at areas associated with the FRO-N SRF commissioning sampling plan to provide additional pre-commissioning data for greater statistical power (Tables 6.1 and 6.2).

The above updates to the 2021 to 2023 FRO LAEMP study design reflect agreements between the study team and the EMC during the April 6, 2022, EMC meeting and the subsequent advice table provided to the study team from the EMC.

Table 6.1: Summary of Sampling Plan for the FRO LAEMP, 2022

Biological Monitoring Area (Associated Teck Water Station)[dg]		Area Description	Biological Monitoring Area UTM Coordinates		Water Quality						Sediment Quality			Benthic Invertebrates								
														Hess			Kick and Sweep					
					Water Chemistry			Selenium						Biomass/Density (# of samples)			Community (# of samples)			Composite-taxon Selenium (# of samples)[b]		
			Easting	Northing	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec	June	Sept	Dec
Reference	RG_HENUP (FR_HC3)	Henretta Creek u/s all mine operations	655771	5567710	1	1	-	1	1	-	-	3	-	-	10	-	-	3	-	3	3	-
	RG_FO26[cg] (FR_UFR1)	Fording River u/s Henretta (u/s all mines)	653064	5569601	1	1	-	1	1	-	-	3	-	-	10	-	-	3	-	3	3	-
	RG_UFR1[ac] (FR_UFR1)	Fording River u/s Henretta at Teck WQ station	651376	5566758	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	5	5	5
Mine-exposed	RG_FRSCH2[e]	Fording River side channel 2 beginning d/s of FRCP1SW reconnecting u/s of FODPO	653549	5555700	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	5	5	5
	RG_FRGHSC[e]	Greenhouse side channel connecting with Fording River d/s of FRUPO	653689	5556265	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	5	5	5
	RG_FODHE (FR_FR1)	Fording River d/s Henretta Creek	651320	5565422	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	3	3	3
	RG_FOUCL	Fording River u/s of Clode Creek	650787	5564445	1	1	1	1	1	1	-	-	-	-	10	-	-	3	-	3	5	5
	RG_FOUNGD	Fording River u/s NGD	650870	5563476	1	1	1	1	1	1	-	-	-	-	10	-	-	3	-	3	5	5
	RG_FODNGD	Fording River d/s Lake Mountain Creek/ North Greenhills Diversion	650972	5563162	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	3	5	5
	RG_MP1 (FR_MULTIPLATE)	Fording River d/s Multiplate d/s Eagle Ponds	651143	5562400	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	3	5	5
	RG_FOUSH	Fording River u/s Shandley Creek	650876	5560957	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	3	3	3
	RG_FOUKI (FR_FR2)	Fording River u/s Kilmarnock Creek	651859	5559804	1	1	1	1	1	1	-	5	-	-	10	-	-	3	-	5	5	5
	RG_FOBKS (FR_FR3)	Fording River between Kilmarnock Creek & Swift Creek	652074	5558652	1	1	1	1	1	1	-	5	-	-	10	-	-	3	-	5	5	5
	RG_SCOUTDS (FR_SCOUTDS)	Fording River d/s of FRO AWTF-S outfall	652307	5558501	1	1	1	1	1	1	-	5	-	-	10	-	-	3	-	5	5	5
	RG_FOBSC (FR_FR4)	Fording River d/s Swift Creek, u/s Cataract Creek	652407	5558109	1	1	1	1	1	1	-	-	-	-	10	-	-	3	-	5	5	5
	RG_FOBCP[f] (FR_FRCP1)	Fording River between Cataract & Porter Creek (Compliance Point)	652920	5556982	1	1	1	1	1	1	-	5	-	-	10	-	-	5	-	5	5	5
	RG_FRCP1SW	Fording River ~1150 m d/s of Compliance Point	653387	5556201	1	1	1	1	1	1	-	-	-	-	10	-	-	3	-	5	5	5
	RG_FRUPO (FR_FRRD)	Fording River u/s of Porter Creek	653894	5555975	1	1	1	1	1	1	-	5	-	-	10	-	-	3	-	5	5	5
	RG_FODPO (GH_PC2)	Fording River d/s Porter Creek, u/s Chauncey Creek	653935	5555085	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	5	5	5
	RG_FO22[f] (FR_FRABCH)	Fording River u/s Chauncey Creek	654841	5553523	1	1	1	1	1	1	-	5	-	-	10	-	-	5	-	5	5	5
	RG_FOUEW (FR_FR5)	Fording River d/s Chauncey Creek, u/s Ewin Creek	656365	5551875	1	1	1	1	1	1	-	-	-	-	-	-	-	3	-	5	5	5

Notes: '-' indicates sample that was not a part of the sampling design
[a] RG_UFR1 will be used as a reference area in winter months when there is no access to RG_FO26 or RG_HENUP.
[b] n=5 for composite-taxon tissue samples in areas associated with the FRO AWTF-S Sampling Commissioning Plan.
[c] The water quality monitoring station is the same for biological monitoring stations RG_FO26 and RG_UFR1
[d] Routine water quality monitoring stations associated with biological monitoring areas are outlined in brackets
[e] RG_FRSCH2 and RG_FRGHSCH will continue to be monitored for water and benthic invertebrate tissue chemistry for post-FRO AWTF-S commissioning monitoring.
[f] Triplicate samples of periphyton for both ash free dry mass and chlorophyll-a analysis
[g] Periphyton scores of n=5 will be taken at each biological monitoring area in September.

Table 6.2: FRO-N SRF Commissioning Sampling Plan, 2022[fg]

	Biological Monitoring Area (Associated Teck Water Station)[d]	Area Description	Biological Monitoring Area UTM Coordinates		Sampling Design											
					Water Chemistry				Water Selenium Speciation				Composite-taxon Selenium			
			Easting	Northing	0 Weeks[c]	4 Weeks	12 Weeks	20 Weeks	0 Weeks[c]	4 Weeks	12 Weeks	20 Weeks	0 Weeks[c]	4 Weeks	12 Weeks	20 Weeks
Ref	RG_UFR1[a] (FR_UFR1)	Fording River u/s Henretta at Teck WQ station	651376	5566758	1	1	1	1	1	1	1	1	5	5	5	5
Exposed	RG_CLODE (FR_CC1)	Clode Cr. near mouth	650871	5564287	1	1	1	1	1	1	1	1	5	5	5	5
	RG_GRASSY[b]	Grassy Creek u/s of Fording River confluence	650944	5563681	1	1	1	1	1	1	1	1	5	5	5	5
	RG_FOUCL (FR_FOUCL)	Fording River u/s of Clode Creek	650787	5564445	1	1	1	1	1	1	1	1	5	5	5	5
	RG_FRDSCC1[e] (FR_FRDSCC1)	Fording River d/s of Clode Creek	TBD	TBD	1	1	1	1	1	1	1	1	5	5	5	5
	RG_FOUNGD	Fording River u/s of Lake Mountain Creek and d/s of Grassy Creek	650870	5563476	1	1	1	1	1	1	1	1	5	5	5	5
	RG_FODNGD (FR_FRABEC1)	Fording River d/s Lake Mountain Creek/ North Greenhills Diversion	650972	5563162	1	1	1	1	1	1	1	1	5	5	5	5
	RG_MP1 (FR_MULTIPLATE)	Fording River d/s Multiplate d/s Eagle Ponds	651143	5562400	1	1	1	1	1	1	1	1	5	5	5	5

Notes: the FRO-N SRF primary outfall of Clode Creek will be located downstream of RG_FOUCL and upstream of RG_FRDSCC1.

[a] RG_UFR1 will be used as the reference location because of limited access to RG_FO26 or RG_HENUP during winter months.

[b] Riffles within tributaries to Fording River may be frozen during winter months.

[c] Week zero sampling may be conducted several weeks before FRO-N SRF commences water discharge from phase 2 operations.

[d] Routine water quality monitoring stations associated with biological monitoring areas are outlined in brackets

[e] Locations of riffles need to be determined during the first sampling campaign

[f] RG_WED was removed from the sampling plan because two years of studies has demonstrated that the West Exfiltration Ditch is not affected by Clode Pond and Clode Creek

[g] More frequent sampling may occur if benthic invertebrate tissue selenium concentrations appear to be rapidly changing. Following the adaptive management framework, if results of the current FRO-N SRF commissioning sampling plan indicate a need to continue sampling past 20 weeks the study plan for 2023 will be updated.

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APPENDIX A
DATA QUALITY REVIEW

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A1 INTRODUCTION 1
A1.1 Background....1
A1.2 Quality Control Samples 1

A2 WATER CHEMISTRY....4
A2.1 Laboratory Reporting Limits....4
A2.2 Laboratory and Field Blanks 4
A2.3 Data Precision 5
A2.4 Data Accuracy 6
A2.5 Hold Times....6
A2.6 Other Concerns 7
A2.7 Data Quality Statement....7

A3 SEDIMENT CHEMISTRY 8
A3.1 Laboratory Reporting Limits....8
A3.2 Laboratory Blanks....8
A3.3 Data Precision 8
A3.4 Data Accuracy 9
A3.5 Hold Times....9
A3.6 Data Quality Statement....9

A4 BENTHIC INVERTEBRATE COMMUNITY....10
A4.1 Organism Sorting Efficiency....10
A4.2 Subsampling Accuracy and Accuracy....10
A4.3 Taxonomic Identification Accuracy 10
A4.4 Data Quality Statement....10

A5 BENTHIC INVERTEBRATE TISSUE CHEMISTRY....12
A5.1 Laboratory Reporting Limits....12
A5.2 Data Accuracy and Precision....12
A5.3 Data Quality Statement....12

A6 DATA QUALITY REVIEW SUMMARY 13

A7 REFERENCES 14

A1 INTRODUCTION

A1.1 Background

A variety of factors can influence the physical, chemical, and biological measurements made in an environmental study and thus affect the accuracy and/or precision of the data. Depending on their magnitude, inaccuracy or imprecision have the potential to affect the reliability of conclusions made from data. Therefore, it is important to ensure that programs incorporate appropriate steps to control non-natural sources of data variability (i.e., minimize variability that does not reflect authentic spatial and temporal variability in the environment) and thus assure the quality of the data. Data quality as a concept is meaningful only when it relates to the intended use of the data. That is, one must know the context in which the data will be interpreted in order to establish a relevant basis for judging whether or not the data set is adequate. A Data Quality Review (DQR) involves the comparison of field and laboratory measurement performance to Data Quality Objectives (DQOs) established for a particular study, such as evaluation of Laboratory Reporting Limits (LRLs), blank sample data, data precision (based on field and laboratory duplicate samples), and data accuracy (based on matrix spike recoveries and/or analysis of standards or certified reference materials). Trusted analytical laboratories certified by Canadian Association for Laboratory Accreditation (CALA) or the National Environmental Laboratory Accreditation Program (NELAP) with a rigorous internal quality assurance program were selected to ensure the highest possible data quality. Data Quality Objectives were established *a priori* to reflect reasonable and achievable performance expectations (Table A.1). Programs involving many samples and analytes usually yield some results that exceed DQOs. This is particularly so for multi-element scans, as the analytical conditions are not necessarily optimal for every element included in the scan. Generally, scan results may be considered acceptable if no more than 20% of the parameters fail to meet DQOs. Overall, the intent of a DQR is not to reject any measurement that did not meet a DQO, but to ensure that any questionable data received more scrutiny to determine what effect, if any, this had on interpretation of results within the context of the project.

A1.2 Quality Control Samples

A DQR was conducted on all laboratory data collected as part of the 2021 Fording River Operations Local Aquatic Effects Monitoring Program (FRO LAEMP). The objective of a DQR is to define the overall quality of the data presented in the report, and, by extension, the confidence with which the data can be used to derive conclusions. A DQR involves the examination of analytical results associated with several types of Quality Control (QC)

Table A.1: Laboratory Data Quality Objectives for the FRO LAEMP, 2021

Quality Control Measure	Quality Control Sample Type	Study Component				
		Water Chemistry	Selenium Speciation	Sediment Chemistry	Benthic Invertebrate Community	Benthic Invertebrate Tissue Chemistry
		ALS Environmental	Brooks Applied Labs	ALS	Cordillera Consulting	TrichAnalytics
Analytical Laboratory LRLs	Comparison of actual LRL versus target LRL	LRL for each parameter should be at least as low as applicable guidelines, benchmarks, and screening values	LRL for each parameter should be at least as low as applicable guidelines, benchmarks, and screening values	LRL for each parameter should be at least as low as applicable guidelines and benchmarks	-	LRL for each parameter should be at least as low as applicable guidelines and benchmarks
Blank Analysis	Field, Trip, or Laboratory Blank	Concentrations measured in blank samples should be < LRL	Concentrations measured in blank samples should be < LRL	Concentrations measured in blank samples should be < LRL	-	-
Laboratory Precision	Laboratory Duplicates	< 4% (pH) <10% (conductivity) ≤15% RPD or <2x LRL (ORP, turbidity) ≤20% RPD or <2x LRL (all remaining analytes)	≤25% RPD (selenium species) ≤20% RPD (total selenium)	0.2 (pH) ≤5% to 25% RPD (particle size) ≤20% RPD (inorganic and total carbon, moisture) ≤30% RPD (all remaining analytes) ≤40% RPD (aluminum, barium, lead, mercury, molybdenum, potassium, silver, sodium, strontium, tin, titanium) ≤50% RPD (PAHs)	-	≤60% RPD (calcium and strontium) ≤40% RPD (all remaining analytes)
	Organism Sorting Efficiency	-	-	-	≥ 95%	-
	Organism Sub-Sampling Precision and Accuracy	-	-	-	<20% between subsamples	-
Accuracy	Recovery of Blank Spike	-	75% to 125% (methylseleninic acid, selenate, selenite, selenocyanate, selenomethionine, total selenium)	-	-	-
	Recovery of Matrix Spike	70% to 130% (TKN, orthophosphate, phosphorus, TOC, DOC, total and dissolved metals) 75% to 125% (ammonia, bromide, chloride, fluoride, nitrate, nitrite, sulphate)	75% to 125% (selenate, selenite, selenocyanate, selenomethionine, total selenium)	-	-	-
	Matrix Spike Duplicate	-	75% to 125% (selenate, selenite, selenocyanate, selenomethionine, total selenium)		-	-
	Recovery of Certified Reference Material	-	75% to 125% (total selenium)	0.15 mg/kg to 0.55 mg/kg (Se) 0.16 mg/kg to 0.36 mg/kg (Ag) 0.2 mg/kg to 4.2 mg/kg (Sn) 1 mg/kg to 2 mg/kg (W) 70 mg/kg to 130% (all other metals) 7.7 mg/kg to 8.3 pH units (pH) 50% to 130% (Naphthalene) 80% to 120% (Inorganic Carbon, Total Carbon) 60% to 130% (all other PAHs) 0% to 26.5% (particle size)		60% to 140% (antimony, barium, boron, silver, tin, titanium) 90% to 110% (selenium) 70% to 130% (all remaining analytes)
	Laboratory Control Sample	6.9 to 7.1 (pH) 75% to 125% (TKN) 80% to 120% (orthophosphate, phosphorus, DOC, TOC, total and dissolved metals) 85% to 115% (acidity, alkalinity, ammonia, bromide, TDS, TSS, turbidity) 90% to 110% (conductivity, chloride, fluoride, nitrate, nitrite, sulphate) 95.4% to 104% (ORP)	-	0% to 26.5% (particle size) 60% to 130% (PAHs) 80% to 120% (inorganic carbon, total carbon) 7.4 to 8 (pH 1:2 soil:water)	-	-
	Taxonomic Accuracy	-	-	-	<5% TIR	-

Notes: LRL = Laboratory Reporting Limit; "-" = not applicable; < = less than; ≤ = less than or equal to; % = percent; RPD = Relative Percent Difference; ORP = oxidation-reduction potential; TKN = Total Kjeldahl Nitrogen; TOC = total organic carbon; DOC = dissolved organic carbon; TSS = total suspended solids; TDS = total dissolved solids; mg/kg dw = milligrams per kilogram dry weight; TIR = total identification error rate.

samples collected or prepared in the field and laboratory. General QC samples collected for this project include the following:

- **Blanks** are samples of de-ionized water and/or appropriate reagent(s) that are handled and analyzed in the same way as regular samples. These samples will reflect any contamination of samples occurring in the field (in the case of field or travel blanks) or in the laboratory (in the case of laboratory or method blanks). Analyte concentrations should be below detection.
- **Laboratory Duplicates** are replicate sub-samples created in the laboratory from randomly selected field samples which are sub-sampled and then analyzed independently using identical analytical methods. The laboratory duplicate sample results reflect any variability introduced during laboratory sample handling and analysis and thus provide a measure of laboratory precision.
- **Field Duplicates** are samples collected from a randomly selected field station that are homogenized to the extent possible, split and analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory.
- **Spike Recovery Samples** are created in the laboratory by adding a known amount/concentration of a given analyte (or mixture of analytes) to a randomly selected test sample previously divided to create two sub-samples. The spiked and regular sub-samples are then analyzed in an identical manner. The spike recovery represents the difference between the measured spike amount (total amount in the spiked sample minus the amount in the original sample) relative to the known spike amount (as a percentage). Two types of spike recovery samples are commonly analyzed: spiked blanks (or blank spikes) are created using laboratory control materials whereas matrix spikes (MS) are created using field-collected samples. The analysis of spiked samples provides an indication of the accuracy of analytical results.
- **Certified Reference Materials (CRM) or Reference Materials (RM)** are commercially prepared (or commercially homogenized) samples containing known chemical concentrations that are processed and analyzed along with batches of environmental samples. The sample results are then compared to the known concentrations to provide a measure of analytical accuracy. The results are reported as the percent of the known concentration that was recovered in the analysis.
- **Laboratory Control Samples** are created in the laboratory to have a known analyte concentration in a matrix free of interferences, such as deionized water or reference sand. The sample results are compared to the target results to confirm that

the analytical method is accurate in a purified reference sample. The results are reported as the percent of the known concentration that was recovered in the analysis.

- **Laboratory Sorting Duplicates** are randomly selected grabs of the initially sorted community material. These samples are recounted and the number of invertebrates that were not recovered during the initial sort was determined. In order to reduce bias, recounting is conducted by an analyst uninvolved in the initial sample processing. This check is performed on 10% of samples and determines the accuracy through assessment of recovery (sorting) efficiency and quantifies any under-estimation of organism enumeration.

- **Taxonomic Quality Control Samples** are a randomly selected portion of a benthic invertebrate community field sample to be assessed by the laboratory using an internal quality control audit. A blind re-enumeration and re-identification of random samples is performed by an analyst uninvolved in the original sample processing. This assessment quantifies taxonomic misidentification among laboratory analysts and ensures accurate organism identities are reported.

- **Laboratory Subsamples** are community samples prepared by the laboratory to ensure that the fraction of the total sample examined was an accurate representation of the total number of organisms. By comparing the amount recovered between at least two sub-samples, one can assess the analytical precision. In addition, comparisons of the sub-samples from the whole community sample allows for an evaluation of sub-sampling accuracy.

A2 WATER CHEMISTRY

A2.1 Laboratory Reporting Limits

The analytical reports for water chemistry from ALS Environmental (ALS; Appendix K) and Brooks Applied Labs (BAL; Appendix K) were examined to assess Laboratory Reporting Limits (LRLs) relative to analyte concentrations and applicable guidelines (Tables A.2 and A.3). Water quality data from 2021 were entered directly into Teck's EQuIS database and thus were assessed as part of Teck's annual water quality reporting for 2021. The LRLs for water quality analytes were assessed relative to British Columbia Water Quality Guidelines (BC WQG; BCMOECCS 2021a, 2021b) for the protection of freshwater aquatic life, Elk Valley Water Quality Plan (EVWQP) benchmarks, screening values for water quality (Teck 2014), and relevant site-specific benchmarks. Several analytes were reported at concentrations below the LRL in 100% of samples (Tables A.2 and A.3). For those analytes with one or more result(s) below the LRL, achieved LRLs were consistently lower than the BC WQG, EVWQP benchmarks, and screening values for water quality, if relevant guidelines exist. Therefore, the achieved LRLs were appropriate for this study.

A2.2 Laboratory and Field Blanks

A total of 293 method blank (MB) samples were analyzed in the ALS laboratory reports (Appendix K). Of the 1,343 reported method blank results, only two results did not meet the laboratory DQO (one result for total arsenic, see laboratory report CG2104189, and one result for dissolved magnesium, see laboratory report CG2102041). The above MB result for total arsenic caused the LRL to be adjusted in total arsenic samples that were below five-times the MB result concentration. The above MB result for dissolved magnesium did not result in any adjusted LRLs for dissolved magnesium. Overall, these two results only represent 0.15% of MB samples and do not suggest significant laboratory contamination.

A total of 44 method blank (MB) samples were analyzed in the BAL laboratory reports (Appendix K). Of the 172 reported method blank results, 12 had detectable concentrations: total selenium in nine blank samples (see laboratory reports 2112275, 2106283, and 2109234 in Appendix K) and selenite in three blank samples (see laboratory report 2109234 in Appendix K). For all 12 of the above results, concentrations were below the LRL despite exceeding the method detection limit, and so met the DQO. Therefore, all BAL MB samples met the laboratory DQO.

As the overall number of DQO exceedances was low (ALS: 0.14%; BAL: 0%), the impacted results were considered to have a negligible impact on data interpretability and laboratory

Table A.2: Laboratory Reporting Limit (LRL) Evaluation for Water Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	BC WQG[a]		EVWQP Level 1 Benchmarks/ Relevant Screening Values[b]	Range of LRLs	No. LRLs > Guideline[c]	No. Sample Results < LRL
		Long-term	Short-term				
Physical Tests							
Total Suspended Solids	mg/L	-	-	-	1 to 1.5	-	23 (35.4%)
Turbidity	NTU	-	-	-	0.1	-	2 (3.08%)
Anions and Nutrients							
Acidity (as $CaCO_3$)	mg/L	-	-	-	2	-	53 (81.5%)
Alkalinity, Carbonate (as CO_3)	mg/L	-	-	-	1	-	28 (50.0%)
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	-	-	-	1	-	29 (44.6%)
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	-	-	-	1	-	65 (100%)
Alkalinity, Hydroxide (as OH)	mg/L	-	-	-	1	-	56 (100%)
Bromide (Br)	mg/L	-	-	-	0.05 to 0.25	-	65 (100%)
Chloride (Cl)	mg/L	150	600	-	0.1 to 0.5	0	3 (4.62%)
Ammonia, Total (as N)[d]	mg/L	0.102	0.752	-	0.005	0	17 (26.2%)
Nitrate (as N)	mg/L	3	32.8	12.2	0.005 to 0.025	0	1 (1.54%)
Nitrite (as N)[e]	mg/L	0.02	0.06	-	0.001 to 0.005	0	17 (26.2%)
Total Kjeldahl Nitrogen	mg/L	-	-	-	0.05	-	26 (40.0%)
Orthophosphate	mg/L	-	-	-	0.001	-	46 (70.8%)
Phosphorus, Total	mg/L	-	-	-	0.002 to 0.004	-	34 (52.3%)
Organic / Inorganic Carbon							
Total Organic Carbon	mg/L	-	-	-	0.5	-	1 (1.54%)
Total Metals							
Aluminum	mg/L	-	-	-	0.003	-	13 (20.0%)
Antimony	mg/L	0.009	-	-	0.0001	0	17 (26.2%)
Arsenic	mg/L	-	0.005	-	0.0001 to 0.0003	0	19 (29.2%)
Beryllium	µg/L	0.13	-	-	0.02	0	65 (100%)
Bismuth	mg/L	-	-	-	0.00005	-	65 (100%)
Boron	mg/L	1.2	-	-	0.01	0	32 (49.2%)
Cadmium	µg/L	-	-	-	0.005	-	1 (1.54%)
Chromium[f]	mg/L	0.001	-	-	0.0001	0	11 (16.9%)
Cobalt	µg/L	4	110	-	0.1	0	38 (58.5%)
Copper	mg/L	-	-	-	0.0005	-	63 (96.9%)
Iron	mg/L	-	1	-	0.01	0	17 (26.2%)
Lead[g]	mg/L	0.0196	0.417	-	0.00005	0	59 (90.8%)
Lithium	mg/L	-	-	-	0.001	-	2 (3.08%)
Manganese[g]	mg/L	2.37	3.39	-	0.0001	0	1 (1.54%)
Mercury[h]	µg/L	0.125	-	-	0.0005	0	41 (64.1%)
Nickel[g]	mg/L	0.15	-	0.0053	0.0005	0	11 (16.9%)
Silver[g]	mg/L	0.0015	0.003	-	0.00001	0	65 (100%)
Thallium	mg/L	0.0008	-	-	0.00001	0	54 (83.1%)
Tin	mg/L	-	-	-	0.0001	-	65 (100%)
Titanium	mg/L	-	-	-	0.0003 to 0.0012	-	52 (80.0%)
Vanadium	mg/L	-	-	-	0.0005	-	65 (100%)
Zinc[g]	mg/L	0.188	0.267	-	0.003	0	46 (70.8%)
Dissolved Metals							
Aluminum[i]	mg/L	0.05	0.1	-	0.001	0	26 (40.0%)
Antimony	mg/L	-	-	-	0.0001	-	18 (27.7%)
Arsenic	mg/L	-	-	-	0.0001	-	39 (60.0%)
Beryllium	µg/L	-	-	-	0.02	-	65 (100%)
Bismuth	mg/L	-	-	-	0.00005	-	65 (100%)
Boron	mg/L	-	-	-	0.01	-	31 (47.7%)
Cadmium[g]	µg/L	0.457	2.47	0.428	0.005	0	2 (3.08%)
Chromium	mg/L	-	-	-	0.0001	-	32 (49.2%)
Cobalt	µg/L	-	-	-	0.0001 to 0.1	-	43 (66.2%)
Copper	mg/L	-	-	-	0.0002	-	38 (58.5%)
Iron	mg/L	-	0.35	-	0.01	0	49 (75.4%)
Lead	mg/L	-	-	-	0.00005	-	65 (100%)
Lithium	mg/L	-	-	-	0.001	-	2 (3.08%)
Manganese	mg/L	-	-	-	0.0001	-	2 (3.08%)
Mercury	µg/L	-	-	-	0.000005	-	64 (98.5%)
Nickel	mg/L	-	-	-	0.0005	-	12 (18.5%)
Silver	mg/L	-	-	-	0.00001	-	65 (100%)
Thallium	mg/L	-	-	-	0.00001	-	54 (83.1%)
Tin	mg/L	-	-	-	0.0001	-	65 (100%)
Titanium	mg/L	-	-	-	0.0003	-	63 (96.9%)
Vanadium	mg/L	-	-	-	0.0005	-	65 (100%)
Zinc	mg/L	-	-	-	0.001	-	7 (10.8%)

Notes: Only analytes with at least one result < Laboratory Reporting Limit (LRL) or LRL were above guidelines were displayed. The total number of samples in 2021 (n) was 65, which included six field duplicate samples. EVWQP = Elk Valley Water Quality Plan; "-" = no applicable guideline exists.

[a] British Columbia Water Quality Guidelines for the protection of Aquatic Life (BCMOECCS 2021a, BCMOECCS 2021b).

[b] Where more than one EVWQP Level 1 Benchmark or screening value was applicable, the most conservative (lowest) value was used.

[c] The LRLs for all analytes were consistently less than the applicable EVWQP Level 1 benchmarks (Teck 2014) or screening values (Golder 2014; Teck 2020).

[d] Guideline is the most conservative (lowest), based on estimates of a maximum temperature of 20°C and a minimum pH of 8.04.

[e] Minimum water quality guidelines for Nitrite (as N) reported in BCMOECCS (2021a) for chloride concentrations < 2 mg/L.

[f] Guideline for Chromium VI (0.001 mg/L) was selected, as this is the principal species found in surface waters.

[g] Hardness-based guidelines calculated using the minimum hardness observed for all samples (402 mg/L).

[h] The most conservative guideline (0.125 µg/L) was applied.

[i] Guideline based on minimum field pH (8.04).

Table A.3: Laboratory Reporting Limit (LRL) Evaluation for Selenium Speciation Analyses, FRO LAEMP, 2021

Parameter	Units	BC WQG[a]		EVWQP Level 1 Benchmarks/ Relevant Screening Values[b]	Range of LRLs	No. LRLs > Guideline	No. Sample Results < LRL
		Long-term	Short-term				
DMSeO - Dimethylselenoxide	mg/L	-	-	-	0.01	-	66 (97.1%)
MeSe(IV) - Methylseleninic Acid	mg/L	-	-	-	0.01	-	60 (88.2%)
MeSe(VI) - Methaneselenonic Acid	mg/L	-	-	-	0.01	-	67 (98.5%)
Se(IV) - Selenite	mg/L	-	-	-	0.01	-	2 (2.94%)
SeCN - Selenocyanate	mg/L	-	-	-	0.01	-	68 (100%)
SeMe - Selenomethionine	mg/L	-	-	-	0.01	-	68 (100%)
Selenosulfate	mg/L	-	-	-	0.01	-	68 (100%)
Selenium Unknown	mg/L	-	-	-	0.01	-	68 (100%)

Notes: Only analytes with at least one result < LRL or an LRL above guidelines were displayed. The total number of samples in 2021 (n) was 65 including six field duplicate samples. EVWQP = Elk Valley Water Quality Plan; LRL = Laboratory Reporting Limit, "-"= no applicable guideline exists.

[a] British Columbia Water Quality Guidelines for the protection of Aquatic Life (BCMOECCS 2021a,b).

[b] Where more than one EVWQP Level 1 Benchmark or screening value was applicable, the most conservative (lowest) value was used.

precision was considered excellent. Six field blank samples and five trip blank samples were submitted to ALS for water chemistry analyses to assess the potential for field sampling contamination (Table A.4). Out of 582 individual analyte results for field blanks, 92.3% were below detection and therefore met the DQO (Table A.1). Out of 335 individual analyte results for trip blanks, 96.2% were below detection and therefore met the DQO (Table A.1). However, several analytes of primary concern did not meet the laboratory DQO in the field blank sample. In one field blank sample (RG_FBLANK_WS_2021-06-17_1330, see laboratory report CG2102104 in Appendix K), the laboratory DQOs for conductivity, hardness, alkalinity, Total Kjeldahl Nitrogen, total and dissolved aluminum, antimony, arsenic, barium, chromium, copper, lead, manganese, strontium, tin, total mercury, and dissolved zinc were not met, indicating substantial field contamination associated with this sample. Additionally, laboratory DQOs for ammonia and dissolved zinc were not met in one other field blank sample (RG_FBLANK_WS_LAEMP_FRO_2021-12_NP, see laboratory report CG2106911) and the DQO for total mercury was not met in another (RG_FBLANK_WS_2021-06-18_1300, see laboratory report CG2102104). In trip blank samples, the laboratory DQO was not met in two samples (RG_TRIP_WS_2021-06-18_1300 and RG_TRIP_WS_2021-06-17_1330, see laboratory report CG2102104) for acidity, total ammonia, Total Kjeldahl Nitrogen (TKN), and total zinc, of which the latter three are analytes of interest within the FRO LAEMP. This suggests a minor degree of contamination was associated with these trip blank samples. As several analytes of concern did not meet the laboratory DQO in both field and trip blanks, potential contamination will be taken into consideration during data interpretation. Field and trip blanks were not collected for selenium speciation.

A2.3 Data Precision

A total of 47 laboratory duplicate samples were used to evaluate precision within the ALS laboratory reports (Appendix K). One TKN result was flagged by ALS as it was biased low due to interference from high nitrate in the parent sample that was used, which caused a negative bias in TKN (see laboratory report CG2104008 in Appendix K); however, this result still met the laboratory DQO. As all 1,444 individual analyte results met the laboratory DQO, ALS laboratory analytical precision was considered excellent.

A total of 13 laboratory duplicate samples were used to evaluate precision within the BAL laboratory reports (Appendix K). Out of the 45 individual analyte results, all met the laboratory DQO. Therefore, BAL laboratory analytical precision was considered excellent.

Six sets of field duplicate samples were collected to assess field sampling precision for water chemistry analyzed by ALS (Table A.5). Several relative percent differences (RPDs) could not

Table A.4: **Field Blank and Trip Blank Evaluation for Water Chemistry Analyses, FRO LAEMP, 2021**

Parameter	Units	Range of LRLs	No. Field Blank Results > LRL	No. Trip Blank Results > LRL
Physical Tests				
Conductivity	µS/cm	2	1 (16.7%)	0
Hardness - Dissolved (as $CaCO_3$)	mg/L	0.5	1 (16.7%)	0
Anions and Nutrients				
Acidity (as $CaCO_3$)	mg/L	2	3 (50.0%)	2 (40.0%)
Alkalinity, Bicarbonate (as HCO_3)	mg/L	1	1 (16.7%)	0
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	1	1 (16.7%)	0
Alkalinity, Total (as $CaCO_3$)	mg/L	1	1 (16.7%)	0
Ammonia, Total (as N)	mg/L	0.005	2 (33.3%)	2 (40.0%)
Total Kjeldahl Nitrogen	mg/L	0.05	1 (16.7%)	2 (40.0%)
Total Metals				
Aluminum	mg/L	0.003	1 (16.7%)	0
Antimony	mg/L	0.0001	1 (16.7%)	0
Arsenic	mg/L	0.0001	1 (16.7%)	0
Barium	mg/L	0.0001	1 (16.7%)	0
Calcium	mg/L	0.05	1 (16.7%)	0
Chromium	mg/L	0.0001	1 (16.7%)	0
Copper	mg/L	0.0005	1 (16.7%)	0
Lead	mg/L	0.00005	1 (16.7%)	0
Magnesium	mg/L	0.005	1 (16.7%)	0
Manganese	mg/L	0.0001	1 (16.7%)	0
Mercury	µg/L	0.0005	1 (16.7%)	0
Silicon	mg/L	0.1	1 (16.7%)	0
Sodium	mg/L	0.05	1 (16.7%)	0
Strontium	mg/L	0.0002	1 (16.7%)	0
Tin	mg/L	0.0001	1 (16.7%)	0
Zinc	mg/L	0.003	0	2 (40.0%)
Dissolved Metals				
Aluminum	mg/L	0.001	1 (16.7%)	-
Antimony	mg/L	0.0001	1 (16.7%)	-
Arsenic	mg/L	0.0001	1 (16.7%)	-
Barium	mg/L	0.0001	1 (16.7%)	-
Calcium	mg/L	0.05	1 (16.7%)	0
Chromium	mg/L	0.0001	1 (16.7%)	-
Copper	mg/L	0.0002	1 (16.7%)	-
Lead	mg/L	0.00005	1 (16.7%)	0
Magnesium	mg/L	0.005	1 (16.7%)	0
Manganese	mg/L	0.0001	1 (16.7%)	-
Silicon	mg/L	0.05	1 (16.7%)	-
Sodium	mg/L	0.05	1 (16.7%)	0
Strontium	mg/L	0.0002	1 (16.7%)	-
Tin	mg/L	0.0001	1 (16.7%)	0
Zinc	mg/L	0.001	2 (33.3%)	-

Notes: LRL = Laboratory Reporting Limit. Six field blank samples and five trip blank sample were collected in 2021. Only analytes with at least one blank results > LRL were displayed. Calcium, magnesium, potassium, and sodium are the only dissolved metals measured in trip blank samples.

Table A.5: Field Duplicate Results for Water Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330	RPD (%)	RG_FOUEW_WS_2021-12-13_1430	RG_RIVER_WS_2021-12-13_1430	RPD (%)	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RPD (%)
Physical Tests										
Conductivity	µS/cm	703	708	0.709	1,160	1,140	1.74	715	732	2.35
Hardness (as $CaCO_3$)	mg/L	395	393	0.508	671	684	1.92	374	381	1.85
pH	pH	8.43	8.28	1.80	8.22	8.27	0.606	8.37	8.40	0.358
ORP	mV	508	426	17.6	470	451	4.13	461	481	4.25
Total Suspended Solids	mg/L	2.30	1.40	48.6	<1	<1	-	<1	<1	-
Total Dissolved Solids	mg/L	476	496	4.12	809	770	4.94	507	495	2.40
Turbidity	NTU	1.24	-	-	0.190	-	-	0.180	-	-
Anions and Nutrients										
Acidity (as $CaCO_3$)	mg/L	<2	<2	-	2.10	2.20	4.65	<2	<2	-
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	180	194	7.49	323	325	0.617	198	193	2.56
Alkalinity, Bicarbonate (as HCO_3)	mg/L				265	267	0.752	162	158	2.50
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	11.4	<1	168	<1	<1	-	5.30	6.00	12.4
Alkalinity, Carbonate (as CO_3)	mg/L				<1	<1	-	8.80	10.0	12.8
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	<1	<1	-	<1	<1	-	<1	<1	-
Alkalinity, Hydroxide (as OH)	mg/L				<1	<1	-	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	mg/L	191	194	1.56	265	267	0.752	171	168	1.77
Bromide	mg/L	<0.05	<0.05	-	<0.25	<0.25	-	<0.05	<0.05	-
Chloride	mg/L	0.640	0.620	3.17	1.64	1.62	1.23	0.470	0.510	8.16
Fluoride	mg/L	0.194	0.200	3.05	0.107	0.105	1.89	0.154	0.153	0.651
Ammonia, Total (as N)	mg/L	0.00930	0.0103	10.2	<0.005	<0.005	-	0.0132	<0.005	90.1
Nitrate (as N)	mg/L	14.4	13.8	4.26	23.0	22.9	0.436	11.8	11.8	0
Nitrite (as N)	mg/L	0.00750	0.00740	1.34	<0.005	<0.005	-	0.00550	0.00570	3.57
Total Kjeldahl Nitrogen	mg/L	<0.05	0.0590	16.5	0.372	0.376	1.07	0.178	0.103	53.4
Orthophosphate	mg/L	<0.001	<0.001	-	0.00120	0.00150	22.2	<0.001	<0.001	-
Phosphorus, Total	mg/L	<0.002	<0.002	-	<0.002	<0.002	-	0.00200	<0.002	0
Sulphate	mg/L	165	155	6.25	321	320	0.312	180	180	0
Anion Sum	meq/L	8.31	8.12	2.31	13.7	13.7	0	8.03	7.97	0.750
Cation Sum	meq/L	8.04	7.98	0.749	13.6	13.9	2.18	7.58	7.72	1.83
Cation - Anion Difference	%	1.65	0.870	61.9	0.366	0.725	65.8	2.88	1.59	57.7
Cation - Anion Ratio	%	96.8	98.3	1.54	99.3	101	1.70	94.4	96.9	2.61
Organic / Inorganic Carbon										
Dissolved Organic Carbon	mg/L	1.95	1.84	5.80	0.800	0.930	15.0	0.970	1.15	17.0
Total Organic Carbon	mg/L	1.75	1.55	12.1	0.720	0.790	9.27	1.04	1.07	2.84
Total Metals										
Aluminum	mg/L	0.00960	0.0101	5.08	<0.003	<0.003	-	<0.003	0.00320	6.45
Antimony	mg/L	0.000240	0.000280	15.4	0.000110	0.000100	9.52	0.000180	0.000170	5.71
Arsenic	mg/L	0.000140	<0.0001	33.3	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Barium	mg/L	0.0463	0.0452	2.40	0.0983	0.102	3.69	0.0821	0.0827	0.728
Beryllium	µg/L	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	<0.02	-
Bismuth	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Boron	mg/L	0.0110	0.0120	8.70	0.0130	0.0120	8.00	<0.01	<0.01	-
Cadmium	µg/L	0.0559	0.0645	14.3	0.0372	0.0293	23.8	0.0299	0.0272	9.46
Calcium	mg/L	85.0	87.7	3.13	156	143	8.70	92.6	92.3	0.324
Chromium	mg/L	<0.0001	0.000390	118	0.000110	0.000120	8.70	<0.0001	0.000110	9.52
Cobalt	µg/L	<0.1	0.100	0	<0.1	<0.1	-	<0.1	<0.1	-
Copper	mg/L	<0.0001	0.00178	112	<0.0001	<0.0005	-	<0.0001	<0.0005	-
Iron	mg/L	0.0220	0.0160	31.6	0.0160	0.0160	0	<0.01	<0.01	-
Lead	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Lithium	mg/L	0.0390	0.0383	1.81	0.0492	0.0436	12.1	0.0435	0.0417	4.23
Magnesium	mg/L	38.1	39.5	3.61	65.9	67.3	2.10	35.0	33.9	3.19
Manganese	mg/L	0.00342	0.00340	0.587	0.00573	0.00595	3.77	0.000580	0.000640	9.84
Mercury	µg/L	0.000760	0.000580	26.9	<0.0001	<0.0005	-	<0.0001	<0.0005	-
Molybdenum	mg/L	0.00158	0.00172	8.48	0.00121	0.00136	11.7	0.000971	0.000988	1.74
Nickel	mg/L	0.00335	0.00381	12.8	0.000910	0.000940	3.24	0.00299	0.00298	0.335
Potassium	mg/L	1.87	1.85	1.08	1.89	1.96	3.64	1.35	1.33	1.49
Selenium	µg/L	52.2	52.1	0.192	85.3	85.3	0	36.5	35.7	2.22
Silicon	mg/L	1.70	1.67	1.78	2.36	2.41	2.10	1.86	1.89	1.60
Silver	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Sodium	mg/L	1.93	1.95	1.03	3.14	3.19	1.58	1.56	1.55	0.643
Strontium	mg/L	0.103	0.115	11.0	0.198	0.186	6.25	0.145	0.146	0.687
Sulphur	mg/L	54.5	59.3	8.44	117	117	0	62.0	61.2	1.30
Thallium	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Tin	mg/L	<0.0001	<0.0001	-	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Titanium	mg/L	<0.0003	0.000310	3.28	<0.0003	<0.0003	-	<0.0003	<0.0003	-
Uranium	mg/L	0.00250	0.00277	10.2	0.00377	0.00357	5.45	0.00227	0.00226	0.442
Vanadium	mg/L	<0.0001	<0.0005	-	<0.0001	<0.0005	-	<0.0001	<0.0005	-
Zinc	mg/L	<0.003	<0.003	-	<0.003	<0.003	-	<0.003	<0.003	-

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL. Turbidity was not analyzed in duplicate samples.

Table A.5: Field Duplicate Results for Water Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330	RPD (%)	RG_FOUEW_WS_2021-12-13_1430	RG_RIVER_WS_2021-12-13_1430	RPD (%)	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RPD (%)
Dissolved Metals										
Aluminum	mg/L	0.00190	0.00160	17.1	0.00160	<0.001	46.2	0.00120	<0.001	18.2
Antimony	mg/L	0.000250	0.000280	11.3	0.000100	0.000100	0	0.000160	0.000160	0
Arsenic	mg/L	0.000100	0.000130	26.1	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Barium	mg/L	0.0480	0.0483	0.623	0.102	0.104	1.94	0.0844	0.0860	1.88
Beryllium	µg/L	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	<0.02	-
Bismuth	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Boron	mg/L	0.0120	0.0120	0	0.0120	0.0130	8.00	<0.01	<0.01	-
Cadmium	µg/L	0.0584	0.0616	5.33	0.0367	0.0359	2.20	0.0274	0.0312	13.0
Calcium	mg/L	88.5	91.5	3.33	154	157	1.93	88.9	90.7	2.00
Chromium	mg/L	<0.0001	<0.0001	-	0.000110	0.000100	9.52	<0.0001	<0.0001	-
Cobalt	µg/L	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-
Copper	mg/L	<0.0002	0.000230	14.0	0.000440	0.000380	14.6	<0.0002	<0.0002	-
Iron	mg/L	<0.01	<0.01	-	0.0170	0.0160	6.06	<0.01	<0.01	-
Lead	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Lithium	mg/L	0.0414	0.0404	2.44	0.0488	0.0490	0.409	0.0426	0.0440	3.23
Magnesium	mg/L	42.3	39.9	5.84	69.5	70.9	1.99	36.9	37.5	1.61
Manganese	mg/L	0.00261	0.00258	1.16	0.00518	0.00516	0.387	0.000660	0.000510	25.6
Mercury	µg/L	<0.005	<0.005	-	<0.005	<0.005	-	<0.005	0.00540	7.69
Molybdenum	mg/L	0.00166	0.00174	4.71	0.000929	0.00122	27.1	0.000999	0.00106	5.93
Nickel	mg/L	0.00326	0.00315	3.43	0.000800	0.000830	3.68	0.00324	0.00318	1.87
Potassium	mg/L	2.14	1.87	13.5	2.06	2.06	0	1.37	1.43	4.29
Selenium	µg/L	56.7	55.7	1.78	100	97.4	2.63	38.6	38.1	1.30
Silicon	mg/L	1.55	1.68	8.05	2.38	2.40	0.837	1.95	1.96	0.512
Silver	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Sodium	mg/L	2.07	1.89	9.09	3.26	3.36	3.02	1.65	1.69	2.40
Strontium	mg/L	0.112	0.113	0.889	0.193	0.195	1.03	0.150	0.150	0
Sulphur	mg/L	55.6	56.2	1.07	111	107	3.67	63.6	65.2	2.48
Thallium	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Tin	mg/L	<0.0001	<0.0001	-	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Titanium	mg/L	<0.0003	<0.0003	-	<0.0003	<0.0003	-	<0.0003	<0.0003	-
Uranium	mg/L	0.00280	0.00289	3.16	0.00396	0.00391	1.27	0.00227	0.00229	0.877
Vanadium	mg/L	<0.0005	<0.0005	-	<0.0005	<0.0005	-	<0.0005	<0.0005	-
Zinc	mg/L	0.00220	0.00230	4.44	0.00160	0.00290	57.8	0.00140	0.00150	6.90

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL. Turbidity was not analyzed in duplicate samples.

Table A.5: Field Duplicate Results for Water Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RPD (%)	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RPD (%)	RG_UFR1_WS_2021-12-16_1000	RG_RIVER_WS_2021-12-16_1000	RPD (%)
Physical Tests										
Conductivity	μS/cm	857	855	0.234	764	783	2.46	300	296	1.34
Hardness (as $CaCO_3$)	mg/L	458	452	1.32	428	425	0.703	167	167	0
pH	pH	8.38	8.39	0.119	8.21	8.28	0.849	8.04	8.05	0.124
ORP	mV	468	437	6.85	469	432	8.21	412	445	7.70
Total Suspended Solids	mg/L	21.6	1.00	182	5.10	28.0	138	<1	<1	-
Total Dissolved Solids	mg/L	616	644	4.44	534	554	3.68	203	171	17.1
Turbidity	NTU	0.380	-	-	0.530	-	-	1.44	-	-
Anions and Nutrients										
Acidity (as $CaCO_3$)	mg/L	<2	<2	-	<2	<2	-	<2	<2	-
Alkalinity, Bicarbonate (as $CaCO_3$)	mg/L	219	220	0.456	240	234	2.53	162	168	3.64
Alkalinity, Bicarbonate (as HCO_3)	mg/L	180	180	0	197	191	3.09	133	138	3.69
Alkalinity, Carbonate (as $CaCO_3$)	mg/L	4.70	5.50	15.7	<1	<1	-	<1	<1	-
Alkalinity, Carbonate (as CO_3)	mg/L	7.80	9.20	16.5	<1	<1	-	<1	<1	-
Alkalinity, Hydroxide (as $CaCO_3$)	mg/L	<1	<1	-	<1	<1	-	<1	<1	-
Alkalinity, Hydroxide (as OH)	mg/L	<1	<1	-	<1	<1	-	<1	<1	-
Alkalinity, Total (as $CaCO_3$)	mg/L	187	190	1.59	197	191	3.09	133	138	3.69
Bromide	mg/L	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-
Chloride	mg/L	0.810	0.760	6.37	0.910	0.900	1.10	0.200	0.210	4.88
Fluoride	mg/L	0.156	0.159	1.90	0.184	0.185	0.542	0.144	0.144	0
Ammonia, Total (as N)	mg/L	0.0180	0.0234	26.1	<0.005	0.00760	41.3	0.00500	0.0101	67.5
Nitrate (as N)	mg/L	16.0	16.1	0.623	16.1	16.0	0.623	0.102	0.105	2.90
Nitrite (as N)	mg/L	0.0219	0.0224	2.26	0.00730	0.00670	8.57	0.00100	0.00120	18.2
Total Kjeldahl Nitrogen	mg/L	<0.05	0.0710	34.7	<0.05	<0.05	-	0.0560	0.0600	6.90
Orthophosphate	mg/L	<0.001	<0.001	-	<0.001	<0.001	-	0.00470	0.00870	59.7
Phosphorus, Total	mg/L	<0.002	<0.002	-	<0.002	<0.002	-	0.00600	0.0127	71.7
Sulphate	mg/L	230	233	1.30	177	175	1.14	37.0	36.6	1.09
Anion Sum	meq/L	9.70	9.83	1.33	8.81	8.64	1.95	3.45	3.54	2.58
Cation Sum	meq/L	9.28	9.16	1.30	8.69	8.62	0.809	3.38	3.38	0
Cation - Anion Difference	%	2.21	3.53	46.0	0.686	0.116	142	1.02	2.31	77.5
Cation - Anion Ratio	%	95.7	93.2	2.65	98.6	99.8	1.21	98.0	95.5	2.58
Organic / Inorganic Carbon										
Dissolved Organic Carbon	mg/L	0.890	0.890	0	1.63	1.60	1.86	1.44	1.38	4.26
Total Organic Carbon	mg/L	1.18	0.800	38.4	1.68	1.51	10.7	1.37	1.76	24.9
Total Metals										
Aluminum	mg/L	0.00340	0.00450	27.8	0.00740	0.0102	31.8	0.0541	0.0671	21.5
Antimony	mg/L	0.000320	0.000330	3.08	0.000200	0.000200	0	<0.0001	<0.0001	-
Arsenic	mg/L	0.000120	0.000130	8.00	0.000100	0.000120	18.2	0.000160	0.000140	13.3
Barium	mg/L	0.0766	0.0786	2.58	0.0550	0.0544	1.10	0.0596	0.0590	1.01
Beryllium	μg/L	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	<0.02	-
Bismuth	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Boron	mg/L	0.0130	0.0130	0	0.0110	0.0110	0	<0.01	<0.01	-
Cadmium	μg/L	0.0264	0.0311	16.3	0.0454	0.0489	7.42	0.0160	0.0213	28.4
Calcium	mg/L	106	108	1.87	98.6	103	4.37	44.4	43.5	2.05
Chromium	mg/L	0.000110	0.000110	0	<0.0001	0.000180	57.1	0.000220	0.000270	20.4
Cobalt	μg/L	0.190	0.200	5.13	<0.1	<0.1	-	<0.1	<0.1	-
Copper	mg/L	<0.0005	<0.0005	-	<0.0005	<0.0005	-	<0.0005	<0.0005	-
Iron	mg/L	0.0470	0.0500	6.19	0.0130	0.0160	20.7	0.0300	0.0270	10.5
Lead	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Lithium	mg/L	0.0497	0.0499	0.402	0.0370	0.0368	0.542	0.00140	0.00140	0
Magnesium	mg/L	44.6	46.6	4.39	44.8	44.8	0	12.0	11.5	4.26
Manganese	mg/L	0.0143	0.0145	1.39	0.00295	0.00324	9.37	0.000860	0.000840	2.35
Mercury	μg/L	<0.0005	<0.0005	-	0.00111	0.00123	10.3	0.000930	0.000640	36.9
Molybdenum	mg/L	0.00176	0.00180	2.25	0.00140	0.00141	0.712	0.000618	0.000566	8.78
Nickel	mg/L	0.00534	0.00545	2.04	0.00217	0.00214	1.39	<0.0005	<0.0005	-
Potassium	mg/L	1.87	1.91	2.12	1.77	1.77	0	0.358	0.363	1.39
Selenium	μg/L	47.6	48.1	1.04	59.4	58.3	1.87	0.720	0.848	16.3
Silicon	mg/L	1.86	1.82	2.17	1.78	1.85	3.86	2.04	1.94	5.03
Silver	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Sodium	mg/L	1.85	1.91	3.19	2.17	2.12	2.33	0.663	0.693	4.42
Strontium	mg/L	0.161	0.167	3.66	0.127	0.133	4.62	0.0897	0.0880	1.91
Sulphur	mg/L	77.2	76.4	1.04	69.1	70.3	1.72	12.7	12.9	1.56
Thallium	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Tin	mg/L	<0.0001	<0.0001	-	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Titanium	mg/L	<0.0003	<0.0003	-	<0.0003	<0.0003	-	0.000970	0.00112	14.4
Uranium	mg/L	0.00296	0.00305	3.00	0.00297	0.00298	0.336	0.000471	0.000461	2.15
Vanadium	mg/L	<0.0005	<0.0005	-	<0.0005	<0.0005	-	<0.0005	<0.0005	-
Zinc	mg/L	<0.003	<0.003	-	<0.003	<0.003	-	<0.003	<0.003	-

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL. Turbidity was not analyzed in duplicate samples.

Table A.5: Field Duplicate Results for Water Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RPD (%)	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RPD (%)	RG_UFR1_WS_2021-12-16_1000	RG_RIVER_WS_2021-12-16_1000	RPD (%)
Dissolved Metals										
Aluminum	mg/L	<0.001	<0.001	-	0.00230	0.00160	35.9	0.0166	0.0256	42.7
Antimony	mg/L	0.000320	0.000320	0	0.000190	0.000190	0	<0.0001	<0.0001	-
Arsenic	mg/L	<0.0001	<0.0001	-	0.000130	0.000130	0	<0.0001	<0.0001	-
Barium	mg/L	0.0796	0.0786	1.26	0.0584	0.0584	0	0.0586	0.0578	1.37
Beryllium	µg/L	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	<0.02	-
Bismuth	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Boron	mg/L	0.0120	0.0120	0	0.0110	0.0110	0	<0.01	<0.01	-
Cadmium	µg/L	0.0302	0.0258	15.7	0.0406	0.0451	10.5	0.0124	0.0118	4.96
Calcium	mg/L	103	103	0	99.7	96.7	3.05	46.0	46.6	1.30
Chromium	mg/L	<0.0001	<0.0001	-	<0.0001	0.000100	0	0.000110	0.000140	24.0
Cobalt	µg/L	0.190	0.180	5.41	<0.1	<0.1	-	<0.1	<0.1	-
Copper	mg/L	<0.0002	<0.0002	-	0.000200	<0.0002	0	0.000230	0.000210	9.09
Iron	mg/L	0.0300	0.0310	3.28	<0.01	<0.01	-	<0.01	0.0160	46.2
Lead	mg/L	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Lithium	mg/L	0.0489	0.0477	2.48	0.0362	0.0362	0	0.00160	0.00150	6.45
Magnesium	mg/L	48.7	47.2	3.13	43.6	44.5	2.04	12.7	12.3	3.20
Manganese	mg/L	0.0145	0.0144	0.692	0.00208	0.00196	5.94	0.000360	0.000620	53.1
Mercury	µg/L	<0.005	<0.005	-	<0.005	<0.005	-	<0.005	<0.005	-
Molybdenum	mg/L	0.00178	0.00178	0	0.00129	0.00132	2.30	0.000569	0.000574	0.875
Nickel	mg/L	0.00563	0.00561	0.356	0.00184	0.00186	1.08	<0.0005	<0.0005	-
Potassium	mg/L	1.96	1.92	2.06	1.74	1.76	1.14	0.350	0.344	1.73
Selenium	µg/L	52.7	50.7	3.87	58.8	63.6	7.84	0.706	0.725	2.66
Silicon	mg/L	2.03	2.01	0.990	1.73	1.75	1.15	1.85	1.88	1.61
Silver	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Sodium	mg/L	2.00	1.95	2.53	1.94	1.96	1.03	0.702	0.678	3.48
Strontium	mg/L	0.161	0.166	3.06	0.119	0.122	2.49	0.0821	0.0823	0.243
Sulphur	mg/L	85.9	84.3	1.88	64.8	64.7	0.154	12.2	11.8	3.33
Thallium	mg/L	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Tin	mg/L	<0.0001	<0.0001	-	<0.0001	<0.0001	-	<0.0001	<0.0001	-
Titanium	mg/L	<0.0003	<0.0003	-	<0.0003	<0.0003	-	0.000460	0.000840	58.5
Uranium	mg/L	0.00295	0.00305	3.33	0.00290	0.00286	1.39	0.000470	0.000441	6.37
Vanadium	mg/L	<0.0005	<0.0005	-	<0.0005	<0.0005	-	<0.0005	<0.0005	-
Zinc	mg/L	0.00130	0.00110	16.7	0.00220	0.00140	44.4	0.00640	0.00110	141

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL. Turbidity was not analyzed in duplicate samples.

be calculated as analyte concentrations in both samples were below the LRL. Of the 385 RPDs that could be calculated, 34 analyte results had RPDs greater than 30% (8.8% of all pairs; Table A.5). Of the comparisons with RPDs greater than 30%, 10 RPDs resulted from analyte concentrations near and below the LRL, where greater variability is expected. RPDs for analytes of primary concern that exceeded the DQO included one RPD for carbonate alkalinity as $CaCO_3$. Relative percent differences for analytes that are not of primary concern that exceeded the DQO included one RPD for total organic carbon, total aluminum, arsenic, and copper, total and dissolved iron, and dissolved manganese and titanium, two RPDs for TKN and total chromium, and three RPDs for total ammonia, total suspended solids (TSS), and dissolved aluminum and zinc. Overall, as only 8.8% of calculable RPDs exceeded the DQO, the data were considered to have adequate field precision and reproducibility. Field duplicate samples were not collected for selenium speciation.

A2.4 Data Accuracy

A total of 45 matrix spike (MS) samples were used to evaluate precision within the ALS laboratory reports (Appendix K). Of the 1,267 individual analyte results, one result was flagged by ALS was it was biased low due to interference from high nitrate in the parent sample that was used, which causes a negative bias in TKN (see laboratory report CG2104008 in Appendix K). Recovery could not be calculated in numerous MS samples as background levels were greater than or equal to one-times spike levels. However, as several other QC tests were successful and do not imply uncertainties as to ALS data accuracy, MS recovery not being calculable in several MS samples does not present concern as to the reliability of the data. Overall, ALS laboratory analytical precision was considered excellent.

Data accuracy within the BAL laboratory reports was evaluated based on results of 26 LCS, 13 MS samples, 13 Matrix Spike Duplicate (MSD) samples, and 22 Reference Material (RM) samples (Appendix K). All 42 LCS results, 25 MS results, 25 MSD results, and 22 RM results met the laboratory DQO; therefore, BAL laboratory analytical precision was considered excellent.

A2.5 Hold Times

The recommended hold times for pH and ORP analyses (0.25 to 0.34 hrs) were exceeded in all samples collected. As *in situ* pH and ORP were used for data interpretation, these hold time exceedances had no impact on data interpretability. The hold times for nitrite, nitrate, and turbidity were exceeded by one day in eight samples each (see laboratory reports CG2106911 and CG2104067 in Appendix K). The hold times for nitrite and nitrate were also exceeded by less than one day in one sample each (see laboratory report CG2104149) and by four days in four samples each (see laboratory report CG2104110). The hold time for nitrate was exceeded by two days in two samples (see laboratory report CG2104213). The hold time for turbidity was also exceeded by less than one day in one sample (see laboratory report CG2104008). The hold time for dissolved orthophosphate was exceeded by one day in 17 samples (see laboratory reports CG2104213 and CG2106911). The only analytes of primary concern for which hold times were exceeded were nitrate and nitrite, and these hold time exceedances will be taken into consideration during data interpretation. All hold times were met for selenium speciation samples.

A2.6 Other Concerns

Samples for dissolved organic carbon (DOC), dissolved metals, and dissolved mercury were not submitted for the trip blank sample submitted to ALS in September. Additionally, a total mercury sample was not submitted from RG_FOBCP in June. Therefore, data for these analytes were not available for these samples. The sample for dissolved mercury from RG_FO26 in June was not preserved in the field; therefore, dissolved mercury results from this sample may be biased low and should be treated with caution in analyses. Total selenium samples submitted to BAL for RG_FOUCL and RG_FRUPO in December arrived in broken containers but were still contained in the plastic bags used for secondary containment. There was minimal risk of cross-contamination and measurements of total selenium from these samples were flagged as estimates. Additionally, total selenium sample for RG_FOBKS in December was not submitted to Brooks; however, total selenium concentrations are taken from ALS reports, so the above estimates and absences of total selenium concentrations from BAL did not affect the resultant data. Additionally, 13 results for selenosulfate were flagged as estimates by BAL (see laboratory reports 2106283 and 2109306 in Appendix K). These results were affected by chromatic interference, as indicated by elevated baselines or co-eluting peaks.

A2.7 Data Quality Statement

Water chemistry data collected for the 2021 FRO LAEMP were of acceptable quality as characterized by appropriate LRLs, negligible analyte concentrations in method blanks, excellent laboratory precision and accuracy, adequate field precision and reproducibility, and few hold time exceedances. Field and trip blank analyses indicated potential contamination that will be taken into consideration during data interpretation. Overall, the associated data can be used with a high level of confidence in the derivation of conclusions.

A3 SEDIMENT CHEMISTRY

A3.1 Laboratory Reporting Limits

The analytical reports for sediment chemistry from ALS (Appendix K) were examined to assess LRLs relative to analyte concentrations and applicable guidelines (Table A.6). The LRLs for these analytes were assessed relative to existing British Columbia Working Sediment Quality Guidelines (BC WSQG; BCMOECCS 2021). Five analytes were reported at concentrations below the LRL in 100% of samples (bismuth, tin, tungsten, zirconium, and quinoline; Table A.6); however, no relevant guidelines exist for these analytes. All LRLs for metals were above relevant guidelines, but several LRLs for polycyclic aromatic hydrocarbons (PAHs) including acenaphthene, acenaphthylene, chrysene, and dibenz(a,h)anthracene exceeded the lower BC WSQG (i.e., Interim Sediment Quality Guideline) in 26.7% to 87.5% of samples. The LRLs for acenaphthene also exceeded the upper BC WSQG (i.e., Probable Effect Limit) in 27.8% of samples. The reason for these high LRLs was due to a combination of chromatographic interference due to PAH co-elution effects and high moisture content (resulting in low sample volume) in specific sediment samples. High LRLs for PAHs will be considered during data interpretation, but as only five LRLs for one analyte (acenaphthene) exceeded relevant guidelines, LRLs were ultimately considered appropriate for this study.

A3.2 Laboratory Blanks

A total of 35 MB samples were analyzed in the ALS laboratory reports (Appendix K). All 580 individual analyte results met the laboratory DQO, indicating no inadvertent contamination of sediment samples during analysis. Therefore, laboratory precision as determined by laboratory blanks was considered excellent.

A3.3 Data Precision

A total of 10 laboratory duplicate samples were used to evaluate precision within the ALS laboratory reports (Appendix K). All 135 individual analyte results met the laboratory DQO (Table A.1). Therefore, ALS laboratory analytical precision was considered excellent.

One set of field duplicate samples was collected to assess field sampling precision for sediment chemistry (Table A.7). Samples were collected as split samples (i.e., a larger sample was homogenized and then split into two duplicate sub-samples), and some variability was expected based on the inherent heterogeneity of sediments. Several RPDs could not be calculated as both analyte concentrations in the pair were below the LRL. Of the 58 RPDs that could be calculated, only two were greater than 30% (benzo(g,h,i)perylene and perylene;

Table A.6: **Laboratory Reporting Limit (LRL) Evaluation for Sediment Chemistry Analyses, FRO LAEMP, 2021**

Parameter	Units	BC WSQGs		Range of LRLs	No. LRLs > ISQG	No. LRLs > PEL	No. Sample Results < LRL
		ISQG	PEL				
Particle Size							
% Gravel (>2mm)	%	-	-	1.0	-	-	17 (47.2%)
% Sand (2.00mm - 1.00mm)	%	-	-	1.0	-	-	11 (30.6%)
% Sand (1.00mm - 0.50mm)	%	-	-	1.0	-	-	6 (16.7%)
Metals							
Antimony	mg/kg	-	-	0.1	-	-	2 (5.56%)
Beryllium	mg/kg	-	-	0.1	-	-	2 (5.56%)
Bismuth	mg/kg	-	-	0.2	-	-	36 (100%)
Boron	mg/kg	-	-	5	-	-	16 (44.4%)
Mercury	mg/kg	0.170	0.486	0.005	0	0	2 (5.56%)
Silver	mg/kg	0.500	-	0.1	0	-	3 (8.33%)
Sulphur	mg/kg	-	-	1000	-	-	31 (86.1%)
Thallium	mg/kg	-	-	0.05	-	-	2 (5.56%)
Tin	mg/kg	-	-	2	-	-	36 (100%)
Tungsten	mg/kg	-	-	0.5	-	-	36 (100%)
Zirconium	mg/kg	-	-	1	-	-	36 (100%)
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	0.00671	0.0889	0.005 to 0.22	15 (83.3%)	5 (27.8%)	18 (50.0%)
Acenaphthylene	mg/kg	0.00587	0.128	0.005 to 0.016	8 (26.7%)	0	30 (83.3%)
Acridine	mg/kg	-	-	0.01 to 0.27	-	-	18 (50.0%)
Anthracene	mg/kg	0.0469	0.245	0.004 to 0.008	0	0	35 (97.2%)
Benzo(a)anthracene	mg/kg	-	-	NA	-	-	13 (36.1%)
Benzo(a)pyrene	mg/kg	0.0319	0.782	0.01 to 0.03	0	0	15 (41.7%)
Benzo(b&j)fluoranthene	mg/kg	-	-	0.01 to 0.02	-	-	2 (5.56%)
Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.015 to 0.03	-	-	4 (11.1%)
Benzo(g,h,i)perylene	mg/kg	0.170	0.320	0.01 to 0.03	0	0	11 (30.6%)
Benzo(k)fluoranthene	mg/kg	0.240	13.4	0.01 to 0.02	0	0	34 (94.4%)
Benzo(e)pyrene	mg/kg	-	-	0.01 to 0.02	-	-	2 (5.56%)
Chrysene	mg/kg	0.0571	0.862	0.01 to 0.36	7 (87.5%)	0	8 (22.2%)
Dibenz(a,h)anthracene	mg/kg	0.00622	0.135	0.005 to 0.03	9 (39.1%)	0	23 (63.9%)
Fluoranthene	mg/kg	0.111	2.36	0.01 to 0.02	0	0	10 (27.8%)
Fluorene	mg/kg	0.0212	0.144	0.01 to 0.02	0	0	1 (2.78%)
Indeno(1,2,3-c,d)pyrene	mg/kg	0.200	3.20	0.01 to 0.02	0	0	34 (94.4%)
Perylene	mg/kg	-	-	0.01 to 0.02	-	-	30 (83.3%)
Pyrene	mg/kg	0.0530	0.875	0.01 to 0.02	0	0	3 (8.33%)
Quinoline	mg/kg	-	-	0.015 to 0.05	-	-	36 (100%)
B(a)P Total Potency Equivalent	mg/kg	-	-	0.02 to 0.03	-	-	10 (27.8%)

Notes: Only analytes with at least one result < Laboratory Reporting Limit (LRL) or LRL were above guidelines were displayed. The total number of samples in 2021 (n) was 37, which included one field duplicate sample. "-" = no applicable guideline exists, BC WSQGs = British Columbia Sediment Quality Guidelines (BCMOECCS 2021); ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Limit; LRL = Laboratory Reporting Limit; BCMOECCS = British Columbia Ministry of Environment and Climate Change Strategy.

Table A.7: Field Duplicate Results for Sediment Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	RG_FO22_SE-5_2021-09-12_0900	RG_RIVER_SE_2021-09-12_0900	RPD (%)
Physical Tests				
% Moisture	%	54.2	53.7	0.927
pH (1:2 soil:water)	pH	8.43	8.24	2.28
Particle Size				
% Gravel (>2mm)	%	<1	<1	-
% Sand (2.00mm - 1.00mm)	%	<1	<1	-
% Sand (1.00mm - 0.50mm)	%	<1	<1	-
% Sand (0.50mm - 0.25mm)	%	<1	<1	-
% Sand (0.25mm - 0.125mm)	%	8.30	9.00	8.09
% Sand (0.125mm - 0.063mm)	%	18.6	18.8	1.07
% Silt (0.063mm - 0.0312mm)	%	30.4	29.4	3.34
% Silt (0.0312mm - 0.004mm)	%	35.7	35.8	0.280
% Clay (<4um)	%	6.20	6.20	0
Organic / Inorganic Carbon				
Total Organic Carbon	%	6.09	5.17	16.3
Metals				
Aluminum	mg/kg	6,830	6,780	0.735
Antimony	mg/kg	0.550	0.520	5.61
Arsenic	mg/kg	4.84	4.50	7.28
Barium	mg/kg	175	164	6.49
Beryllium	mg/kg	0.520	0.510	1.94
Bismuth	mg/kg	<0.2	<0.2	-
Boron	mg/kg	6.40	6.70	4.58
Cadmium	mg/kg	1.18	1.19	0.844
Calcium	mg/kg	40,800	40,100	1.73
Chromium	mg/kg	13.1	12.8	2.32
Cobalt	mg/kg	5.62	5.23	7.19
Copper	mg/kg	14.1	13.2	6.59
Iron	mg/kg	13,100	12,200	7.11
Lead	mg/kg	8.44	8.08	4.36
Lithium	mg/kg	10.8	10.6	1.87
Magnesium	mg/kg	13,600	12,600	7.63
Manganese	mg/kg	516	471	9.12
Mercury	mg/kg	0.0394	0.0482	20.1
Molybdenum	mg/kg	1.26	1.19	5.71
Nickel	mg/kg	26.5	24.8	6.63
Phosphorus	mg/kg	1,410	1,270	10.4
Potassium	mg/kg	1,450	1,500	3.39
Selenium	mg/kg	1.97	1.98	0.506
Silver	mg/kg	0.200	0.230	14.0
Sodium	mg/kg	74.0	70.0	5.56
Strontium	mg/kg	53.7	52.2	2.83
Sulphur	mg/kg	<1000	<1000	-
Thallium	mg/kg	0.218	0.216	0.922
Tin	mg/kg	<2	<2	-
Titanium	mg/kg	14.4	13.0	10.2
Tungsten	mg/kg	<0.5	<0.5	-
Uranium	mg/kg	1.06	1.01	4.83
Vanadium	mg/kg	29.3	28.3	3.47
Zinc	mg/kg	97.3	91.3	6.36
Zirconium	mg/kg	<1	<1	-
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	mg/kg	0.0279	0.0287	2.83
Acenaphthylene	mg/kg	<0.005	<0.005	-
Acridine	mg/kg	0.0400	0.0390	2.53
Anthracene	mg/kg	<0.004	<0.004	-
Benzo(a)anthracene	mg/kg	0.0150	0.0190	23.5
Benzo(a)pyrene	mg/kg	<0.01	<0.01	-
Benzo(b&j)fluoranthene	mg/kg	0.0350	0.0380	8.22
Benzo(b+j+k)fluoranthene	mg/kg	0.0350	0.0380	8.22
Benzo(e)pyrene	mg/kg	0.0350	0.0390	10.8
Benzo(g,h,i)perylene	mg/kg	<0.01	0.0170	51.9
Benzo(k)fluoranthene	mg/kg	<0.01	<0.01	-
Chrysene	mg/kg	0.0870	0.0910	4.49
Dibenz(a,h)anthracene	mg/kg	<0.005	<0.005	-
Fluoranthene	mg/kg	0.0160	0.0160	0
Fluorene	mg/kg	0.0660	0.0660	0
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.01	<0.01	-
1-Methylnaphthalene	mg/kg	0.261	0.275	5.22
2-Methylnaphthalene	mg/kg	0.436	0.440	0.913
Naphthalene	mg/kg	0.141	0.143	1.41
Perylene	mg/kg	0.0150	0.0210	33.3
Phenanthrene	mg/kg	0.328	0.378	14.2
Pyrene	mg/kg	0.0340	0.0280	19.4
Quinoline	mg/kg	<0.05	<0.05	-
d10-Acenaphthene	%	87.0	87.9	1.03
d12-Chrysene	%	87.9	85.5	2.77
d8-Naphthalene	%	85.5	83.1	2.85
Phenanthrene d10	%	97.7	98.1	0.409
B(a)P Total Potency Equivalent	mg/kg	<0.02	<0.02	-

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL.

3.4% of all pairs; Table A.7). The RPD for benzo(g,h,i)perylene resulted from an analyte concentration below the LRL, where greater variability is expected. The greater variability observed for polycyclic aromatic hydrocarbons (PAHs) is likely attributed to residual heterogeneity in the samples. Subtle differences in the distribution of fine particulate matter and associated PAHs amongst split samples may exist even after homogenization in the field. Since only 3.4% of calculable RPDs exceeded the DQO, the data were considered to have excellent field precision and reproducibility.

A3.4 Data Accuracy

Data accuracy for sediment chemistry analyses completed by ALS was evaluated based on the analysis of 39 LCS, five CRM samples, and 32 Internal Reference Material (IRM) samples. All 503 LCS, 165 CRM, and 344 IRM individual analyte results met the laboratory DQO (Table A.1). Therefore, the accuracy achieved by the laboratory was considered excellent.

A3.5 Hold Times

All recommended hold times were met for all samples.

A3.6 Data Quality Statement

Sediment chemistry data collected for the 2021 FRO LAEMP were of acceptable quality as characterized by appropriate LRLs, excellent laboratory precision and accuracy, good field precision and reproducibility, and no hold time exceedances. Overall, the associated data were considered acceptable for this study.

A4 BENTHIC INVERTEBRATE COMMUNITY

A4.1 Organism Sorting Efficiency

The analytical reports from Cordillera Consulting Inc. (benthic invertebrate community structure; see Appendix K for laboratory reports) were examined to assess sub-sampling accuracy. Canadian Aquatic Biomonitoring Network (CABIN) protocols were followed for sub-sampling (i.e., identification of a minimum 300 invertebrates), with a minimum of 5% of a sample being assessed. Of the 139 benthic invertebrate community samples analyzed, only one sample was processed in its entirety (Table A.8). The proportion of sub-sampled material ranged from 5% to 90% of the total sample material (Table A.8). Both the precision and accuracy of the subsamples randomly chosen for subsample assessment (approximately 10% of samples that were subsampled; n = 13) met the DQO in all subsamples (Table A.9). Thus, the precision and accuracy for sub-sampling of the benthic invertebrate community samples was considered excellent.

A4.2 Subsampling Accuracy and Accuracy

To measure the effectiveness of the sorters, at least 10% of samples were selected at random for resorting analysis by a different sorter. Sorting efficiency (i.e., percent recovery) of benthic invertebrate samples was excellent, achieving an average of 99.4% for the samples evaluated (Table A.10). As recovery in quality control samples was above the laboratory's DQO (95%), organism sorting efficiency was considered excellent.

A4.3 Taxonomic Identification Accuracy

Cordillera Consulting Inc. performed an internal audit of taxonomic identification for approximately 10% of all community structure samples (n = 13; Table A.11). The analysts reported total identification error rate (TIR) of 0%, percent difference in enumeration (PDE) of 0% to 0.75%, percent taxonomic disagreement (PTD) of 0.402% to 1.79%, and Bray Curtis Dissimilarity Index (BCDI, a measure of the differences in identifications between different analysts) of 0.002 to 0.012 (Table A.11). The laboratory DQO was based on TIR as per CABIN laboratory methods (< 5% TIR; Environment Canada 2014). As TIR was below 5% for all samples examined, the taxonomic accuracy of the analysis was considered excellent.

A4.4 Data Quality Statement

Benthic community data collected for the 2021 FRO LAEMP and analyzed by Cordillera Consulting Inc. were of good quality as characterized by excellent sorting efficiency, subsampling precision and accuracy, and taxonomic identification accuracy. Therefore, the

Table A.8: Percent of Sample Sorted and the Total Number of Invertebrates Recovered from the Sampled Fraction, FRO LAEMP, 2021

Sample ID	Laboratory ID	% Sampled	# Invertebrates
RG_HENUP_BIC-01_2021-06-16	CC220082	5%	313
RG_HENUP_BIC-02_2021-06-16	CC220083	9%	335
RG_HENUP_BIC-03_2021-06-16	CC220084	20%	346
RG_FODHE_BIC-01_2021-06-14	CC220085	5%	441
RG_FODHE_BIC-02_2021-06-14	CC220086	9%	337
RG_FODHE_BIC-03_2021-06-14	CC220087	5%	408
RG_MP1_BIC-01_2021-06-14	CC220088	9%	320
RG_MP1_BIC-02_2021-06-14	CC220089	6%	352
RG_MP1_BIC-03_2021-06-14	CC220090	5%	315
RG_FOUCL_BIC-01_2021-06-14	CC220091	8%	313
RG_FOUCL_BIC-02_2021-06-14	CC220092	5%	392
RG_FOUCL_BIC-03_2021-06-14	CC220093	7%	347
RG_FOUNGD_BIC-01_2021-06-15	CC220094	36%	425
RG_FOUNGD_BIC-02_2021-06-15	CC220095	17%	311
RG_FOUNGD_BIC-03_2021-06-15	CC220096	5%	404
RG_FODNGD_BIC-01_2021-06-15	CC220097	13%	430
RG_FODNGD_BIC-02_2021-06-15	CC220098	50%	428
RG_FODNGD_BIC-03_2021-06-15	CC220099	20%	307
RG_FOBKS_BIC-01_2021-06-16	CC220100	50%	345
RG_FOBKS_BIC-02_2021-06-16	CC220101	20%	364
RG_FOBKS_BIC-03_2021-06-16	CC220102	16%	336
RG_SCOUTDS_BIC-01_2021-06-16	CC220103	5%	392
RG_SCOUTDS_BIC-02_2021-06-16	CC220104	90%	321
RG_SCOUTDS_BIC-03_2021-06-16	CC220105	9%	349
RG_FOUKI_BIC-01_2021-06-17	CC220106	6%	353
RG_FOUKI_BIC-02_2021-06-17	CC220107	10%	321
RG_FOUKI_BIC-03_2021-06-17	CC220108	5%	552
RG_FOBCP_BIC-01_2021-06-17	CC220109	9%	343
RG_FOBCP_BIC-02_2021-06-17	CC220110	5%	343
RG_FOBCP_BIC-03_2021-06-17	CC220111	8%	343
RG_FO26_BIC-01_2021-06-14	CC220112	5%	501
RG_FO26_BIC-02_2021-06-14	CC220113	5%	336
RG_FO26_BIC-03_2021-06-14	CC220114	5%	324
RG_UFR1_BIC-01_2021-06-15	CC220115	5%	452
RG_UFR1_BIC-02_2021-06-15	CC220116	5%	331
RG_UFR1_BIC-03_2021-06-15	CC220117	5%	701
RG_FOBSC_BIC-01_2021-06-17	CC220118	20%	437
RG_FOBSC_BIC-02_2021-06-17	CC220119	9%	315
RG_FOBSC_BIC-03_2021-06-17	CC220120	7%	326
RG_FRCP1SW_BIC-01_2021-06-17	CC220121	27%	354
RG_FRCP1SW_BIC-02_2021-06-17	CC220122	40%	359
RG_FRCP1SW_BIC-03_2021-06-17	CC220123	8%	371
RG_FODPO_BIC-01_2021-06-17	CC220124	5%	406
RG_FODPO_BIC-02_2021-06-17	CC220125	7%	335
RG_FODPO_BIC-03_2021-06-17	CC220126	20%	479
RG_FRUPO_BIC-01_2021-06-18	CC220127	25%	330
RG_FRUPO_BIC-02_2021-06-18	CC220128	5%	339
RG_FRUPO_BIC-03_2021-06-18	CC220129	13%	348
RG_FOUEW_BIC-01_2021-06-18	CC220130	5%	468
RG_FOUEW_BIC-02_2021-06-18	CC220131	7%	336
RG_FOUEW_BIC-03_2021-06-18	CC220132	5%	361
RG_FO22_BIC-01_2021-06-18	CC220133	12%	344
RG_FO22_BIC-02_2021-06-18	CC220134	100%	425
RG_FO22_BIC-03_2021-06-18	CC220135	9%	349
RG_FOUSH_BIC-1_2021-06-16	CC220136	5%	466
RG_FOUSH_BIC-2_2021-06-16	CC220137	5%	387
RG_FOUSH_BIC-3_2021-06-16	CC220138	5%	349
RG_SCOUTDS_BIC-1_2021-09-14	CC221408	5%	434
RG_SCOUTDS_BIC-2_2021-09-14	CC221409	5%	672
RG_SCOUTDS_BIC-3_2021-09-14	CC221410	5%	356
RG_FRCP1SW_BIC-1_2021-09-15	CC221411	5%	502
RG_FRCP1SW_BIC-2_2021-09-15	CC221412	5%	700
RG_FRCP1SW_BIC-3_2021-09-15	CC221413	5%	513
RG_MP1_BIC-1_2021-09-15	CC221414	5%	593
RG_MP1_BIC-2_2021-09-15	CC221415	5%	909
RG_MP1_BIC-3_2021-09-15	CC221416	5%	830
RG_FOUCL_BIC-1_2021-09-13	CC221417	5%	1185
RG_FOUCL_BIC-2_2021-09-13	CC221418	5%	1099
RG_FOUCL_BIC-3_2021-09-13	CC221419	5%	1436
RG_FO22_BIC-1_2021-09-12	CC221420	5%	466
RG_FO22_BIC-2_2021-09-12	CC221421	5%	343
RG_FO22_BIC-3_2021-09-12	CC221422	5%	526
RG_FO22_BIC-4_2021-09-12	CC221423	5%	323
RG_FO22_BIC-5_2021-09-12	CC221424	7%	497

Table A.8: Percent of Sample Sorted and the Total Number of Invertebrates Recovered from the Sampled Fraction, FRO LAEMP, 2021

Sample ID	Laboratory ID	% Sampled	# Invertebrates
RG_FOBSC_BIC-1_2021-09-13	CC221425	5%	355
RG_FOBSC_BIC-2_2021-09-13	CC221426	6%	363
RG_FOBSC_BIC-3_2021-09-13	CC221427	5%	511
RG_FOBKS_BIC-1_2021-09-10	CC221428	5%	395
RG_FOBKS_BIC-2_2021-09-10	CC221429	6%	330
RG_FOBKS_BIC-3_2021-09-10	CC221430	10%	342
RG_FODPO_BIC-1_2021-09-11	CC221431	5%	670
RG_FODPO_BIC-2_2021-09-11	CC221432	5%	952
RG_FODPO_BIC-3_2021-09-11	CC221433	5%	1091
RG_FOBCP_BIC-1_2021-09-14	CC221434	7%	410
RG_FOBCP_BIC-2_2021-09-14	CC221435	5%	561
RG_FOBCP_BIC-3_2021-09-14	CC221436	5%	605
RG_FOBCP_BIC-4_2021-09-14	CC221437	5%	320
RG_FOBCP_BIC-5_2021-09-14	CC221438	5%	502
RG_FOUEW_BIC-1_2021-09-11	CC221439	5%	532
RG_FOUEW_BIC-2_2021-09-11	CC221440	5%	594
RG_FOUEW_BIC-3_2021-09-11	CC221441	5%	610
RG_FODHE_BIC-1_2021-09-13	CC221442	5%	1092
RG_FODHE_BIC-2_2021-09-13	CC221443	5%	504
RG_FODHE_BIC-3_2021-09-13	CC221444	5%	892
RG_FOUSH_BIC-1_2021-09-16	CC221445	5%	341
RG_FOUSH_BIC-2_2021-09-16	CC221446	6%	335
RG_FOUSH_BIC-3_2021-09-16	CC221447	6%	323
RG_FO26_BIC-1_2021-09-16	CC221448	5%	2356
RG_FO26_BIC-2_2021-09-16	CC221449	5%	959
RG_FO26_BIC-3_2021-09-16	CC221450	5%	1071
RG_HENUP_BIC-1_2021-09-16	CC221452	10%	369
RG_HENUP_BIC-2_2021-09-16	CC221453	5%	714
RG_HENUP_BIC-3_2021-09-16	CC221454	5%	492
RG_FOUNGD_BIC-1_2021-09-17	CC221455	5%	485
RG_FOUNGD_BIC-2_2021-09-17	CC221456	5%	1001
RG_FOUNGD_BIC-3_2021-09-17	CC221457	5%	1156
RG_FODNGD_BIC-1_2021-09-17	CC221458	5%	372
RG_FODNGD_BIC-2_2021-09-17	CC221459	5%	718
RG_FODNGD_BIC-3_2021-09-17	CC221460	5%	533
RG_FRUPO_BIC-1_2021-09-19	CC221461	5%	888
RG_FRUPO_BIC-2_2021-09-19	CC221462	5%	566
RG_FRUPO_BIC-3_2021-09-19	CC221463	5%	563
RG_FOUKI_BIC-1_2021-09-20	CC221464	5%	520
RG_FOUKI_BIC-2_2021-09-20	CC221465	5%	408
RG_FOUKI_BIC-3_2021-09-20	CC221466	5%	592
RG_SCOUTDS_BIC-01_2021-12-09	CC222884	5%	1420
RG_SCOUTDS_BIC-02_2021-12-09	CC222885	5%	498
RG_SCOUTDS_BIC-03_2021-12-09	CC222886	5%	806
RG_FOUKI_BIC-01_2021-12-14	CC222887	5%	547
RG_FOUKI_BIC-02_2021-12-14	CC222888	5%	775
RG_FOUKI_BIC-03_2021-12-14	CC222889	5%	491
RG_UFR1_BIC-01_2021-12-16	CC222890	5%	1578
RG_UFR1_BIC-02_2021-12-16	CC222891	5%	1305
RG_UFR1_BIC-03_2021-12-16	CC222892	5%	571
RG_FOBSC_BIC-01_2021-12-09	CC222893	15%	320
RG_FOBSC_BIC-02_2021-12-09	CC222894	50%	369
RG_FOBSC_BIC-03_2021-12-09	CC222895	30%	431
RG_FODPO_BIC-01_2021-12-13	CC222896	5%	809
RG_FODPO_BIC-02_2021-12-13	CC222897	5%	1166
RG_FODPO_BIC-03_2021-12-13	CC222898	5%	1075
RG_FRUPO_BIC-01_2021-12-13	CC222899	5%	1032
RG_FRUPO_BIC-02_2021-12-13	CC222900	5%	1394
RG_FRUPO_BIC-03_2021-12-13	CC222901	5%	2408
RG_FOUEW_BIC-01_2021-12-13	CC222902	5%	1092
RG_FOUEW_BIC-02_2021-12-13	CC222903	5%	1014
RG_FOUEW_BIC-03_2021-12-13	CC222904	5%	750
RG_FO22_BIC-01_2021-12-13	CC222905	5%	559
RG_FO22_BIC-02_2021-12-13	CC222906	5%	851
RG_FO22_BIC-03_2021-12-13	CC222907	5%	965

Table A.9: Benthic Invertebrate Community Sub-sampling Precision and Accuracy, FRO LAEMP, 2021

Station ID		Organisms in Subsample																				Total	Precision Error		Accuracy Error	
Sample ID	Laboratory ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		Min (%)	Max (%)	Min (%)	Max (%)
RG_HENUP_BIC-01_2021-06-16	CC220082	314	308	337	353	335	290	323	316	319	321	318	324	328	311	325	335	295	308	319	320	6,399	0	17.9	0.02	10.3
RG_FODPO_BIC-03_2021-06-17	CC220126	469	478	529	473	486	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,435	0.85	11.3	0.21	8.62
RG_FRUPO_BIC-01_2021-06-18	CC220127	322	289	291	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,198	0.69	10.3	1.17	7.51
RG_FO26_BIC-02_2021-06-14	CC220113	348	313	369	334	316	317	328	355	314	336	337	323	356	347	303	313	341	348	297	335	6,630	0	19.5	0.75	11.3
RG_HENUP_BIC-03_2021-06-16	CC220084	349	315	324	311	324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,623	0	10.9	0.18	7.52
RG_FOBSC_BIC-01_2021-06-17	CC220118	438	396	413	395	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,036	0.25	10.1	1.42	7.56
RG_FO22_BIC-4_2021-09-12	CC221423	319	268	275	287	275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,424	0.00	16.0	0.77	12.0
RG_FOUNGD_BIC-1_2021-09-17	CC221455	472	485	468	466	498	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,389	0.43	6.43	1.21	4.23
RG_FOBCP_BIC-5_2021-09-14	CC221438	409	431	394	434	382	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,050	0.69	12.0	0.24	6.83
RG_FOBSC_BIC-1_2021-09-13	CC221425	346	340	346	332	356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,720	0.00	6.74	0.58	3.49
RG_SCOUTDS_BIC-1_2021-09-14	CC221408	422	397	412	415	432	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,078	0.72	8.10	0.14	4.48
RG_FOBSC_BIC-02_2021-12-09	CC222894	377	385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	762	2.08	2.08	1.05	1.05
RG_SCOUTDS_BIC-02_2021-12-09	CC222885	498	553	495	508	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,521	0.60	15.6	0.75	9.68
																							0.49	**11.30**	**0.65**	**7.27**

Note: "-" indicates subsample was not analyzed.

Table A.10: Benthic Invertebrate Community Sorting Efficiency, FRO LAEMP, 2021

Sample ID	Laboratory ID	Number of Organisms Recovered (Initial Sort)	Number of Organisms in Re-sort	Sorting Efficiency (%)
RG_HENUP_BIC-01_2021-06-16	CC220082	313	1	100.0
RG_MP1_BIC-02_2021-06-14	CC220089	352	3	99.0
RG_FOUCL_BIC-01_2021-06-14	CC220091	313	0	100.0
RG_SCOUTDS_BIC-02_2021-06-16	CC220104	321	1	100.0
RG_UFR1_BIC-02_2021-06-15	CC220116	331	0	100.0
RG_FO22_BIC-01_2021-06-18	CC220133	344	2	99.0
RG_FRCP1SW_BIC-2_2021-09-15	CC221412	700	37	95.0
RG_FOUCL_BIC-2_2021-09-13	CC221418	1099	3	100.0
RG_FO22_BIC-5_2021-09-12	CC221424	497	1	100.0
RG_FOBKS_BIC-2_2021-09-10	CC221429	330	0	100.0
RG_FOUEW_BIC-3_2021-09-11	CC221441	610	1	100.0
RG_FO26_BIC-2_2021-09-16	CC221449	959	3	100.0
RG_FOBSC_BIC-01_2021-12-09	CC222893	320	0	100.0
RG_FODPO_BIC-01_2021-12-13	CC222896	809	8	99.0
				99.4

Table A.11: Percent Benthic Invertebrate Community Organism Recovery[a], FRO LAEMP, 2021

Sample ID	Laboratory ID	Percent Sampled (%)	Taxa Identified	TIR (%)	PDE (%)	PTD (%)	BCDI
RG_HENUP_BIC-01_2021-06-16	CC220082	5	313	0	0	0.639	0.006
RG_FODHE_BIC-02_2021-06-14	CC220086	9	335	0	0.298	1.19	0.009
RG_FODNGD_BIC-02_2021-06-15	CC220098	50	427	0	0.117	0.701	0.006
RG_FOBKS_BIC-03_2021-06-16	CC220102	16	331	0	0.750	1.79	0.010
RG_FOBCP_BIC-03_2021-06-17	CC220111	8	340	0	0.439	1.17	0.007
RG_SCOUTDS_BIC-1_2021-09-14	CC221408	5	435	0	0.115	0.690	0.006
RG_MP1_BIC-2_2021-09-15	CC221415	5	909	0	0	1.21	0.012
RG_FOBSC_BIC-1_2021-09-13	CC221425	5	355	0	0	0.563	0.006
RG_FOBCP_BIC-3_2021-09-14	CC221436	5	604	0	0.083	0.661	0.006
RG_FOUEW_BIC-3_2021-09-11	CC221441	5	609	0	0.082	0.492	0.004
RG_FO26_BIC-1_2021-09-16	CC221448	5	2,358	0	0.042	1.190	0.011
RG_SCOUTDS_BIC-02_2021-12-09	CC222885	5	496	0	0.201	0.402	0.002
RG_FOBSC_BIC-01_2021-12-09	CC222893	15	320	0	0	0.625	0.006

Notes: TIR = Total Identification Error Rate, PDE = Percent Difference in Enumeration, PTD = Percent Taxonomic Disagreement, BCDI = Bray Curtis Dissimilarity Index to quantify differences in identifications.

[a] For error rationale and calculations, refer to Cordillera Consulting laboratory report (Appendix X).

associated data can be used with a high level of confidence in the derivation of conclusions. Quality control procedures were not conducted on benthic invertebrate community structure and density data analyzed by Zeas.

A5 BENTHIC INVERTEBRATE TISSUE CHEMISTRY

A5.1 Laboratory Reporting Limits

Analytical reports of benthic invertebrate tissue metal concentrations from TrichAnalytics (see laboratory reports in Appendix K) were examined to provide an inventory of analyte results below the LRL and to compare the LRLs for these analytes to available benchmarks (Table A.12). Arsenic and mercury were the only analytes that had at least one result below the LRL (Table A.12); however, the sole focus of interpretation of benthic invertebrate tissue chemistry results for the FRO LAEMP was selenium. Selenium was detectable (i.e., above the LRL) in all benthic invertebrate samples, therefore comparison of the selenium LRL to the applicable guidelines was not necessary to assess whether adequate detectability was achieved. Overall, the detectability of selenium in all samples (i.e., below the LRL) indicates that the achieved LRLs were suitable for the study.

A5.2 Data Accuracy and Precision

Data accuracy and precision were evaluated based on the analysis of 25 CRM samples (see laboratory reports in Appendix K). As all 750 CRM results met the laboratory DQO, laboratory accuracy and precision as determined by CRM analyses were considered excellent. Laboratory precision was also evaluated by duplicate analysis of 27 benthic invertebrate tissue samples (Appendix K). As all 810 duplicate results met the laboratory DQO, laboratory accuracy and precision as determined by duplicate analyses were considered excellent.

A5.3 Data Quality Statement

Benthic invertebrate tissue data collected for the 2021 FRO LAEMP were of good quality as characterized by appropriate LRLs and excellent laboratory precision and accuracy. Therefore, the associated data can be used with a good level of confidence in the derivation of conclusions for this study.

Table A.12: Laboratory Reporting Limit (LRL) Evaluation for Benthic Invertebrate Tissue Chemistry Analyses, FRO LAEMP, 2021

Parameter	Units	Range of LRLs	No. Sample Results < LRL
Arsenic	mg/kg dw	0.425 to 0.471	38 (15.2%)
Mercury	mg/kg dw	0.033 to 0.034	63 (25.2%)

Notes: "-" = no applicable guideline exists; LRL = Laboratory Reporting Limit; dw = dry weight. Only analytes with at least one sample results < LRL are displayed. Total number of samples was 250. The only guidelines that exist for benthic invertebrate tissue are for selenium, and LRLs for selenium were below the applicable guidelines.

[a] British Columbia Water Quality Guidelines for the protection of Aquatic Life (BCMOECCS 2021a, BCMOECCS 2021b).

[b] Level 1 EVWQP benchmark for benthic invertebrates.

A6 DATA QUALITY REVIEW SUMMARY

Overall, the quality of the data collected for this project was considered acceptable for the derivation of conclusions associated with the objectives of the 2021 FRO LAEMP. Several results were above detection in field and trip blanks, including for some analytes of primary concern, suggest possible field contamination of water samples that will be taken into consideration during data interpretation.

A7 REFERENCES

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APPENDIX B
WATER

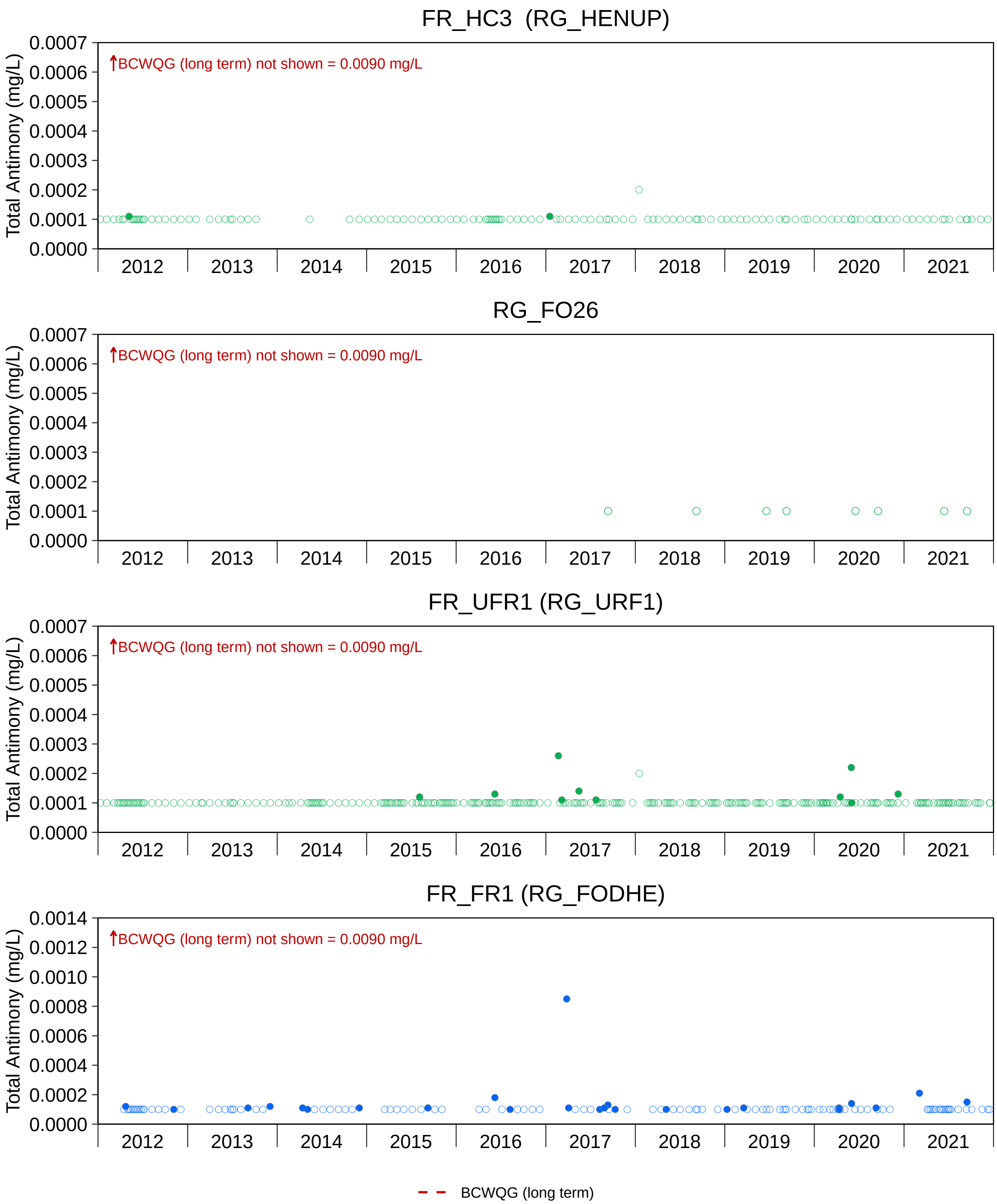

Figure B.1: Time Series Plots for Total Antimony Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

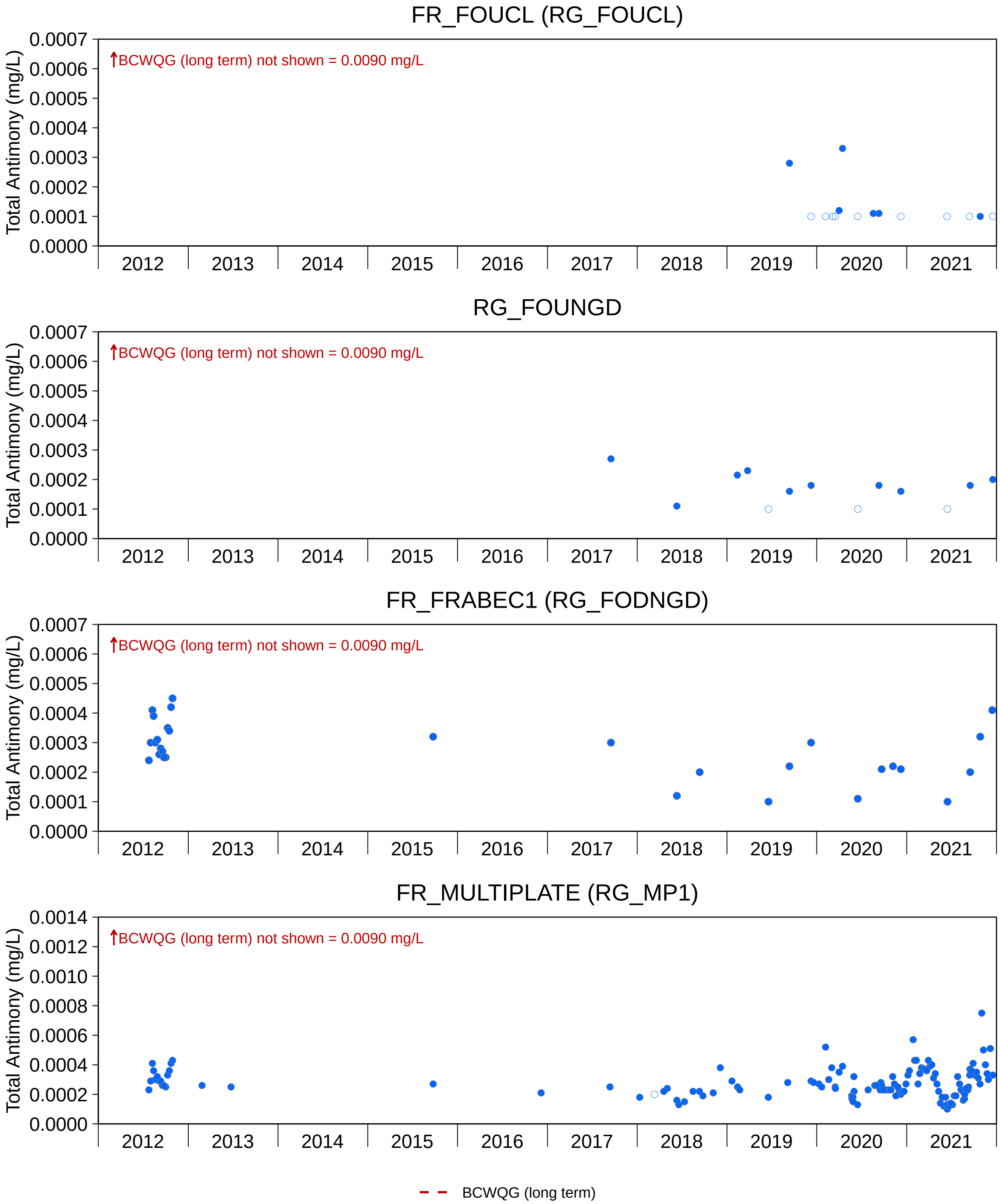

Figure B.1: Time Series Plots for Total Antimony Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

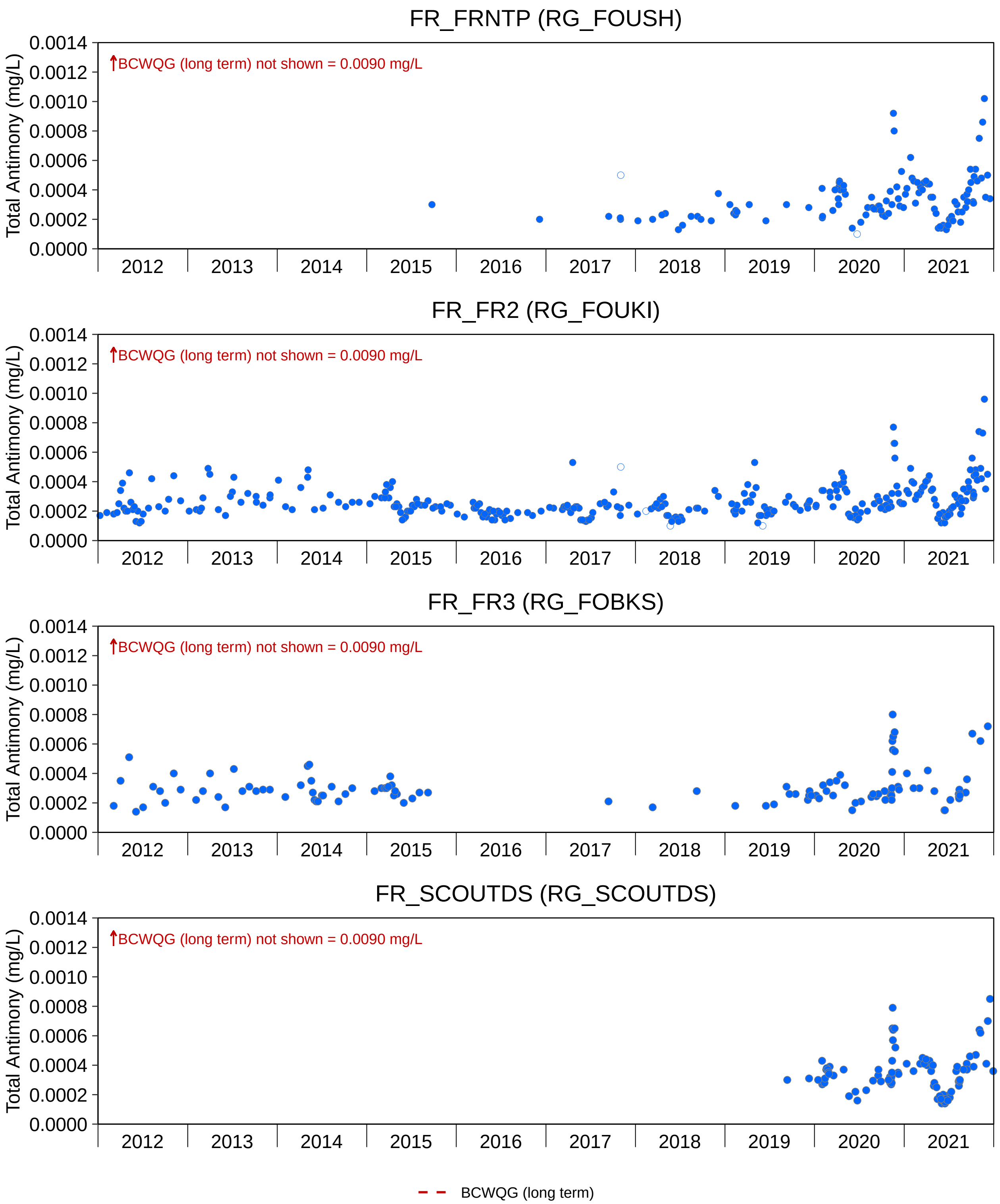

Figure B.1: Time Series Plots for Total Antimony Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

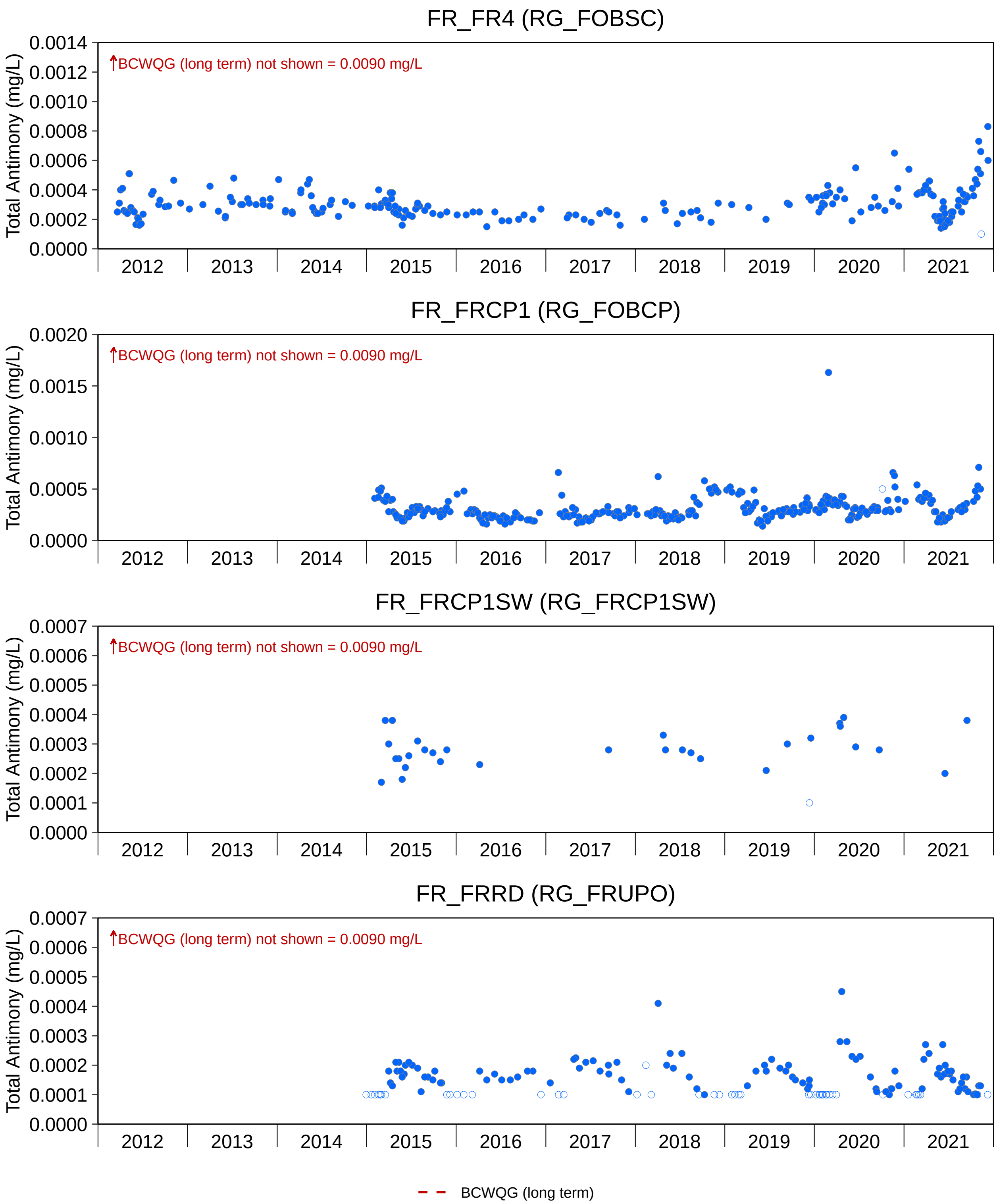

Figure B.1: Time Series Plots for Total Antimony Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

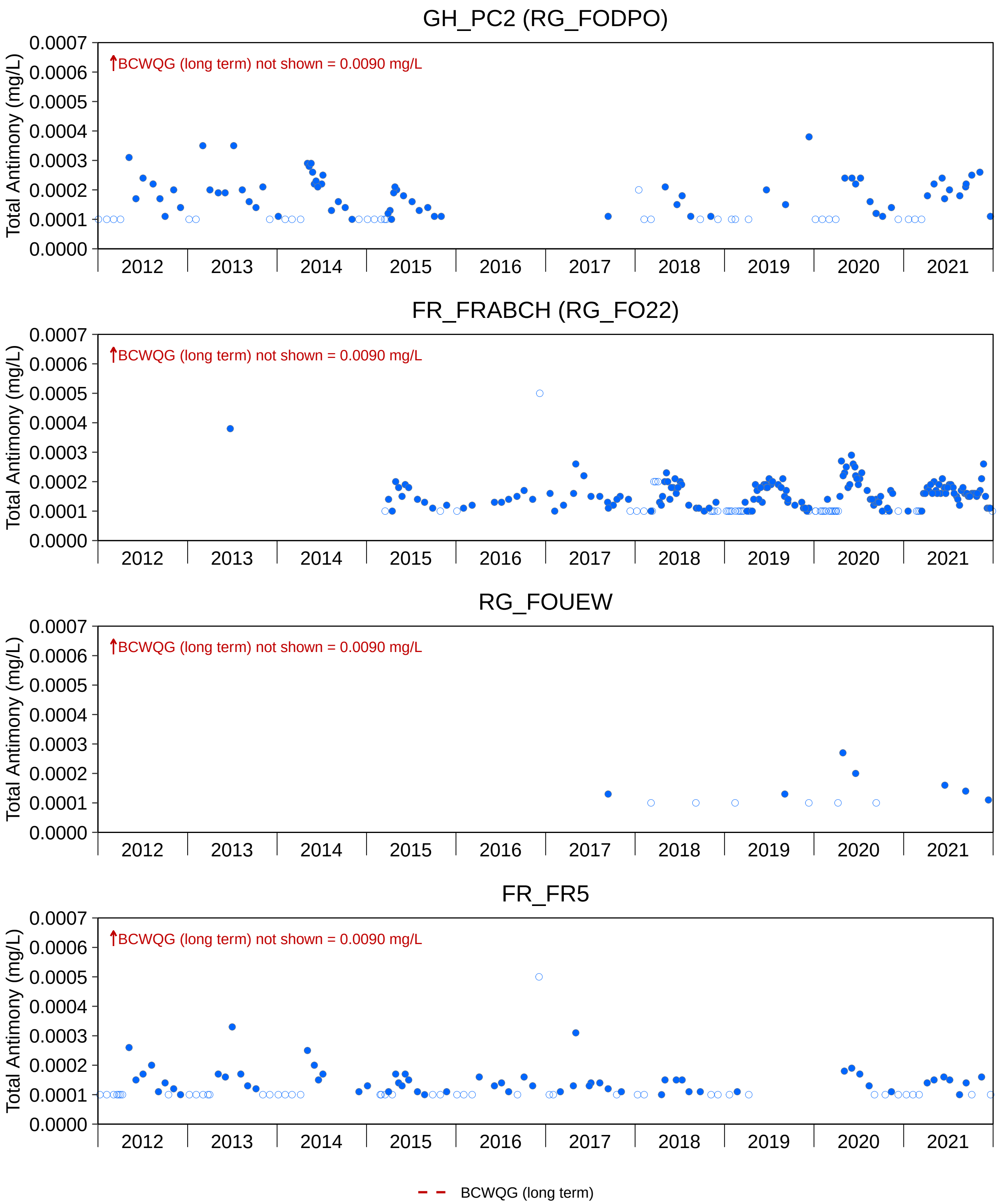

Figure B.1: Time Series Plots for Total Antimony Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

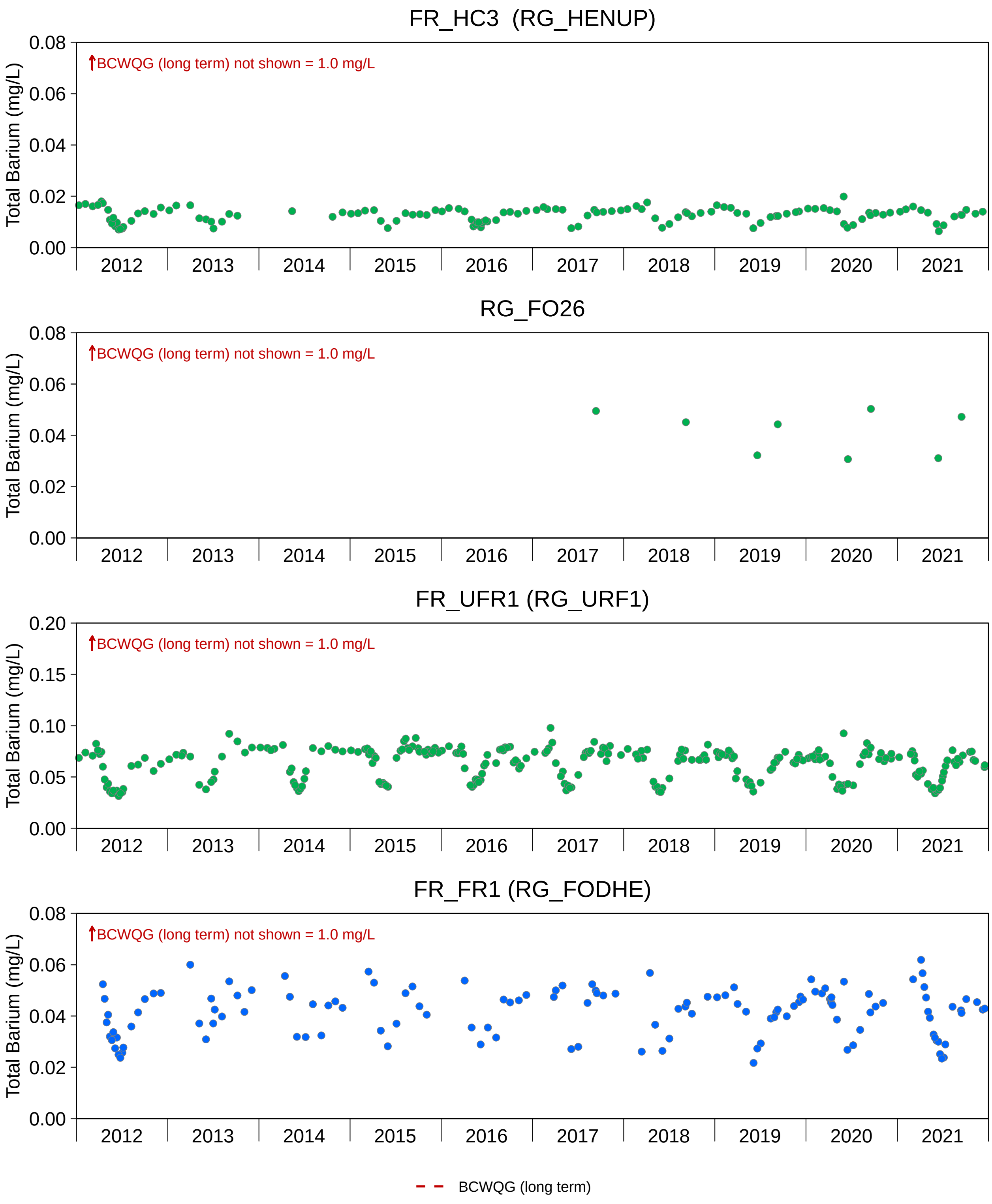

Figure B.2: Time Series Plots for Total Barium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

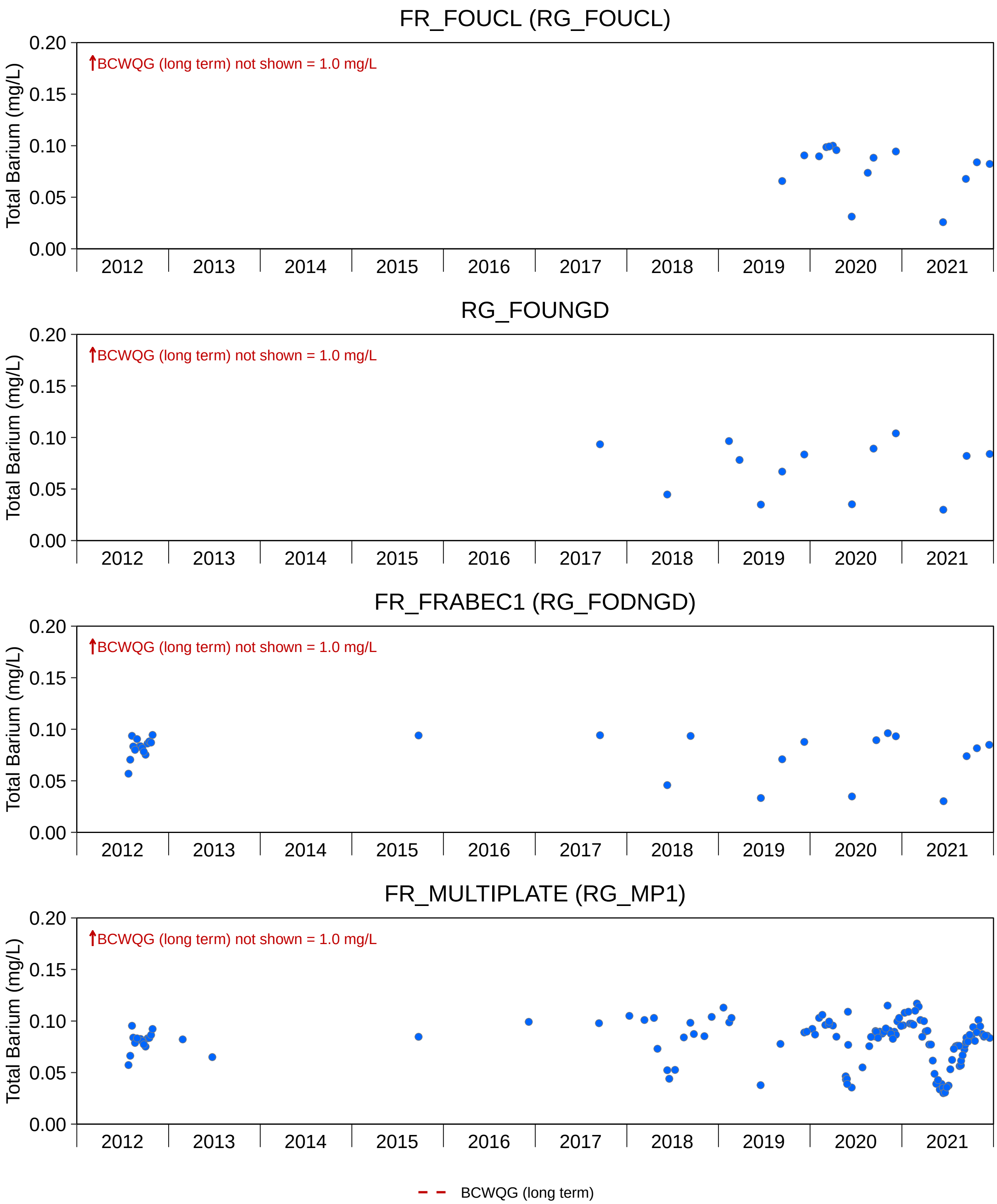

Figure B.2: Time Series Plots for Total Barium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

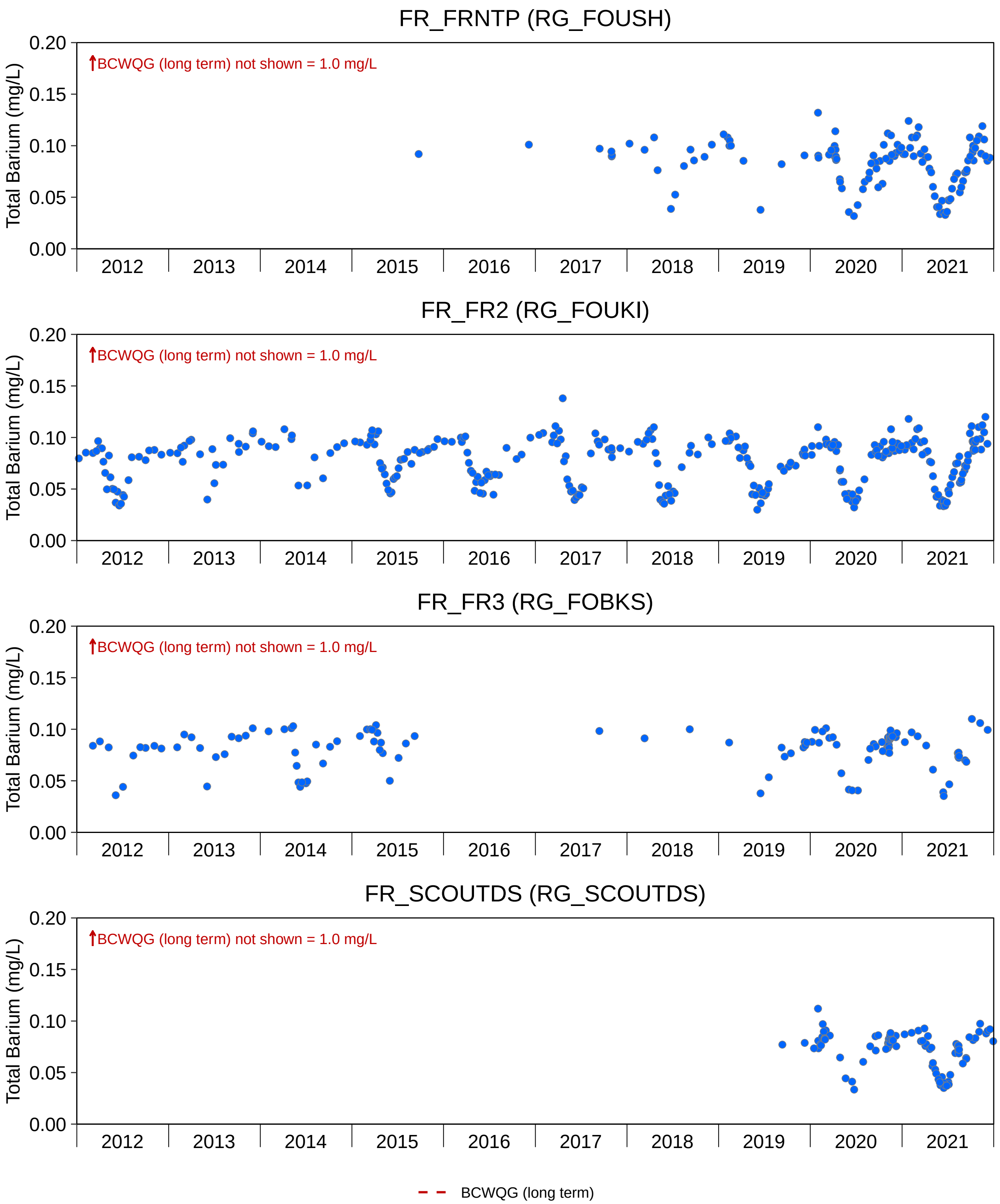

Figure B.2: Time Series Plots for Total Barium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

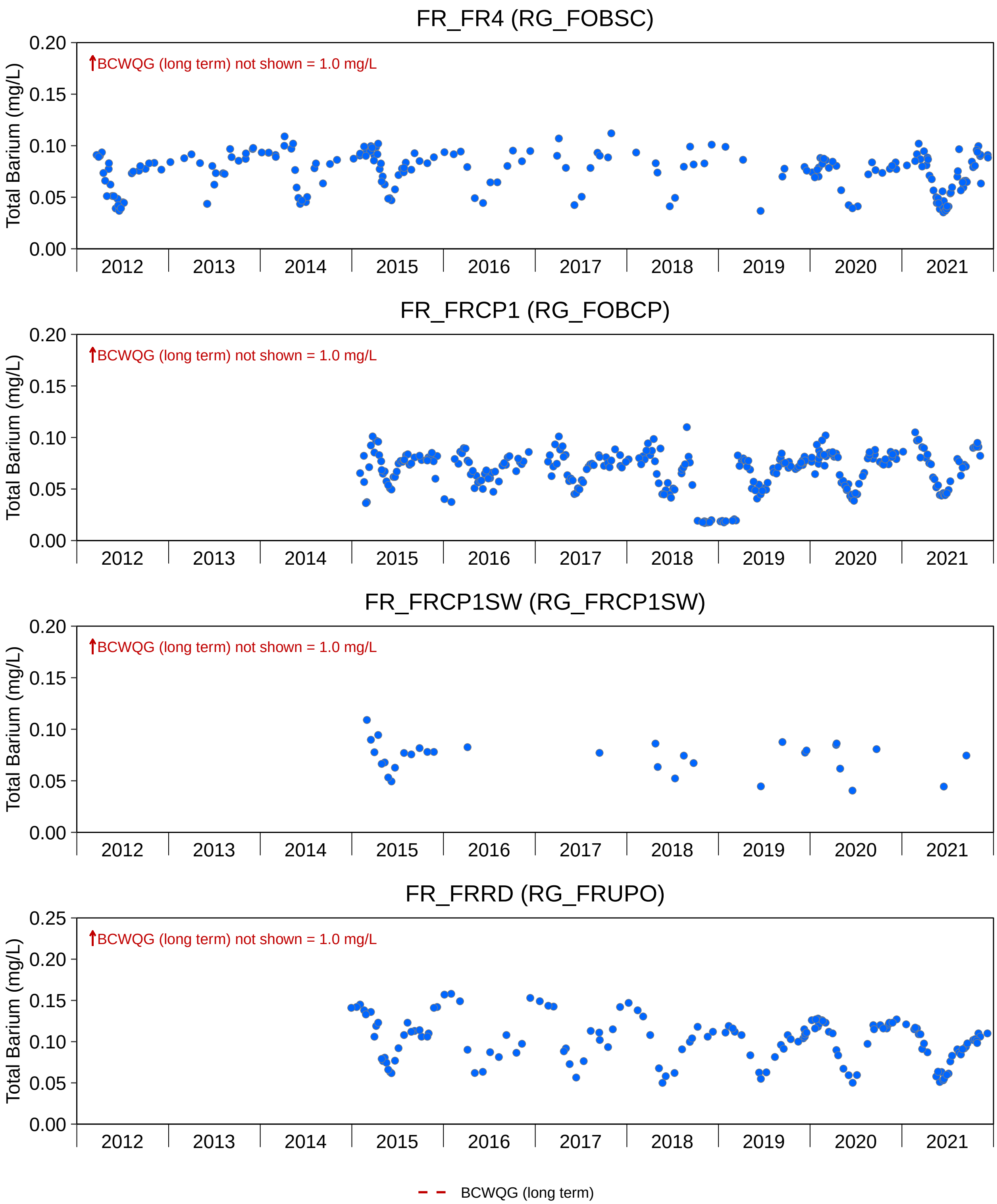

Figure B.2: Time Series Plots for Total Barium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

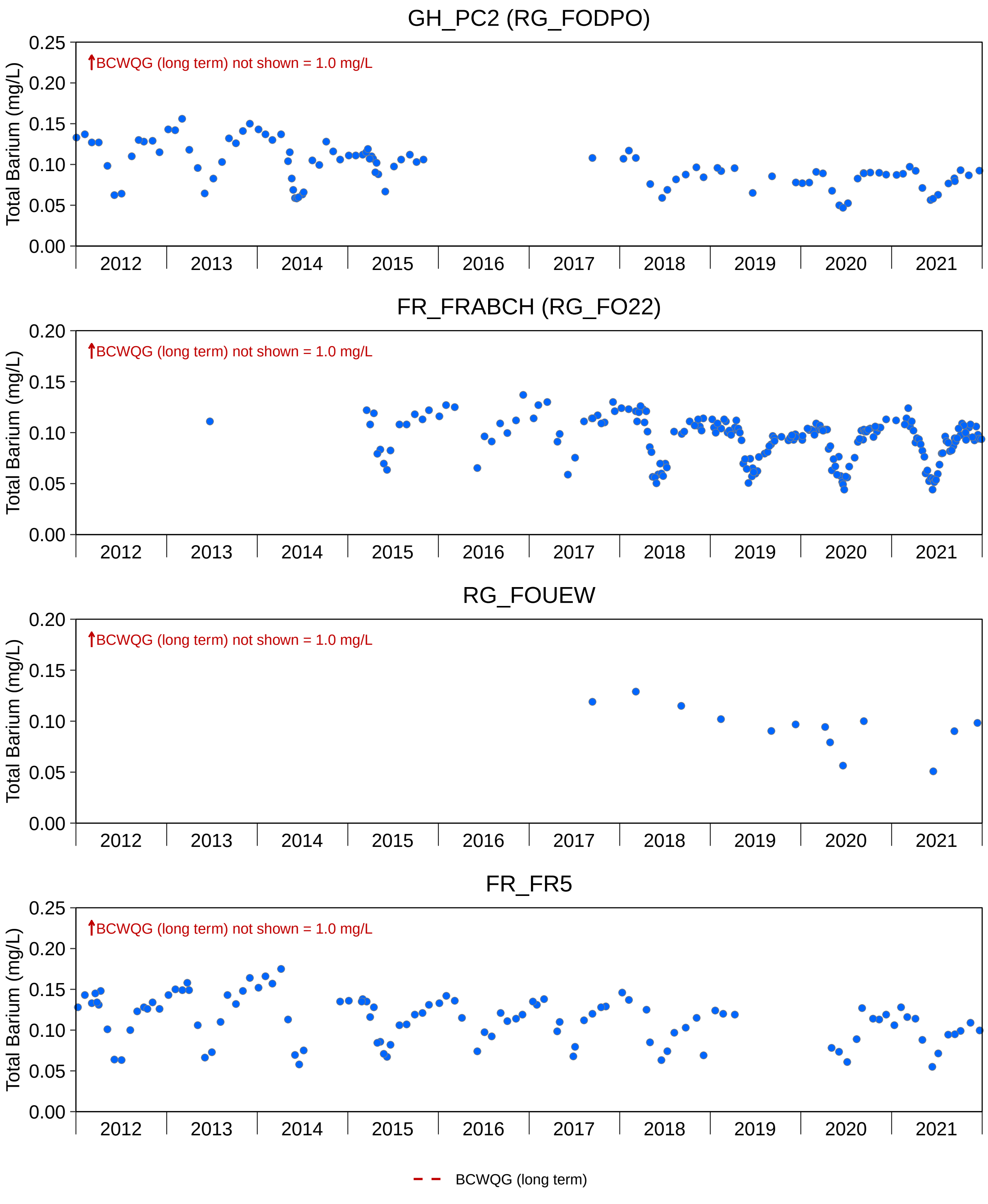

Figure B.2: Time Series Plots for Total Barium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

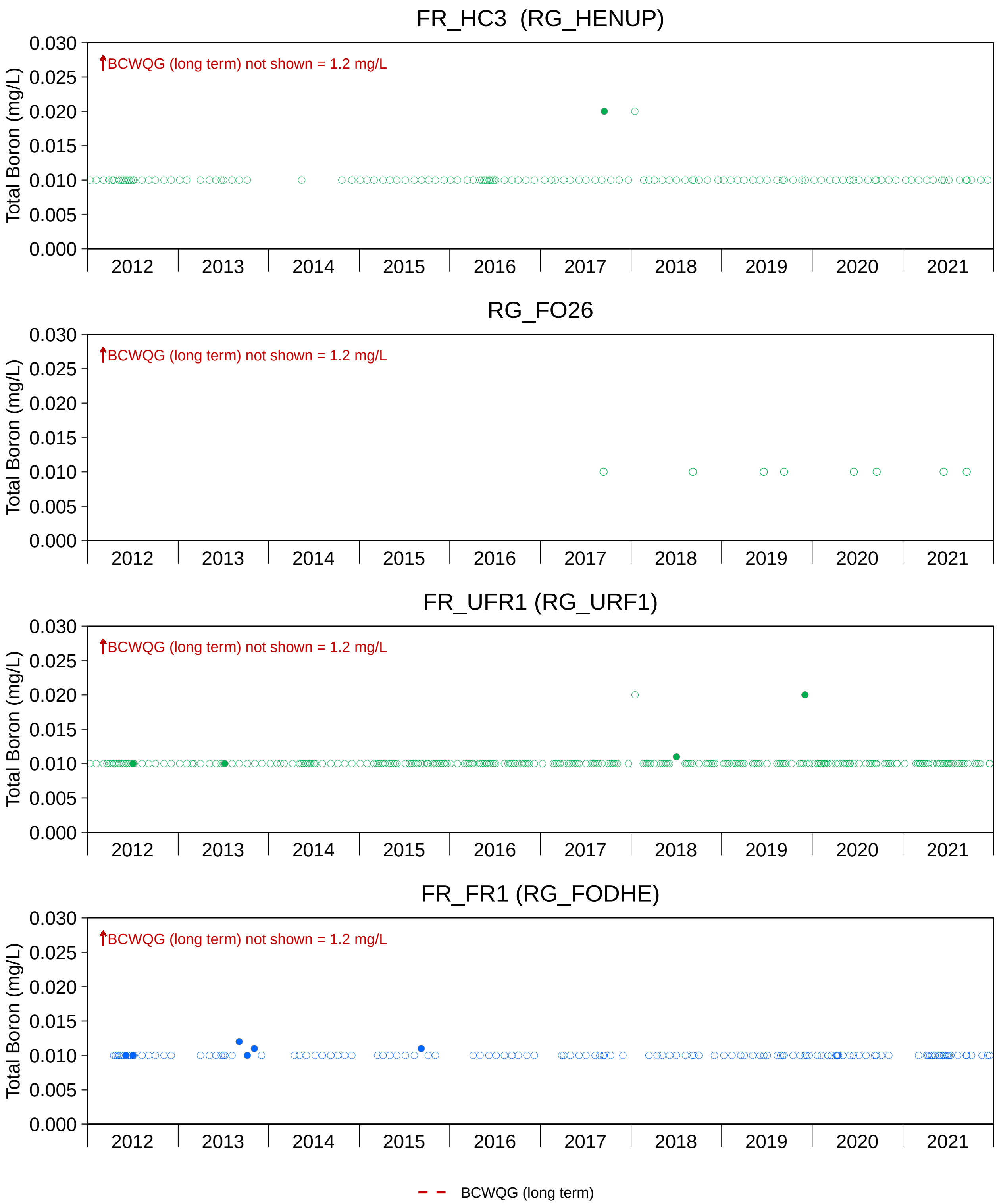

Figure B.3: Time Series Plots for Total Boron Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

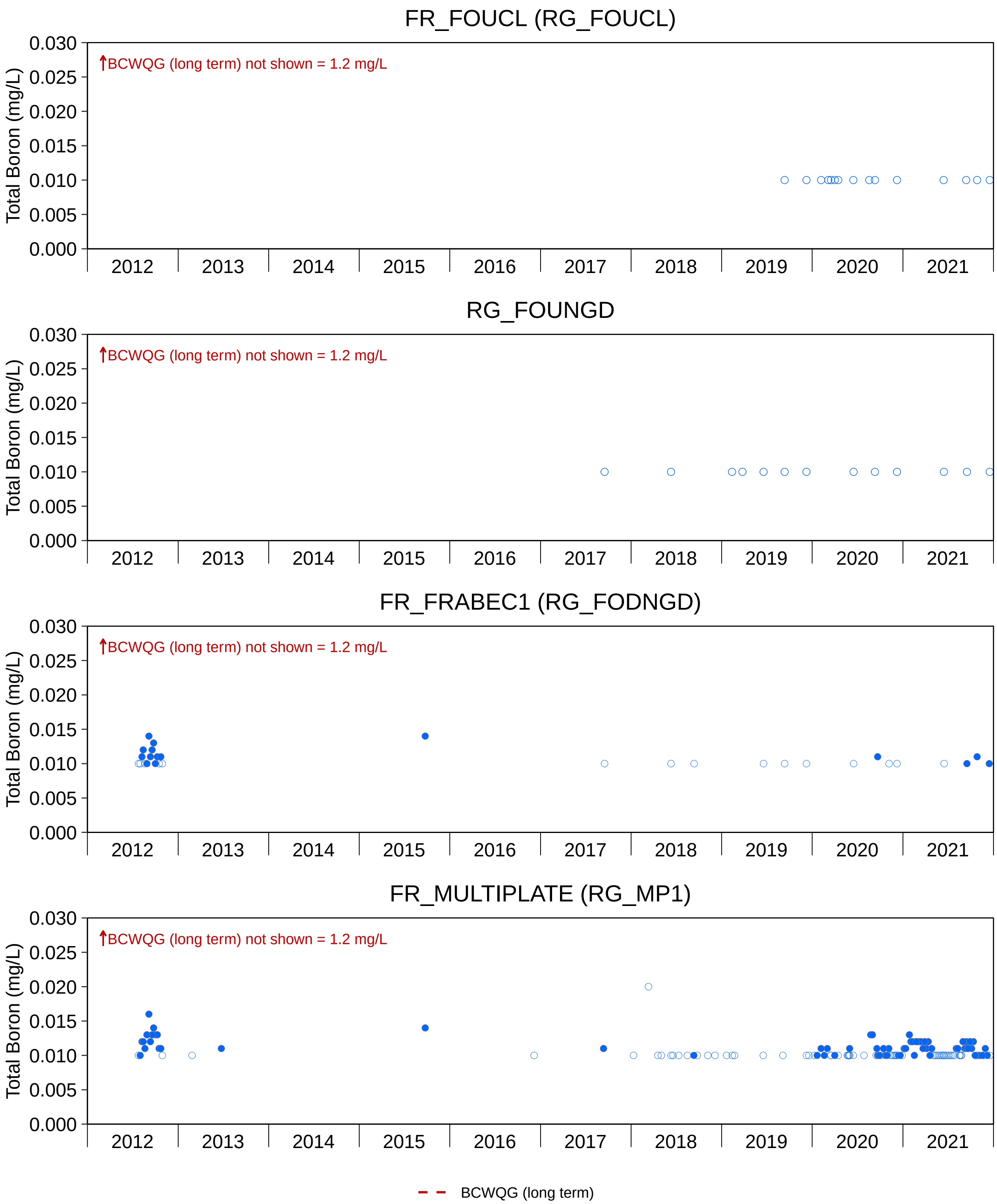

Figure B.3: Time Series Plots for Total Boron Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

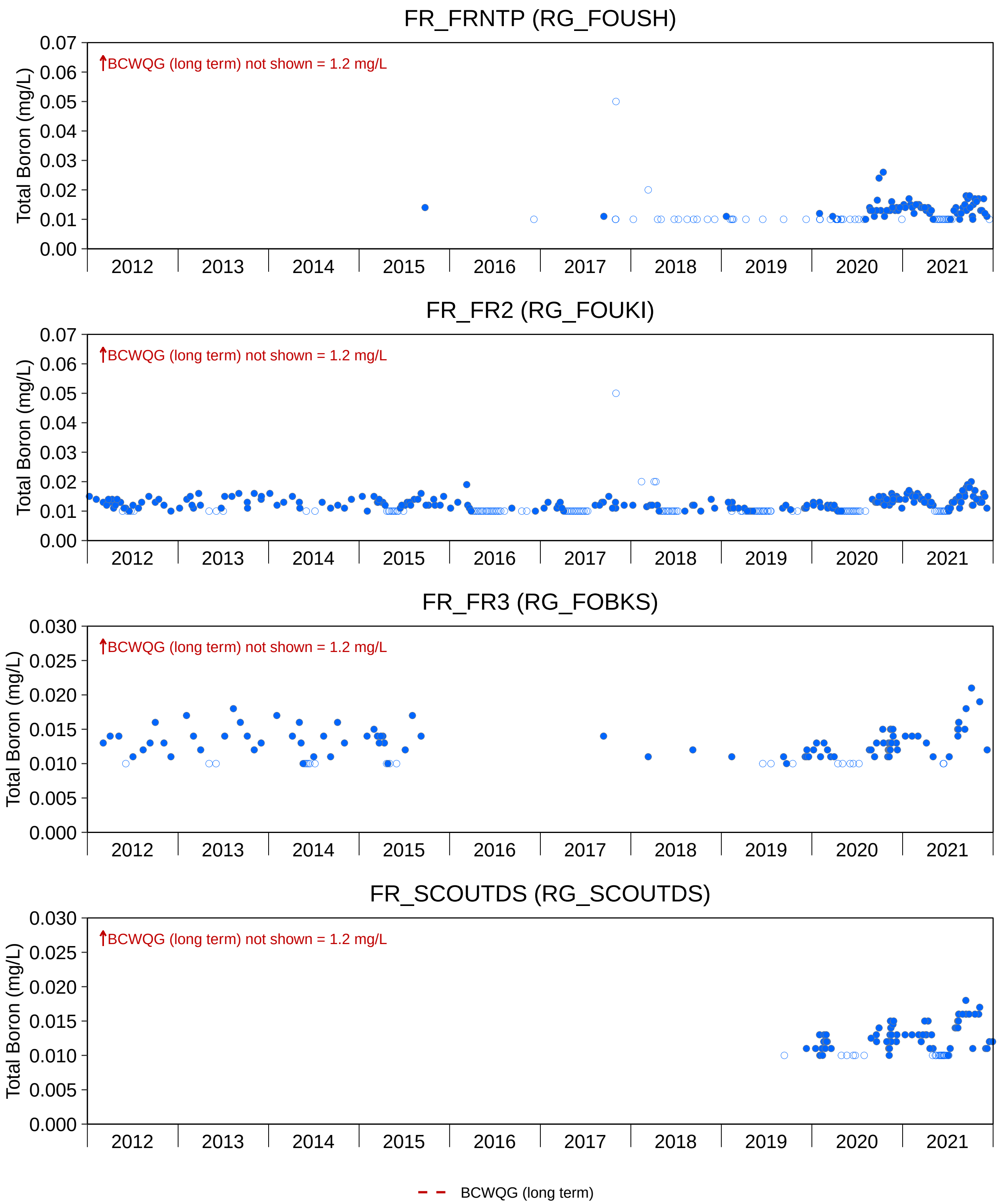

Figure B.3: Time Series Plots for Total Boron Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

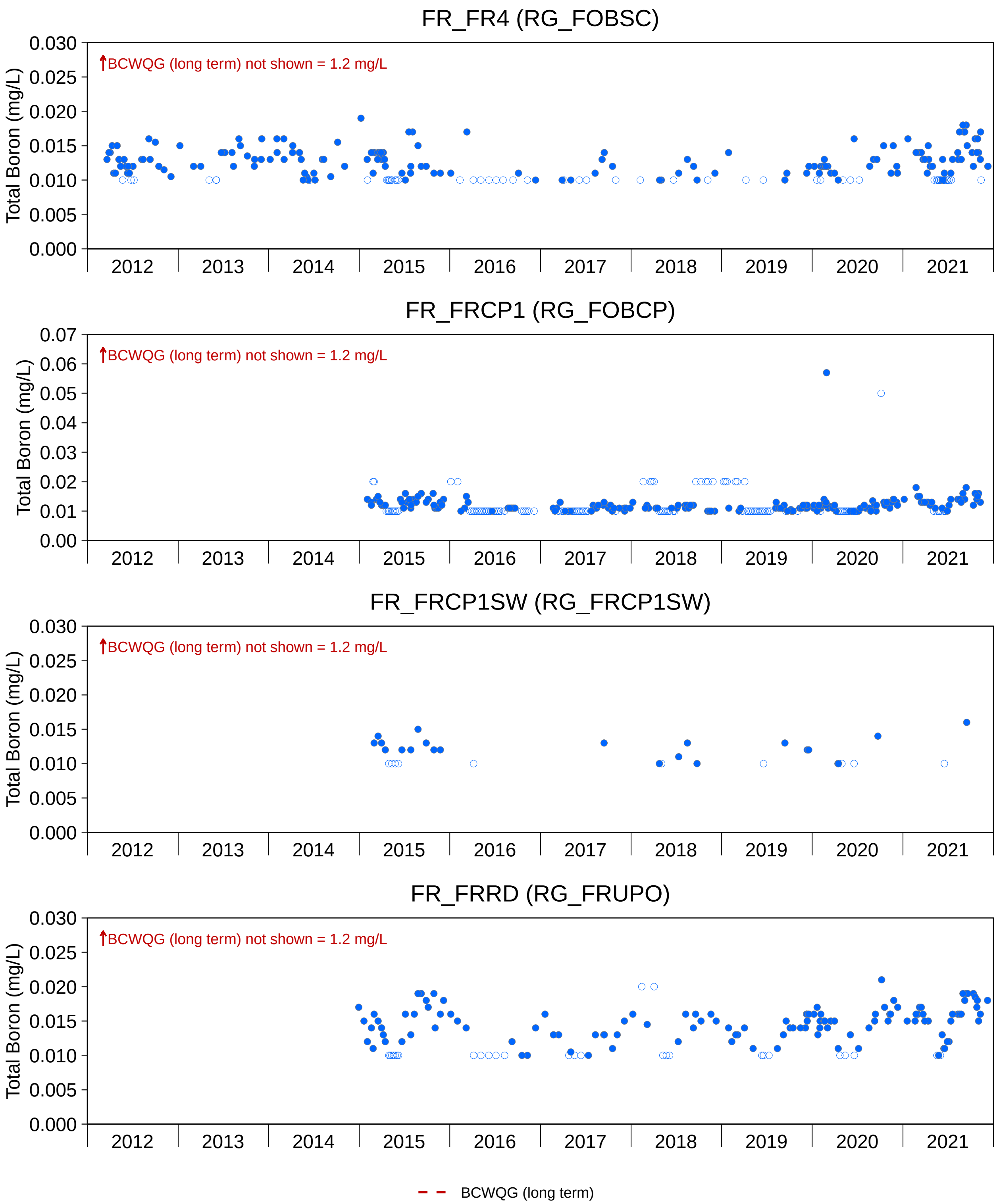

Figure B.3: Time Series Plots for Total Boron Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

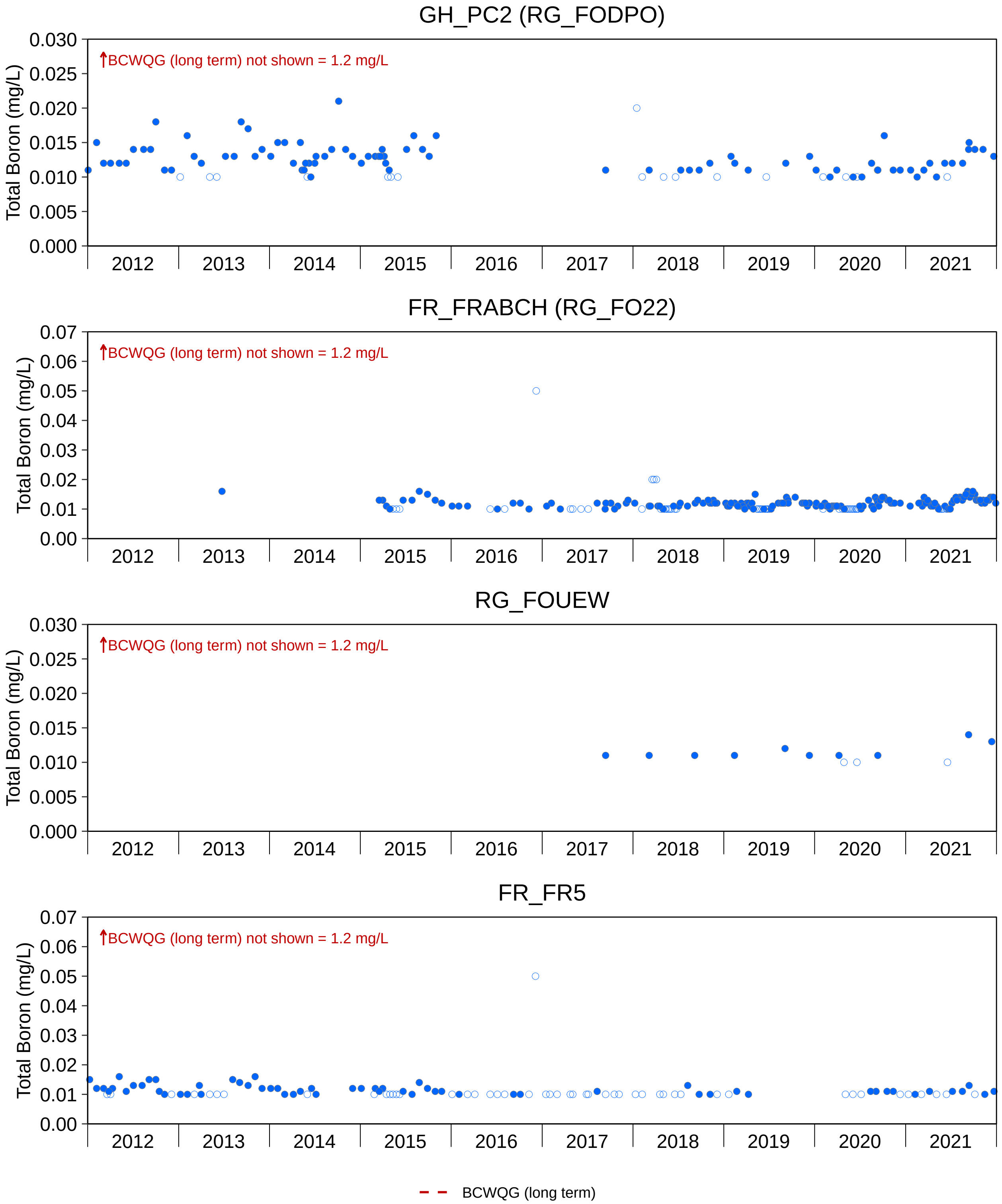

Figure B.3: Time Series Plots for Total Boron Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

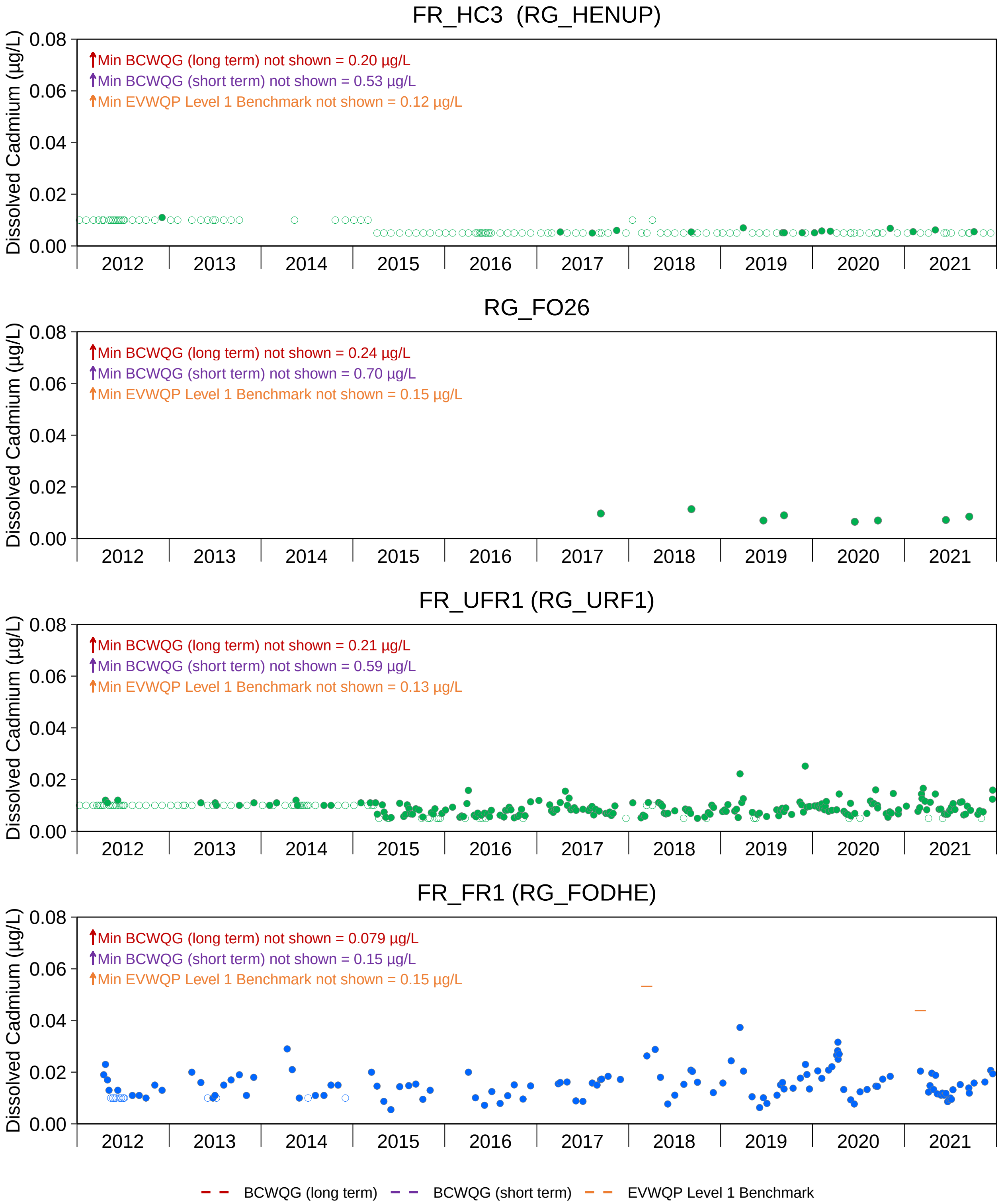

Figure B.4: Time Series Plots for Dissolved Cadmium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

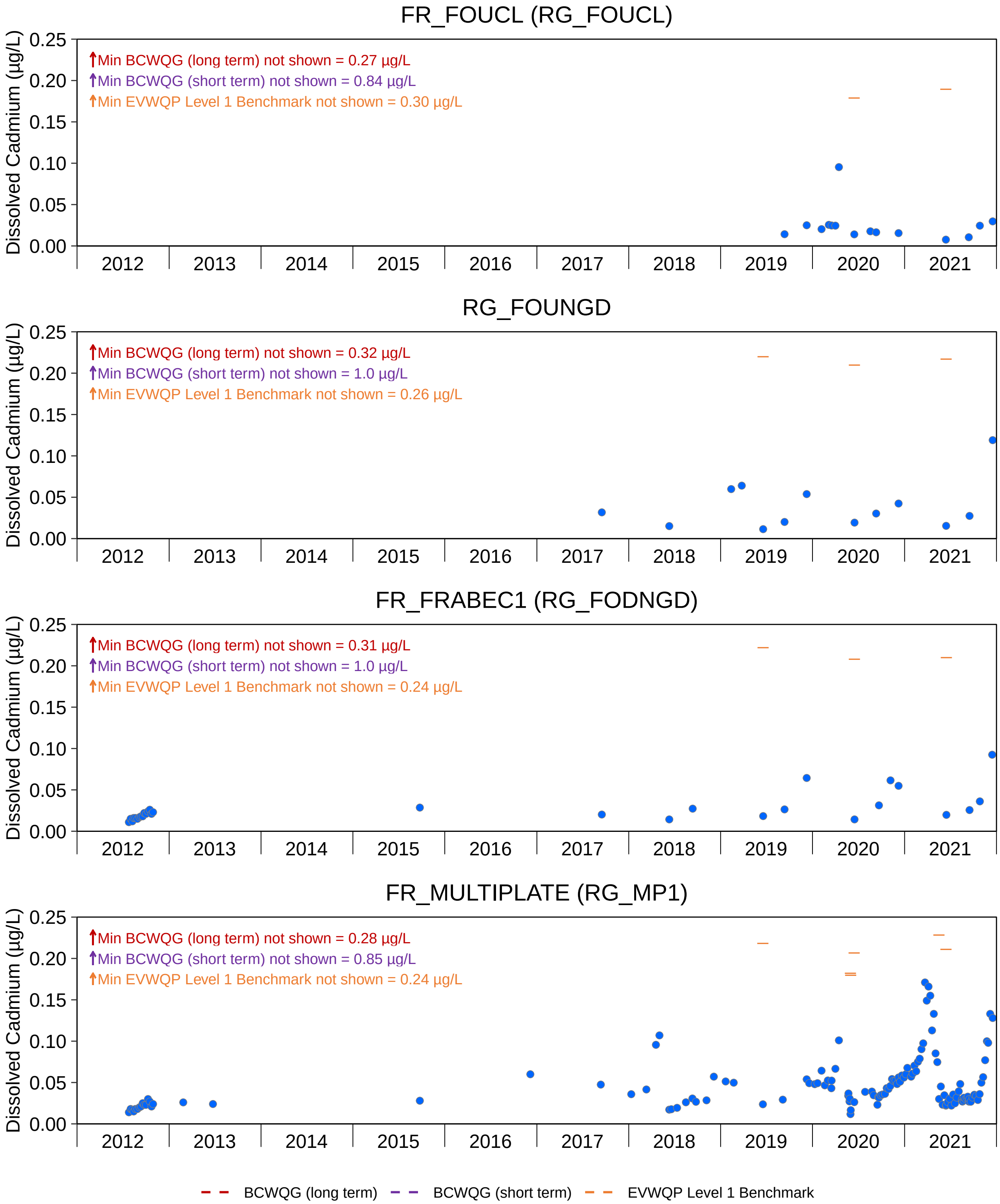

Figure B.4: Time Series Plots for Dissolved Cadmium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

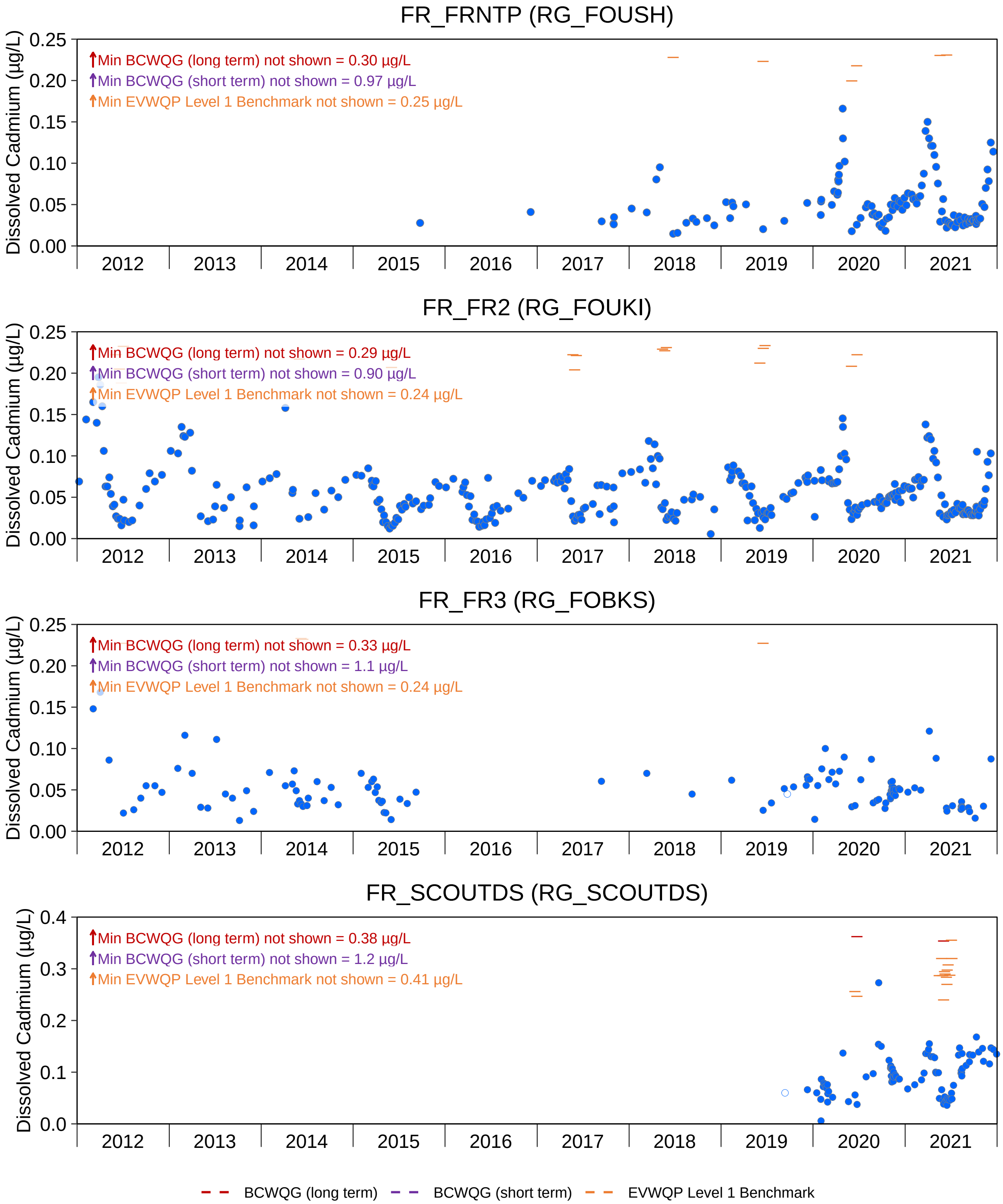

Figure B.4: Time Series Plots for Dissolved Cadmium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

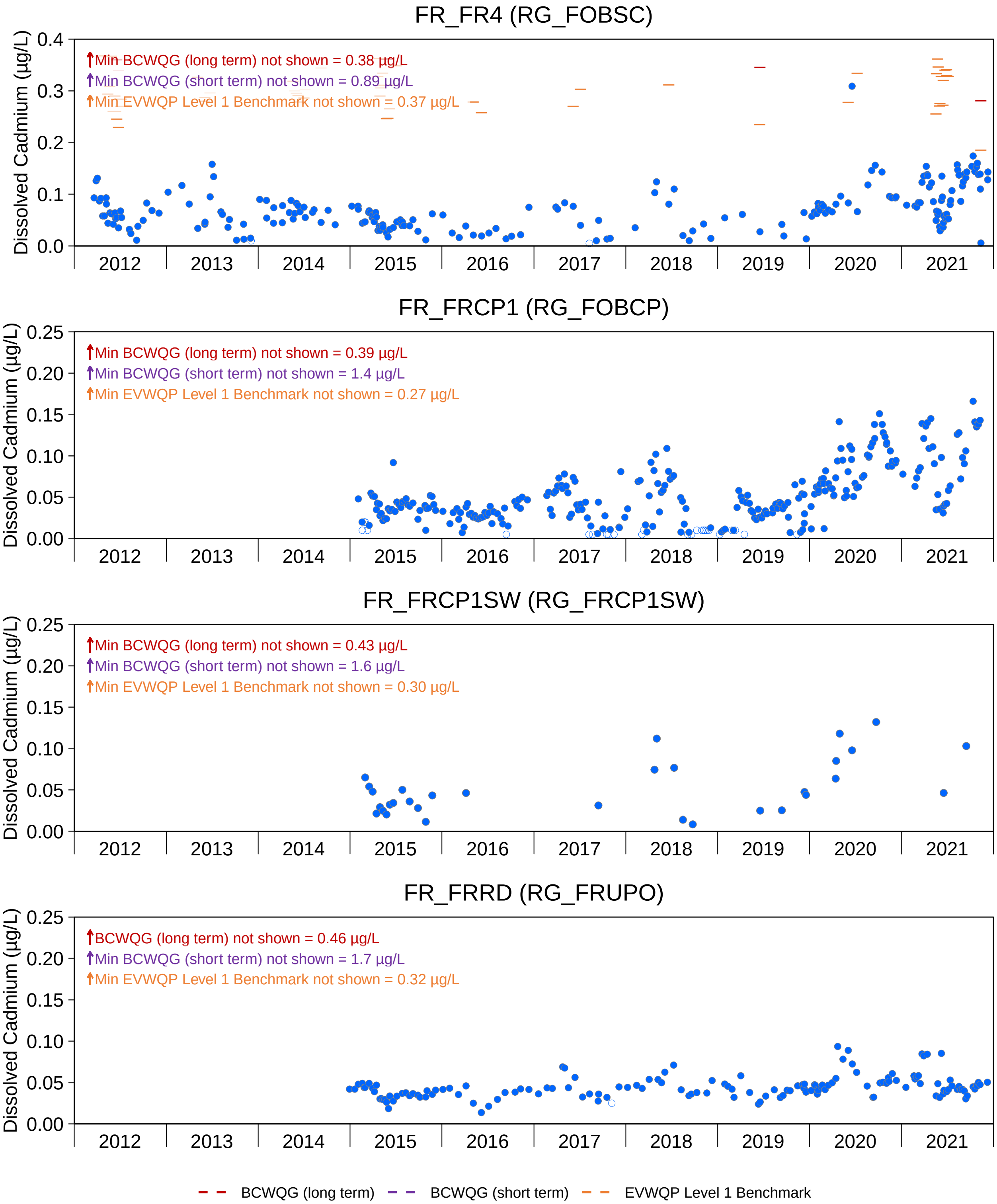

Figure B.4: Time Series Plots for Dissolved Cadmium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

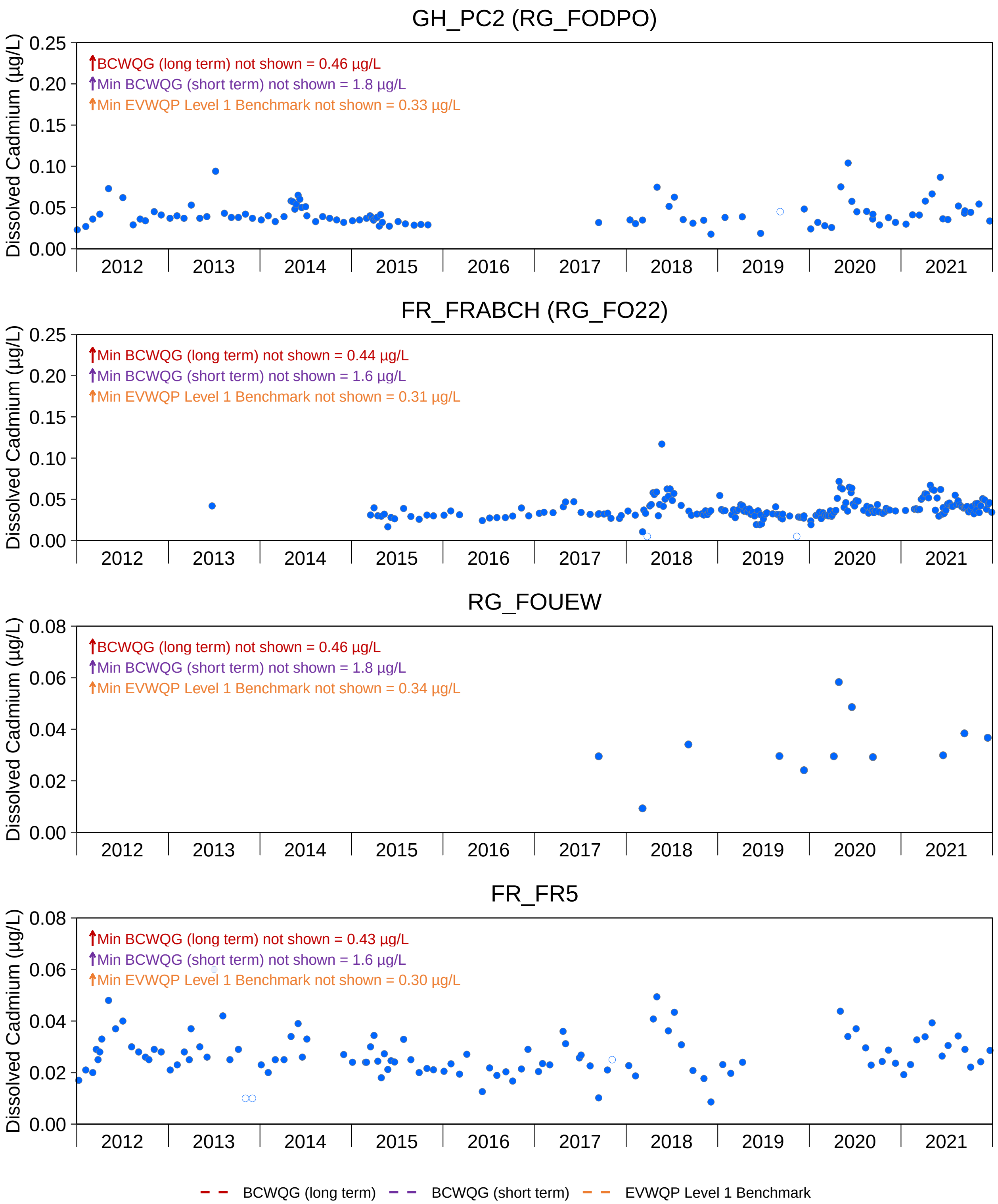

Figure B.4: Time Series Plots for Dissolved Cadmium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

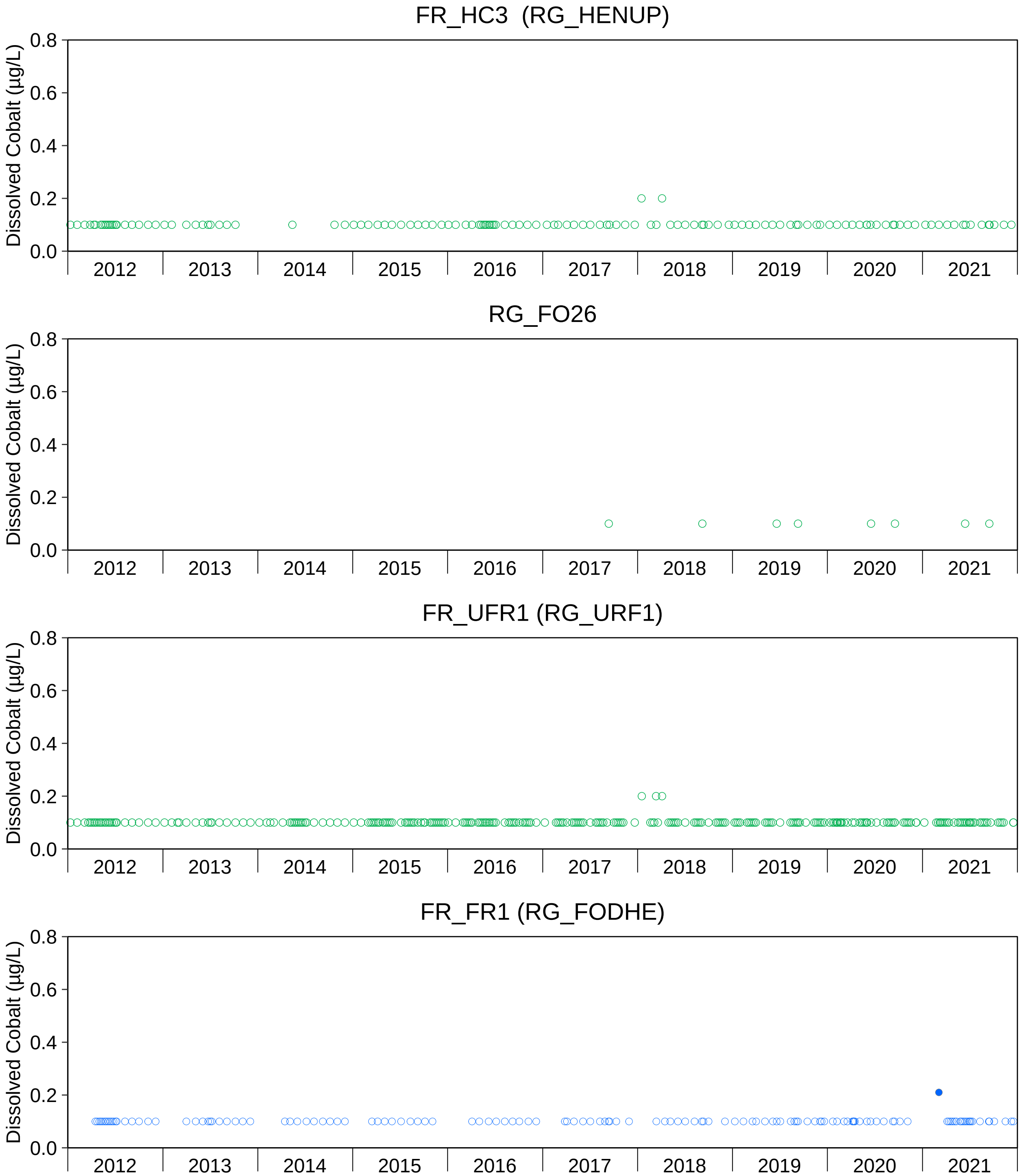

Figure B.5: Time Series Plots for Dissolved Cobalt Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

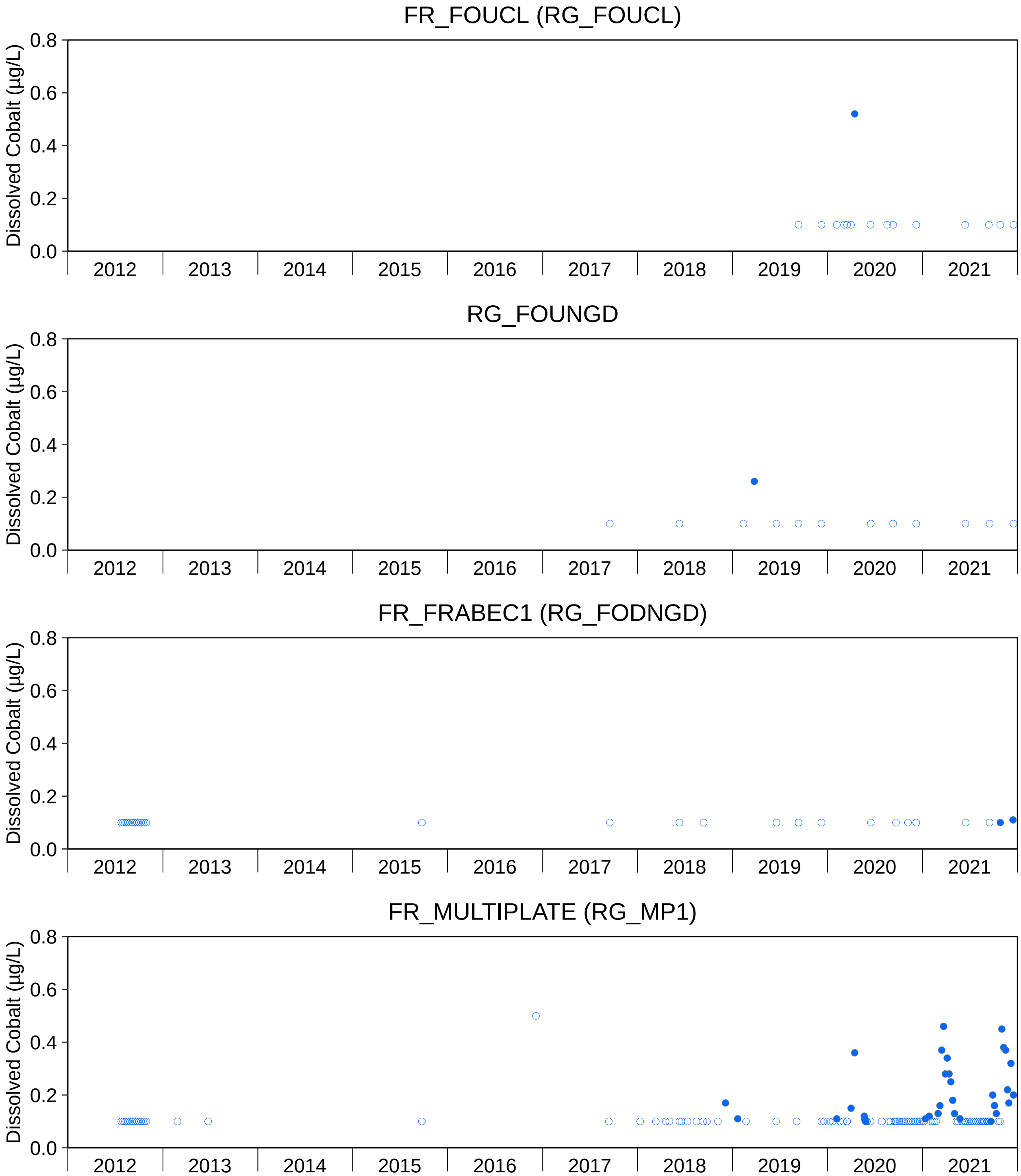

Figure B.5: Time Series Plots for Dissolved Cobalt Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

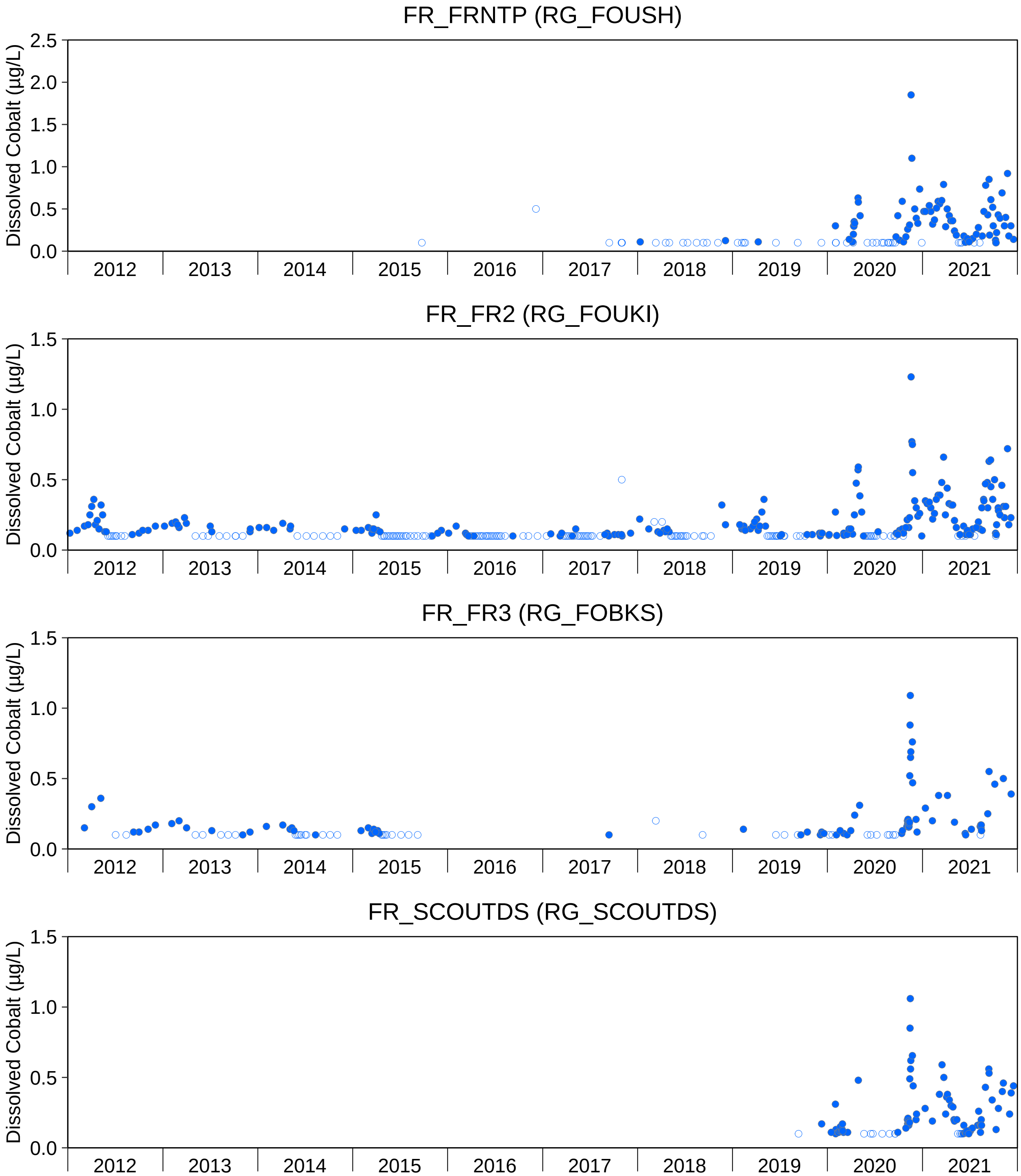

Figure B.5: Time Series Plots for Dissolved Cobalt Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

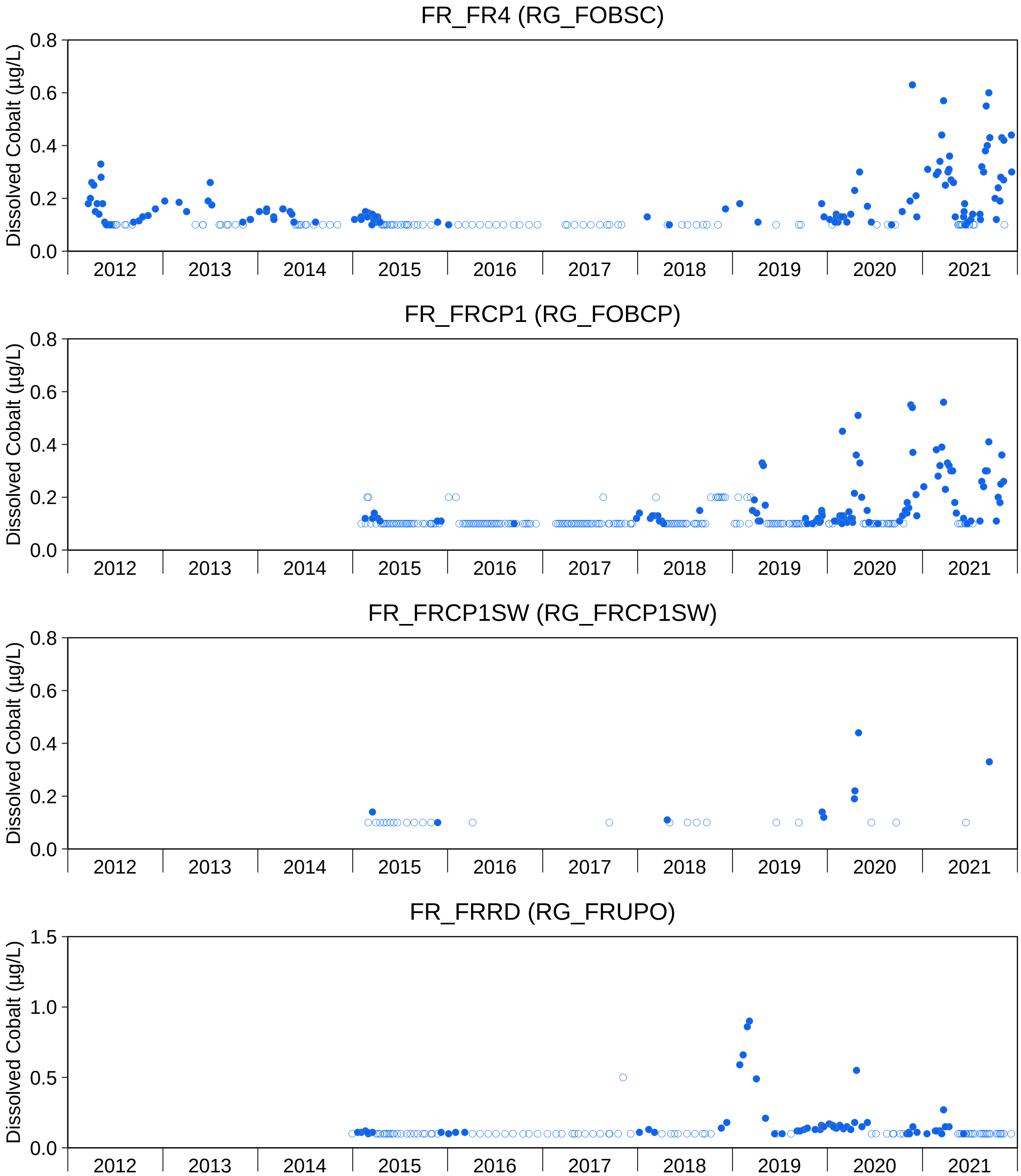

Figure B.5: Time Series Plots for Dissolved Cobalt Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

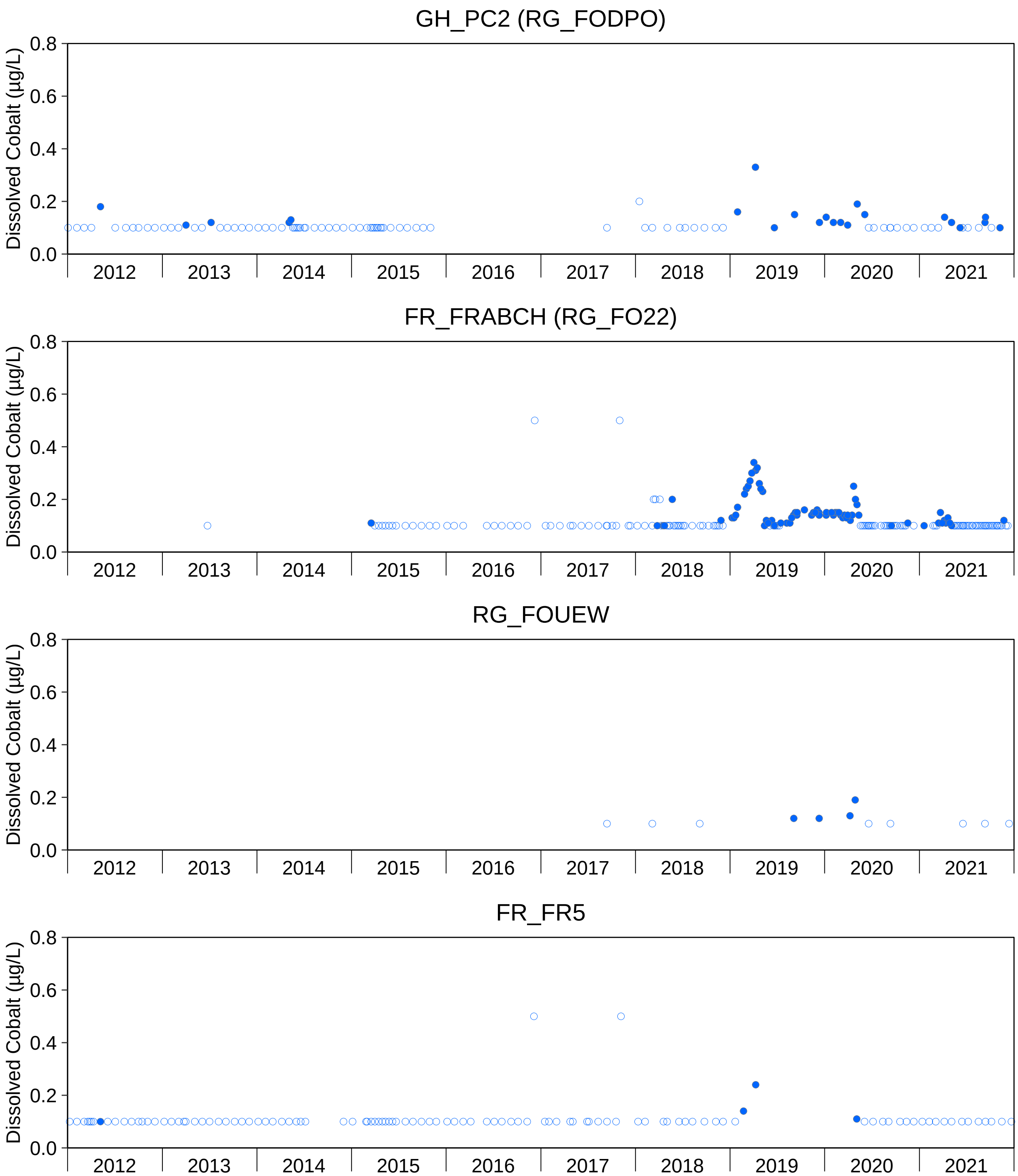

Figure B.5: Time Series Plots for Dissolved Cobalt Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

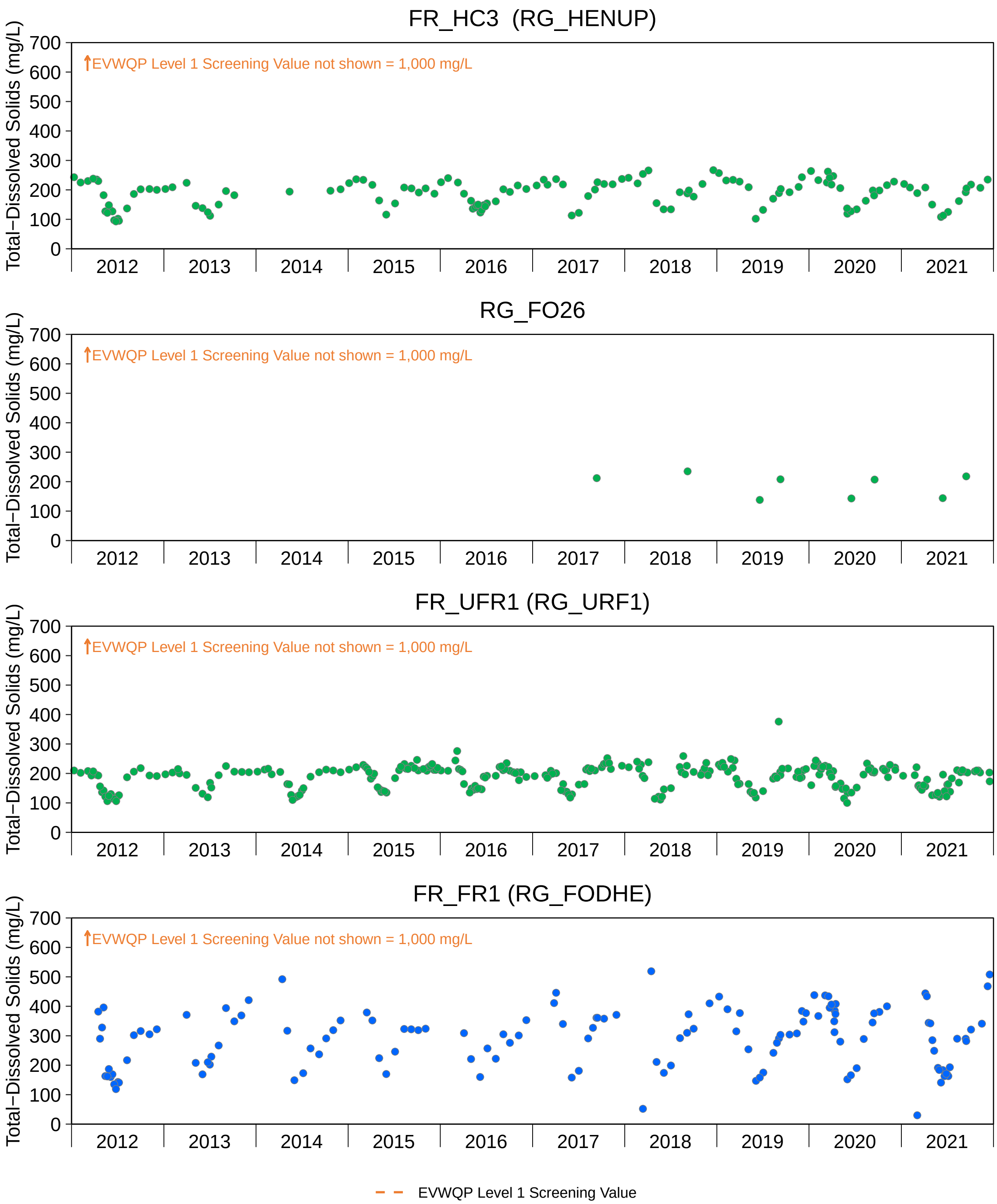

Figure B.6: Time Series Plots for Total−Dissolved Solids Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

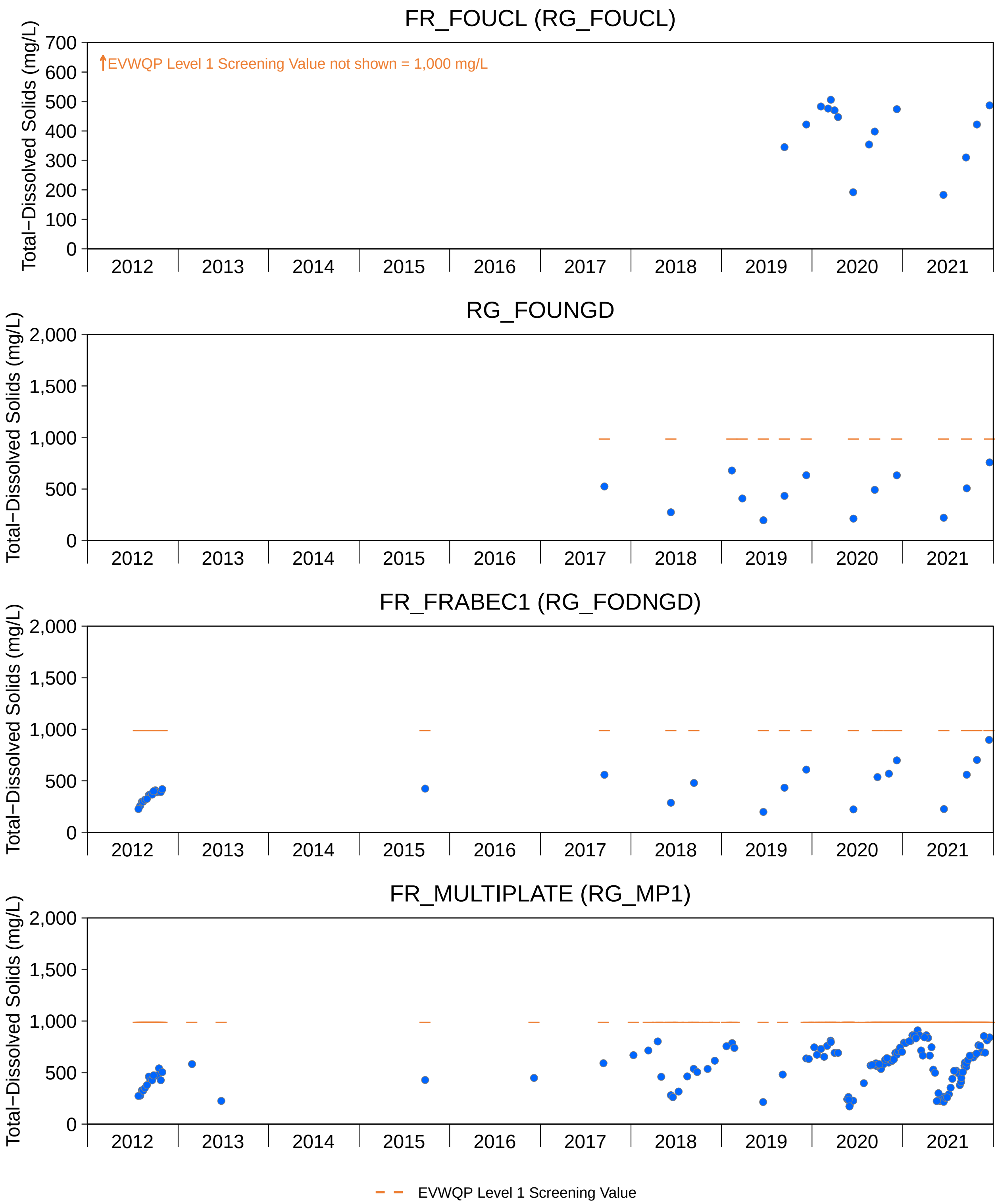

Figure B.6: Time Series Plots for Total−Dissolved Solids Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

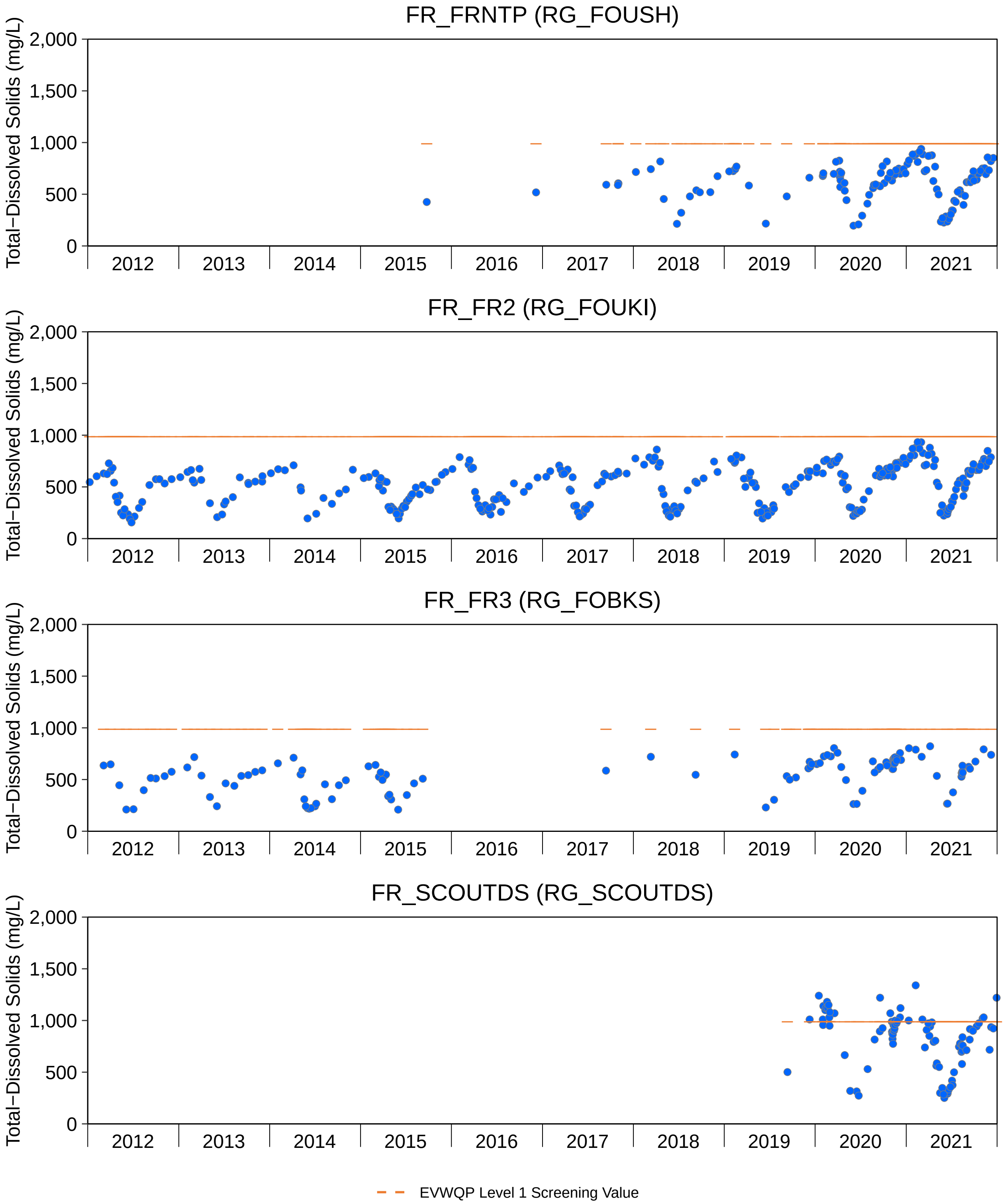

Figure B.6: Time Series Plots for Total−Dissolved Solids Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

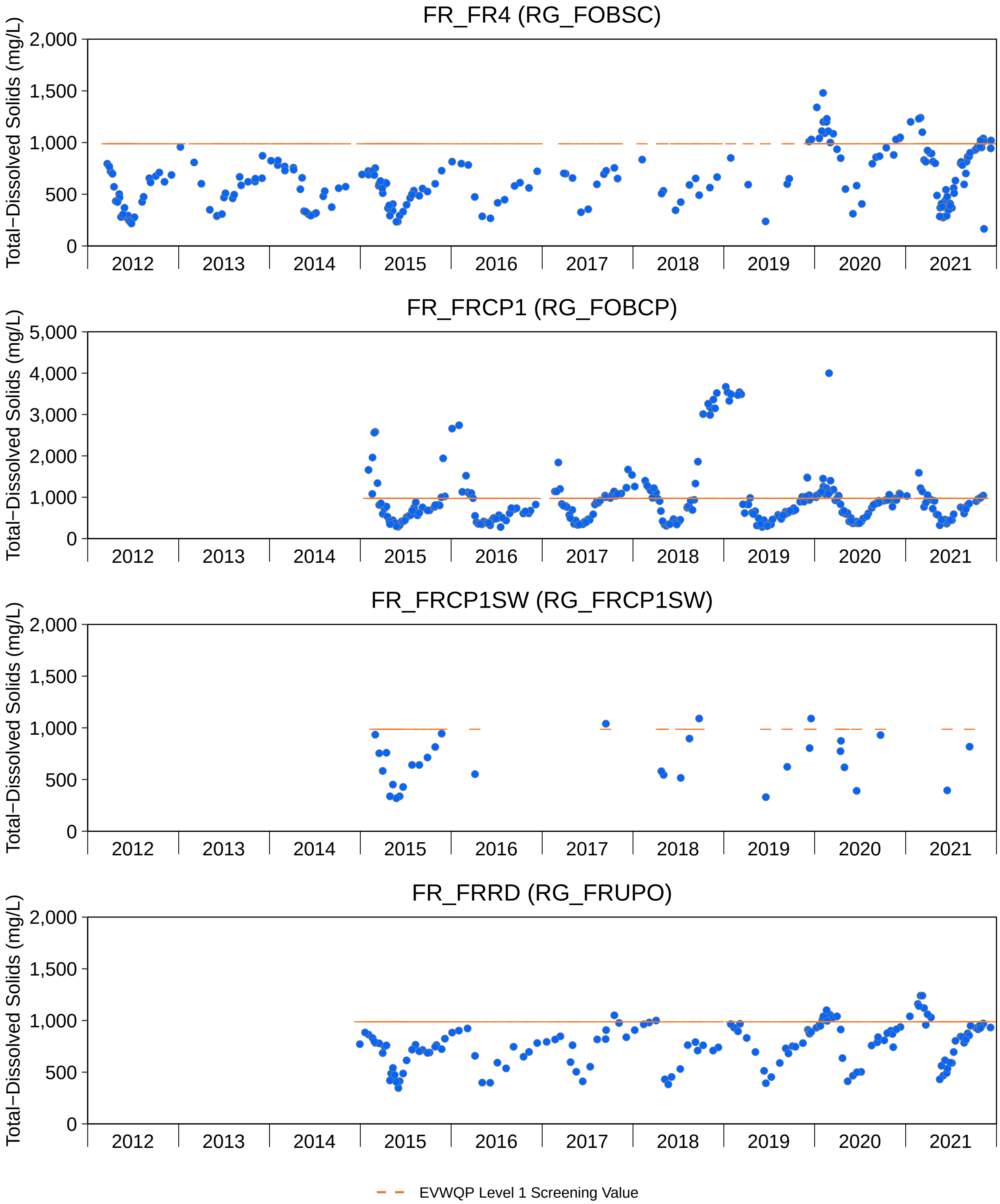

Figure B.6: Time Series Plots for Total−Dissolved Solids Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

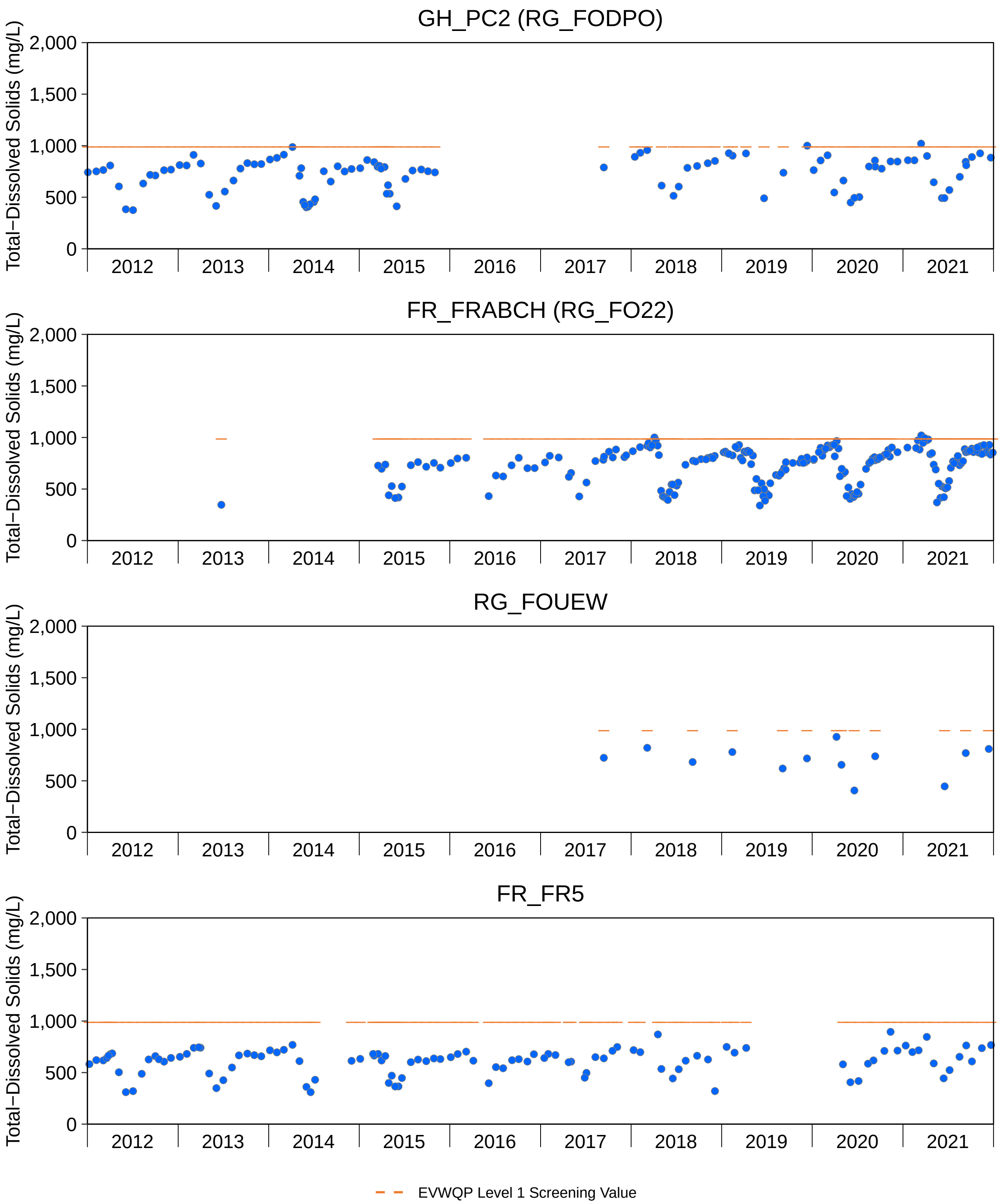

Figure B.6: Time Series Plots for Total−Dissolved Solids Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

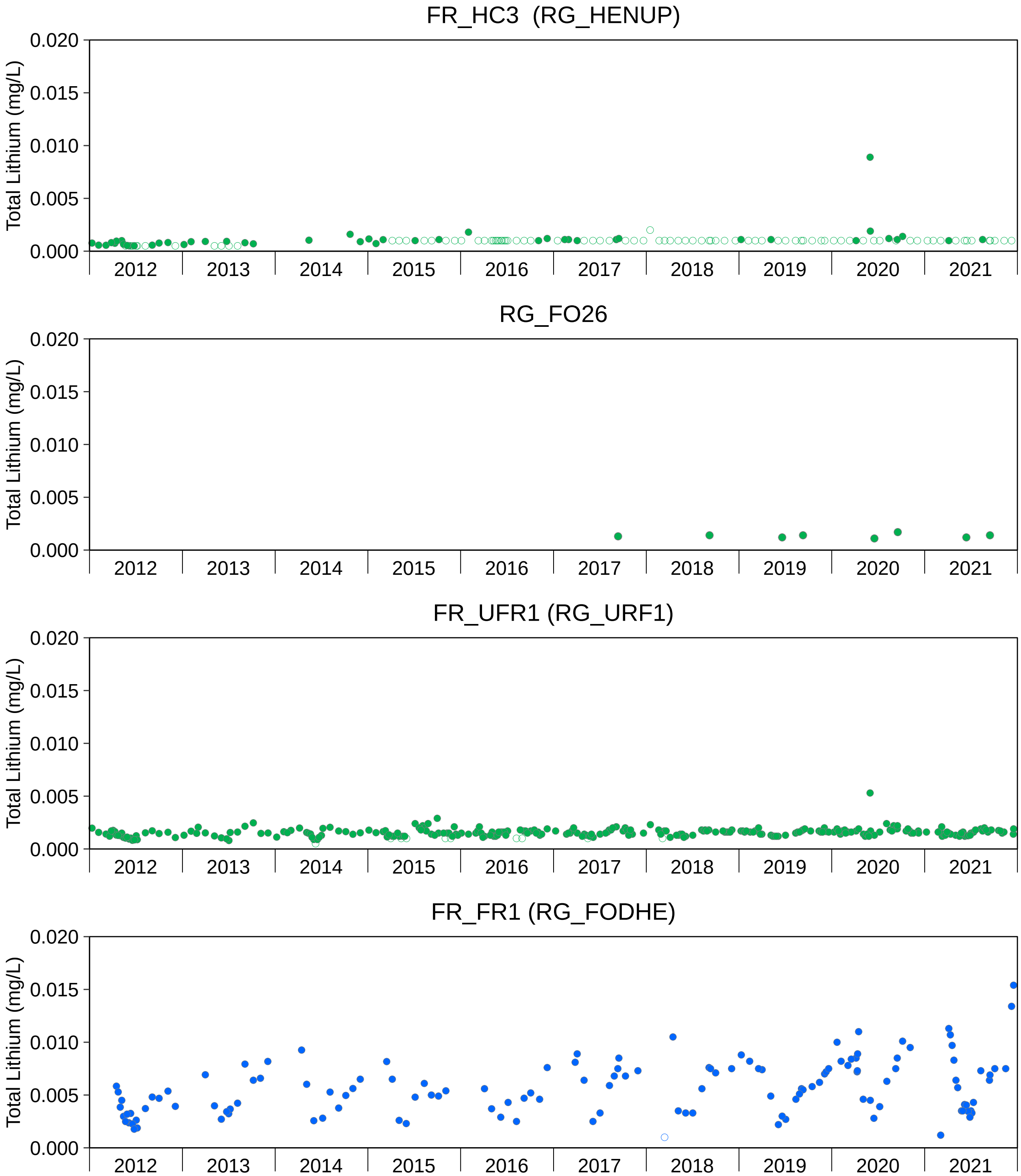

Figure B.7: Time Series Plots for Total Lithium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

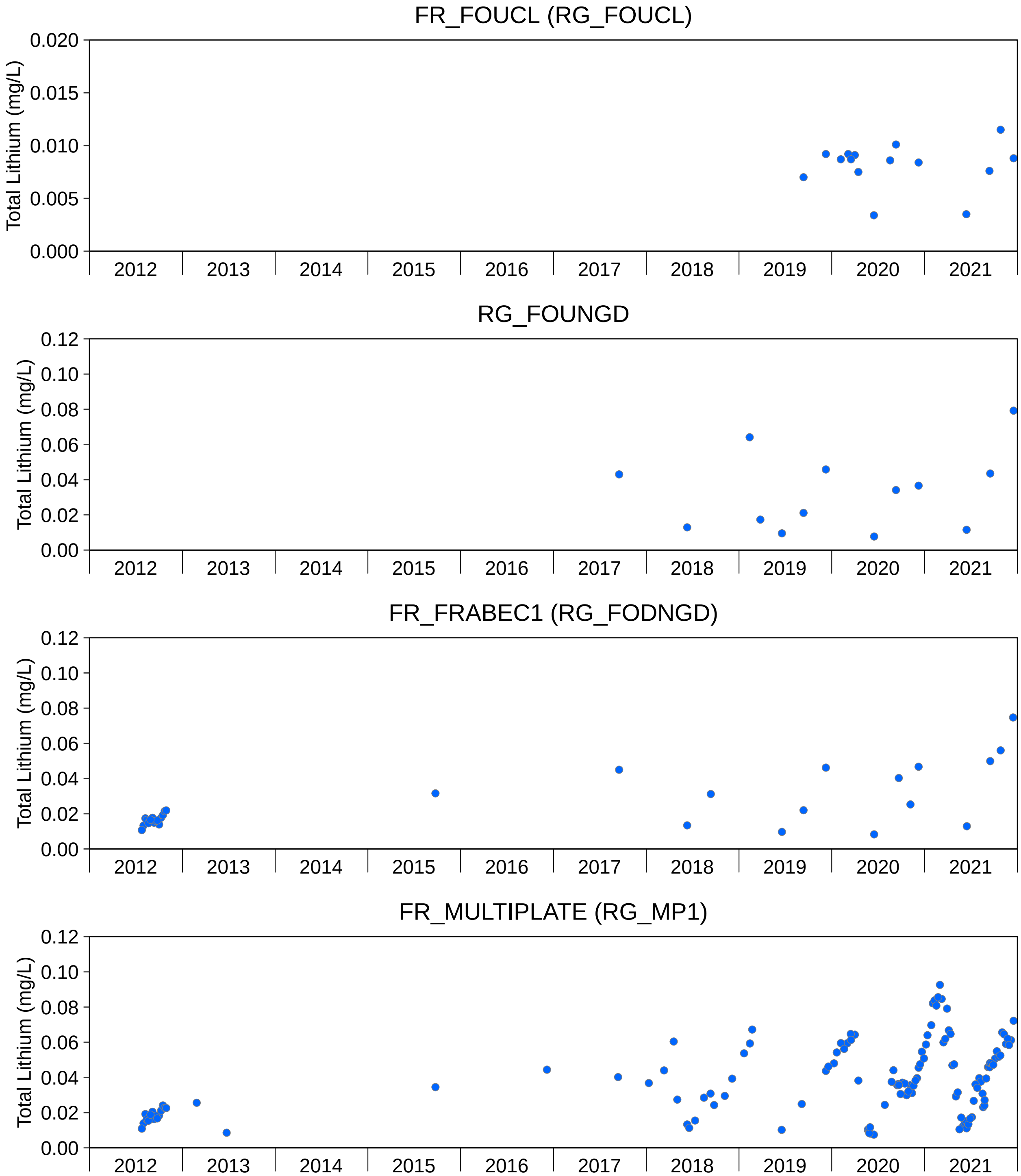

Figure B.7: Time Series Plots for Total Lithium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

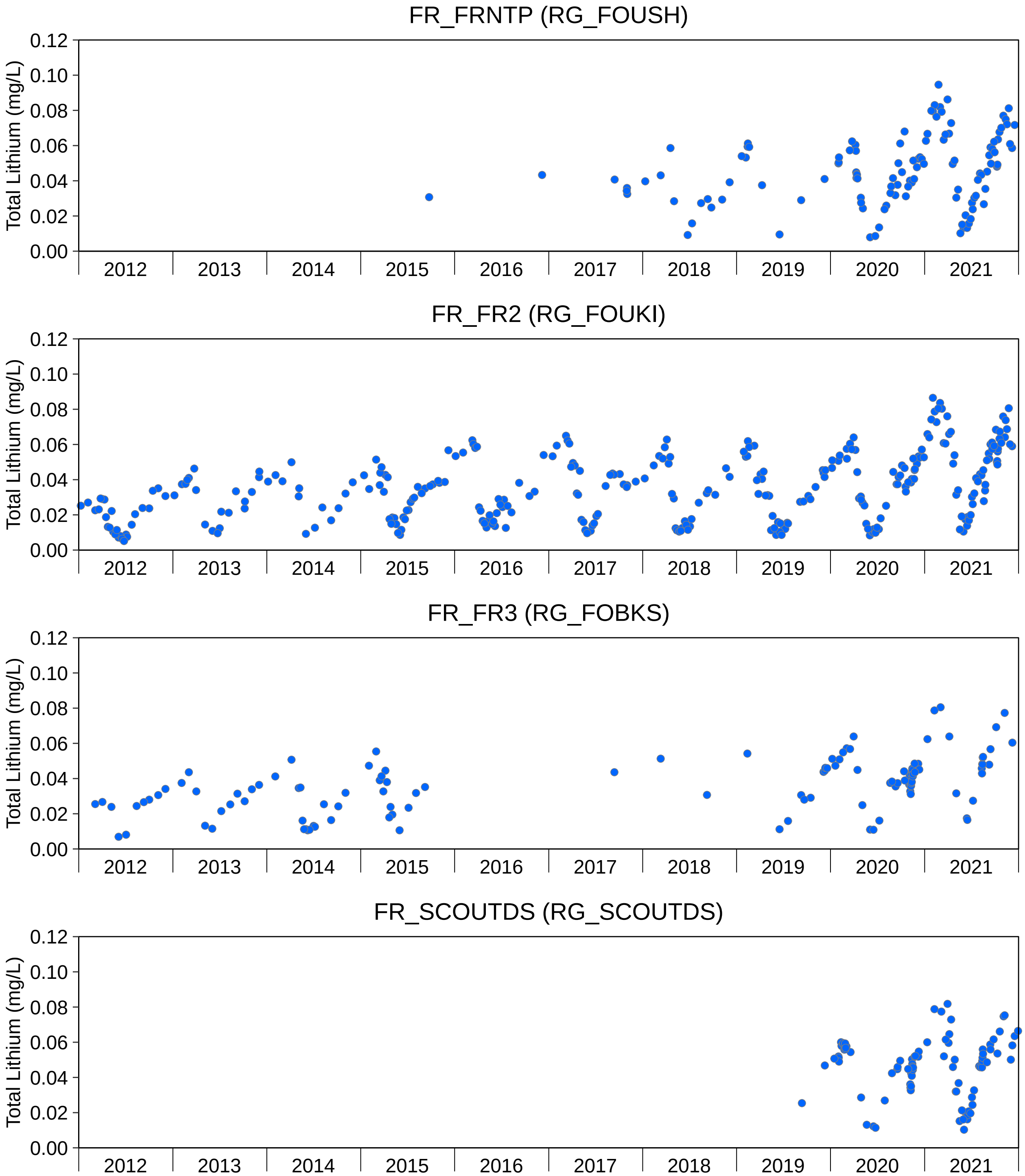

Figure B.7: Time Series Plots for Total Lithium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

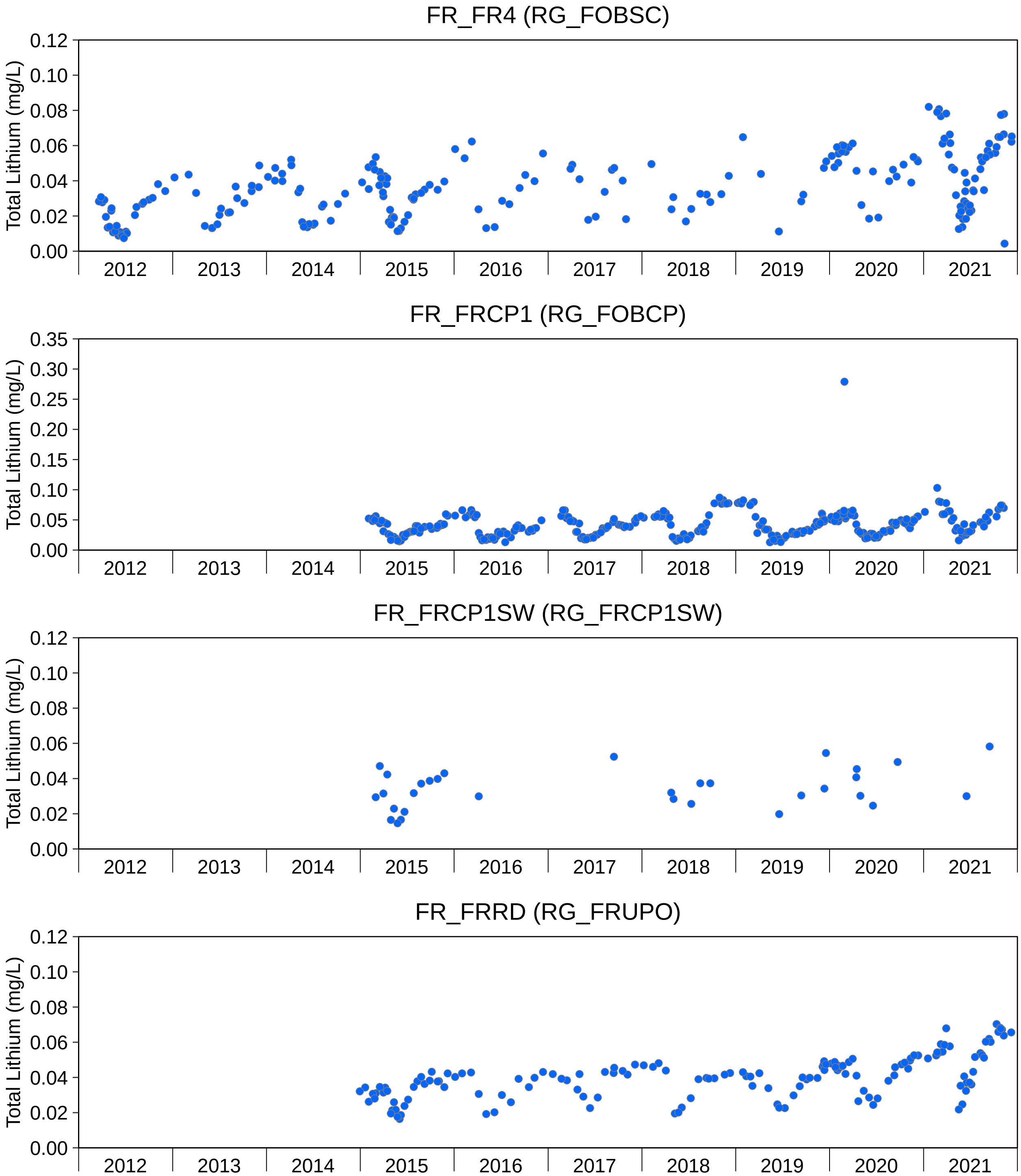

Figure B.7: Time Series Plots for Total Lithium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

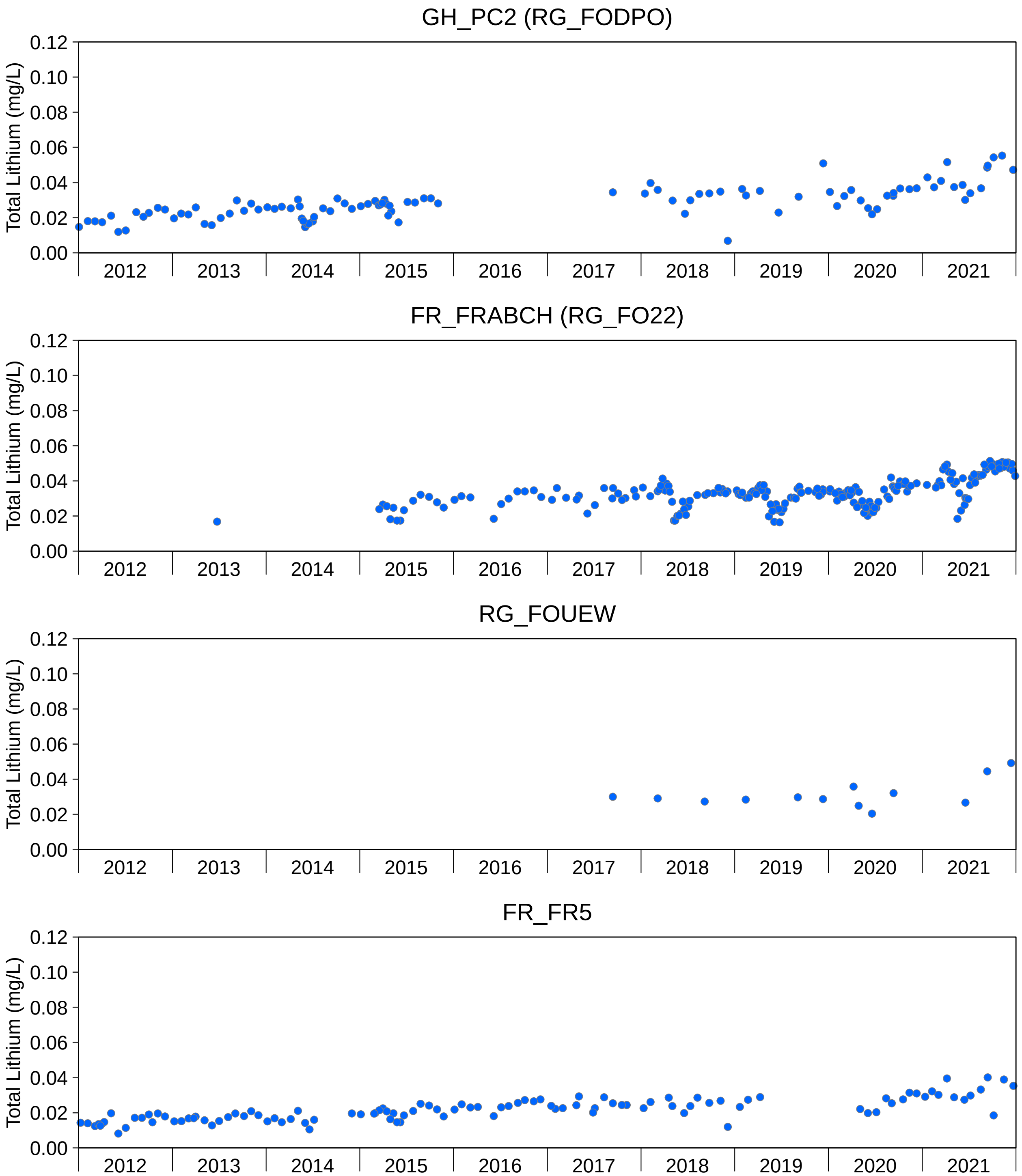

Figure B.7: Time Series Plots for Total Lithium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

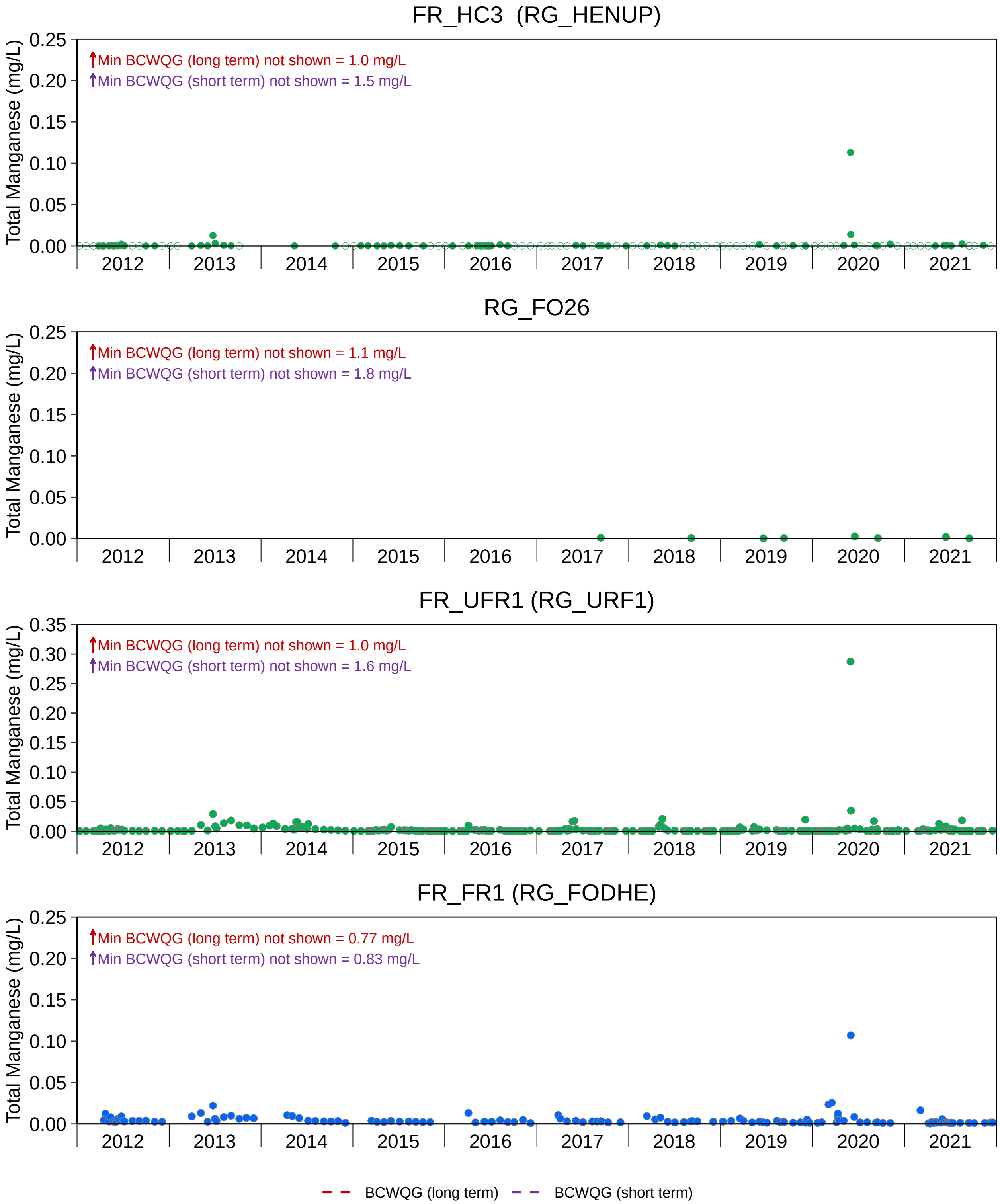

Figure B.8: Time Series Plots for Total Manganese Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

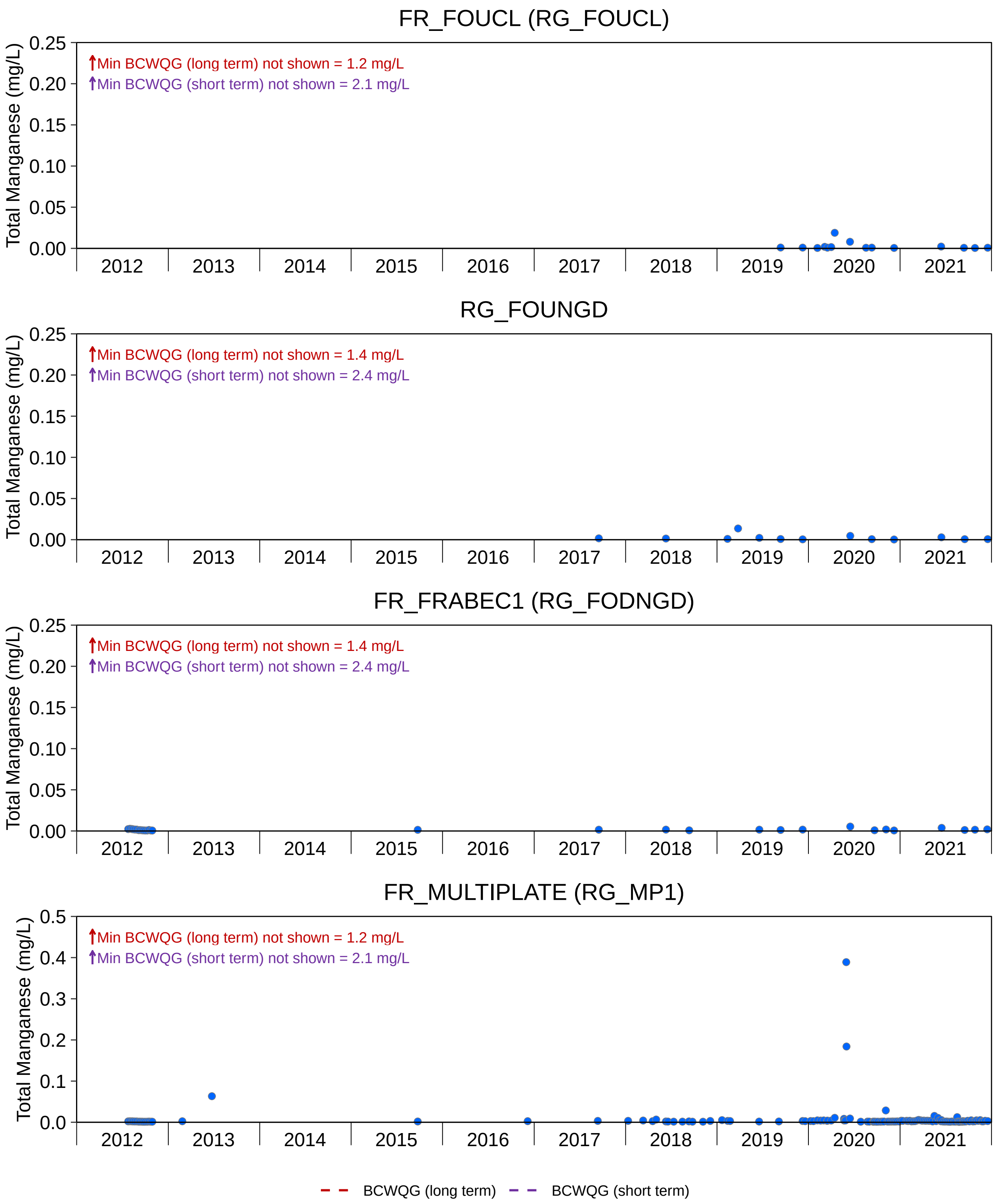

Figure B.8: Time Series Plots for Total Manganese Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

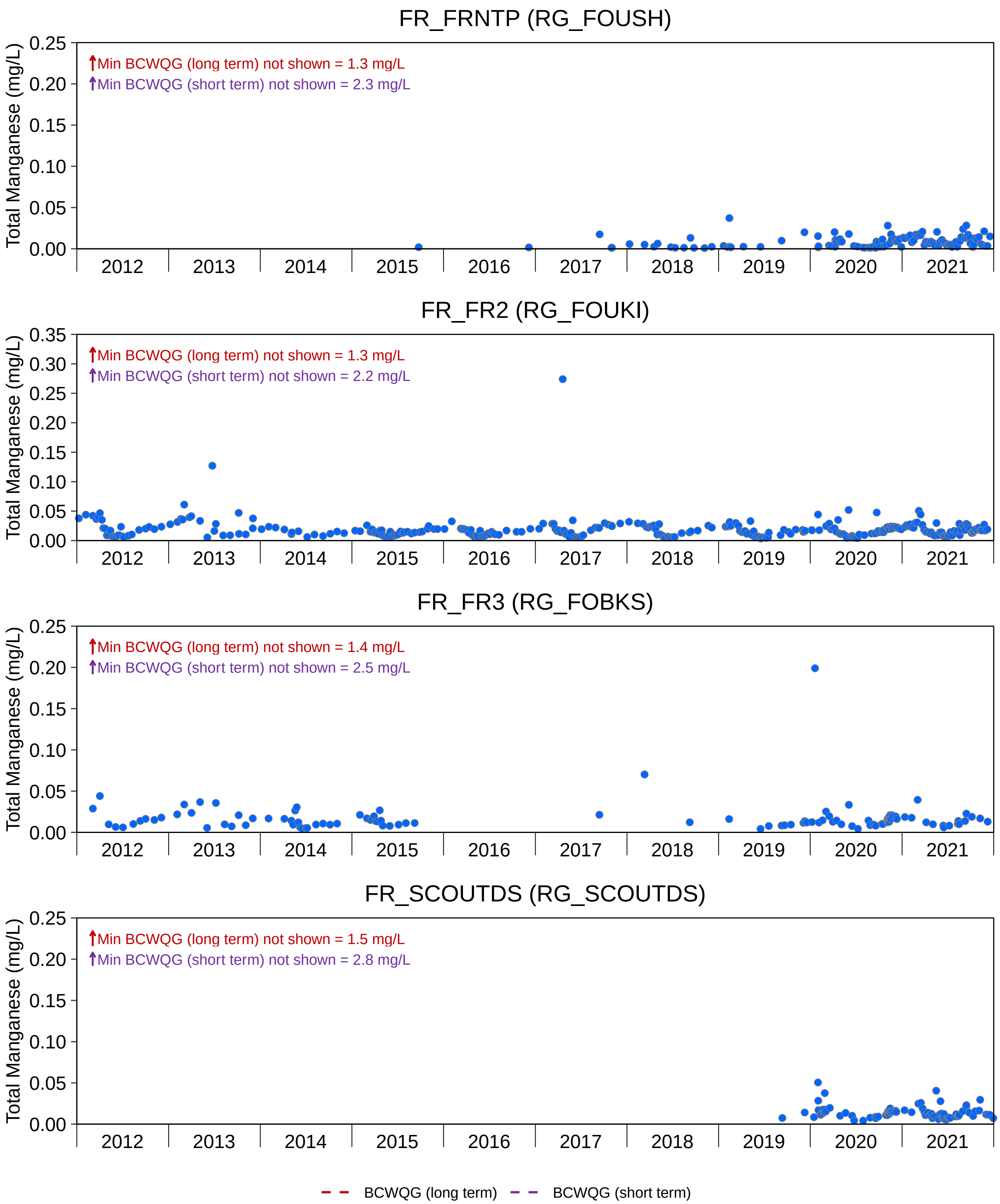

Figure B.8: Time Series Plots for Total Manganese Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

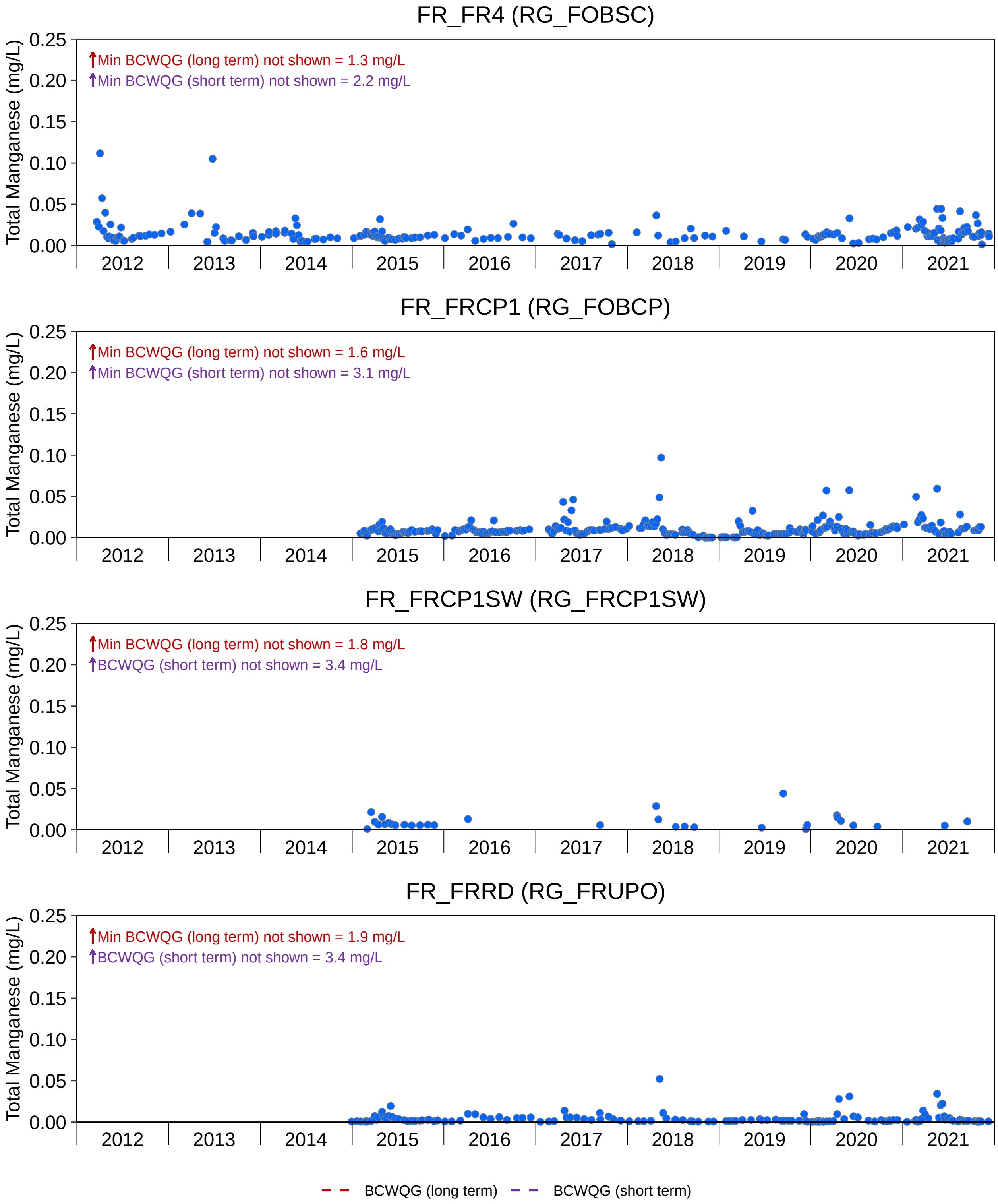

Figure B.8: Time Series Plots for Total Manganese Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

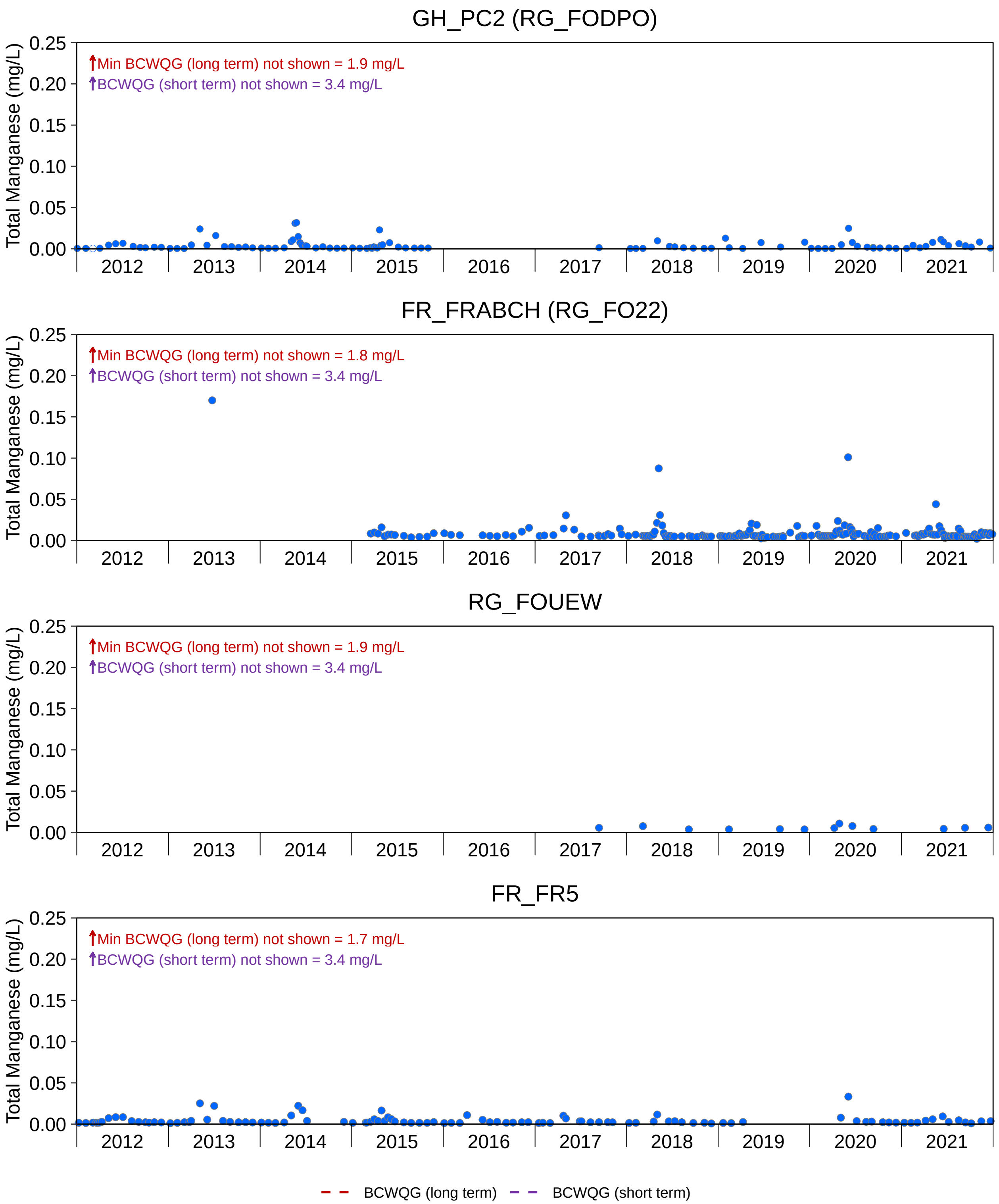

Figure B.8: Time Series Plots for Total Manganese Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

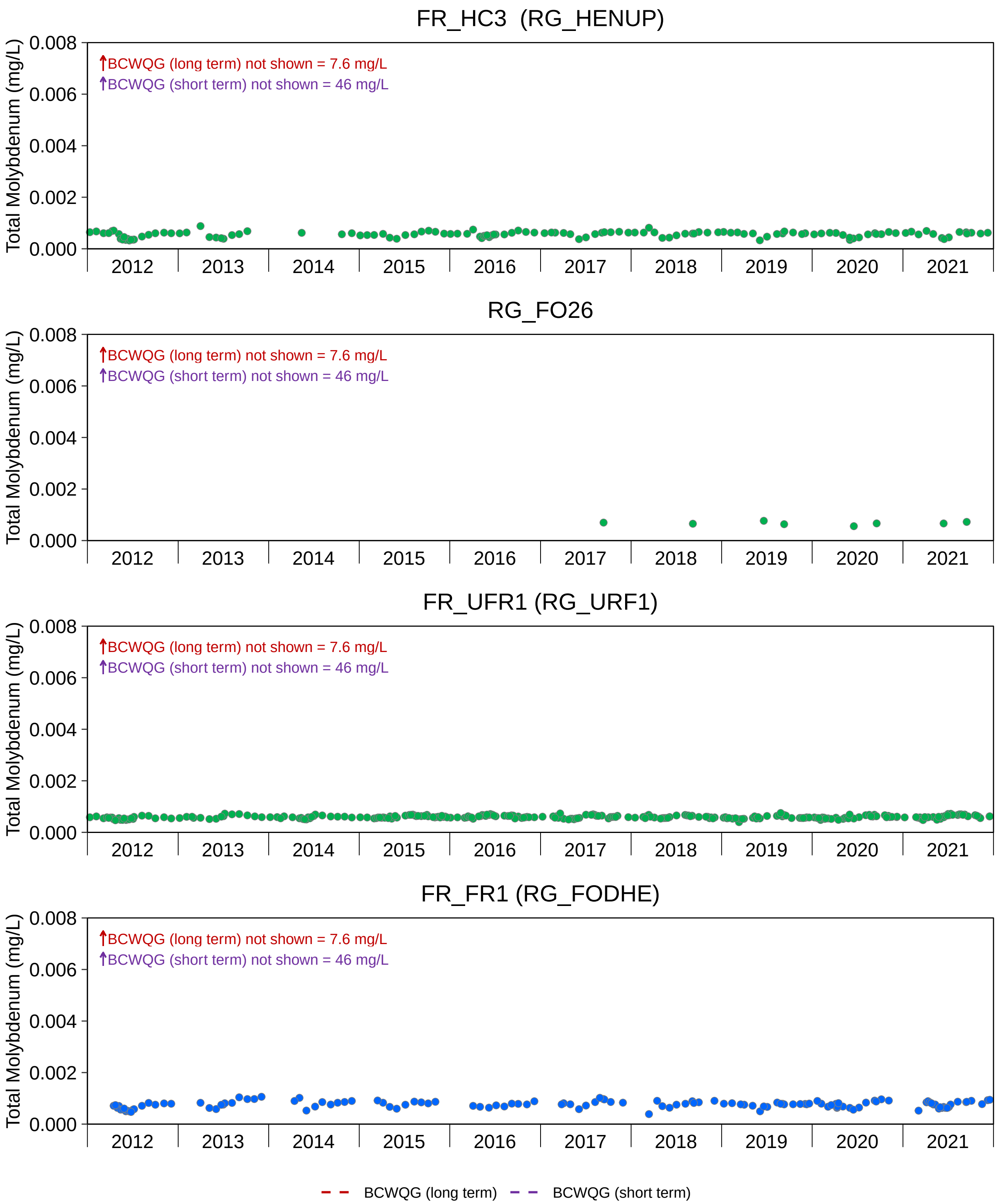

Figure B.9: Time Series Plots for Total Molybdenum Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

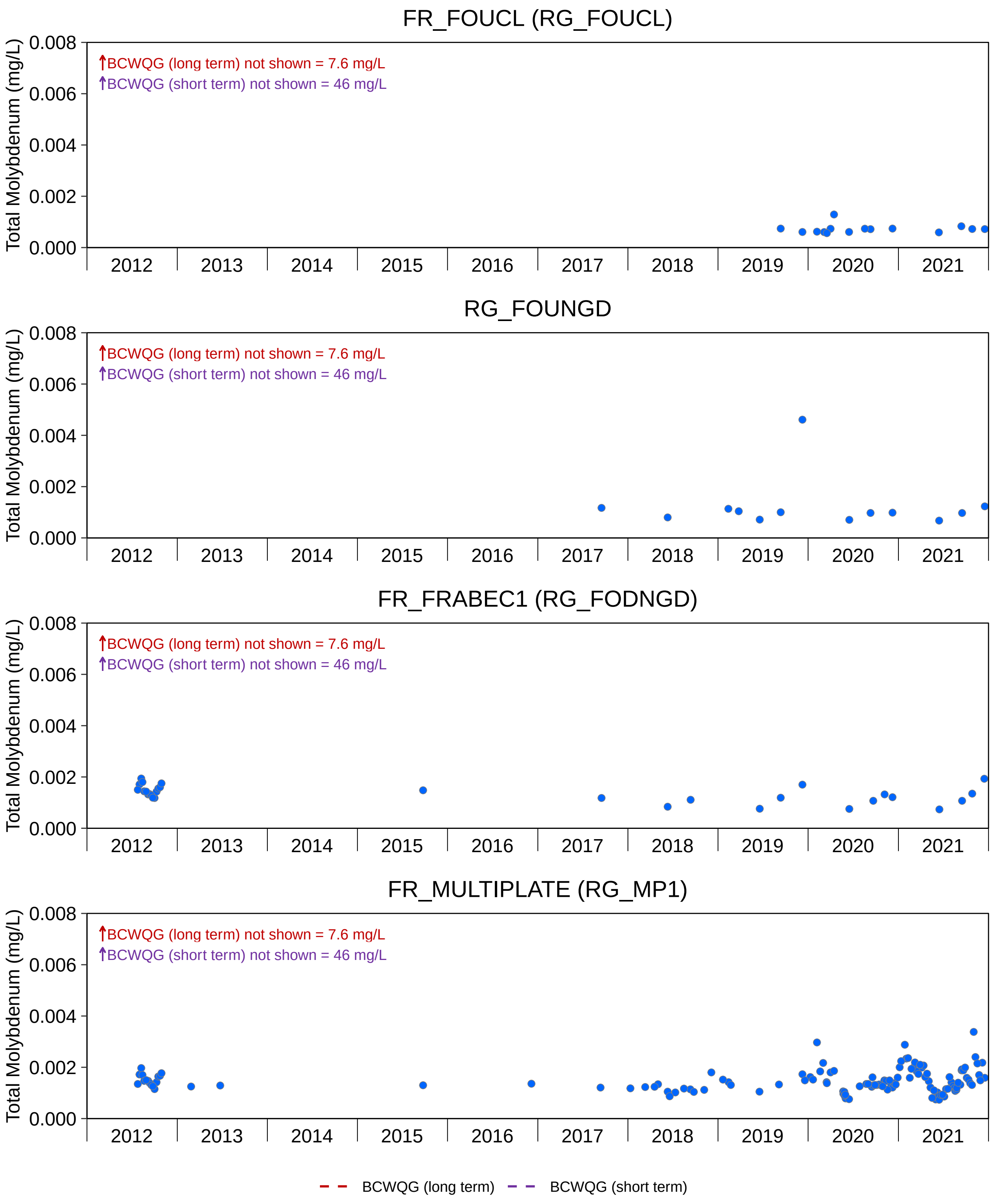

Figure B.9: Time Series Plots for Total Molybdenum Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

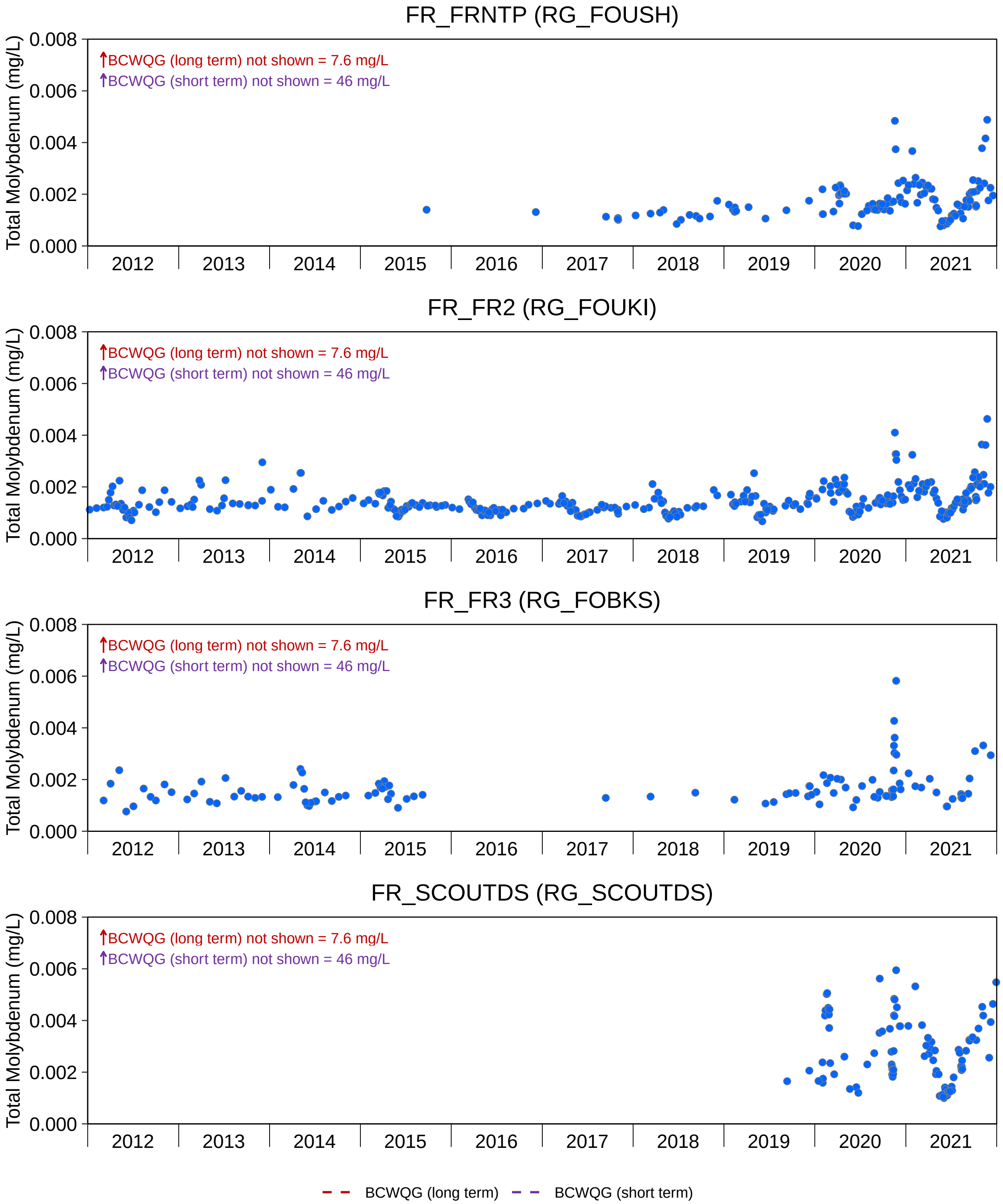

Figure B.9: Time Series Plots for Total Molybdenum Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

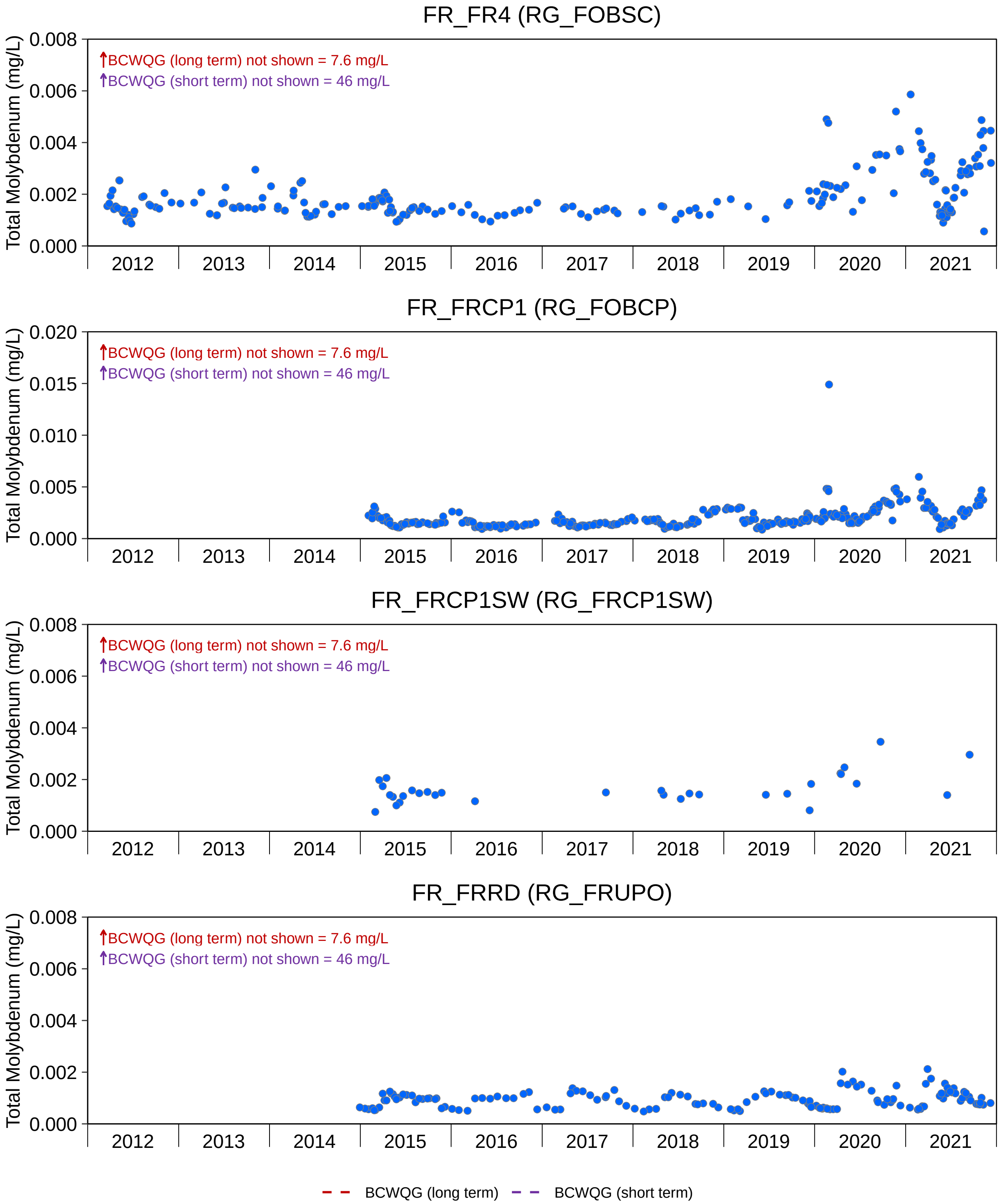

Figure B.9: Time Series Plots for Total Molybdenum Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

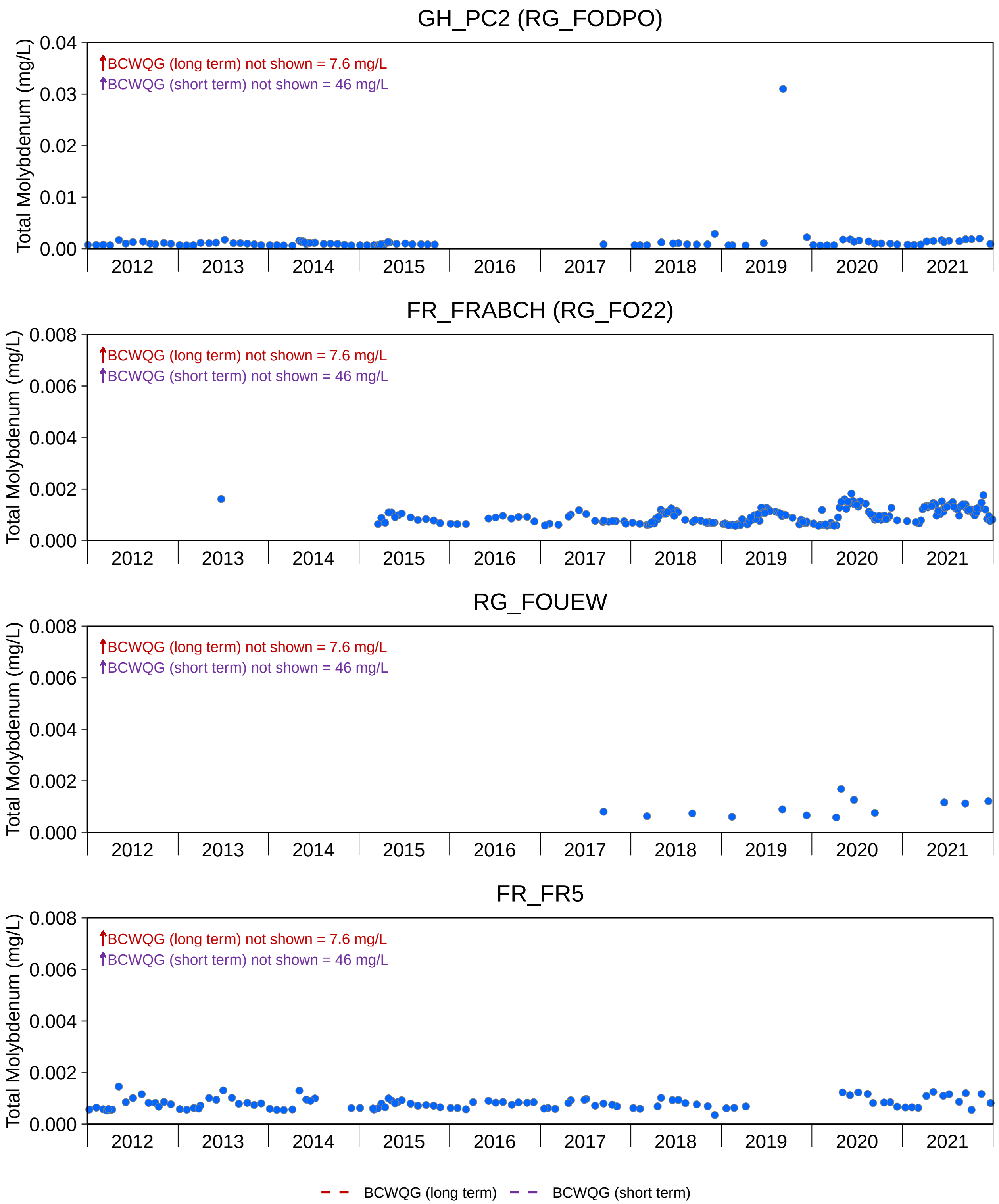

Figure B.9: Time Series Plots for Total Molybdenum Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

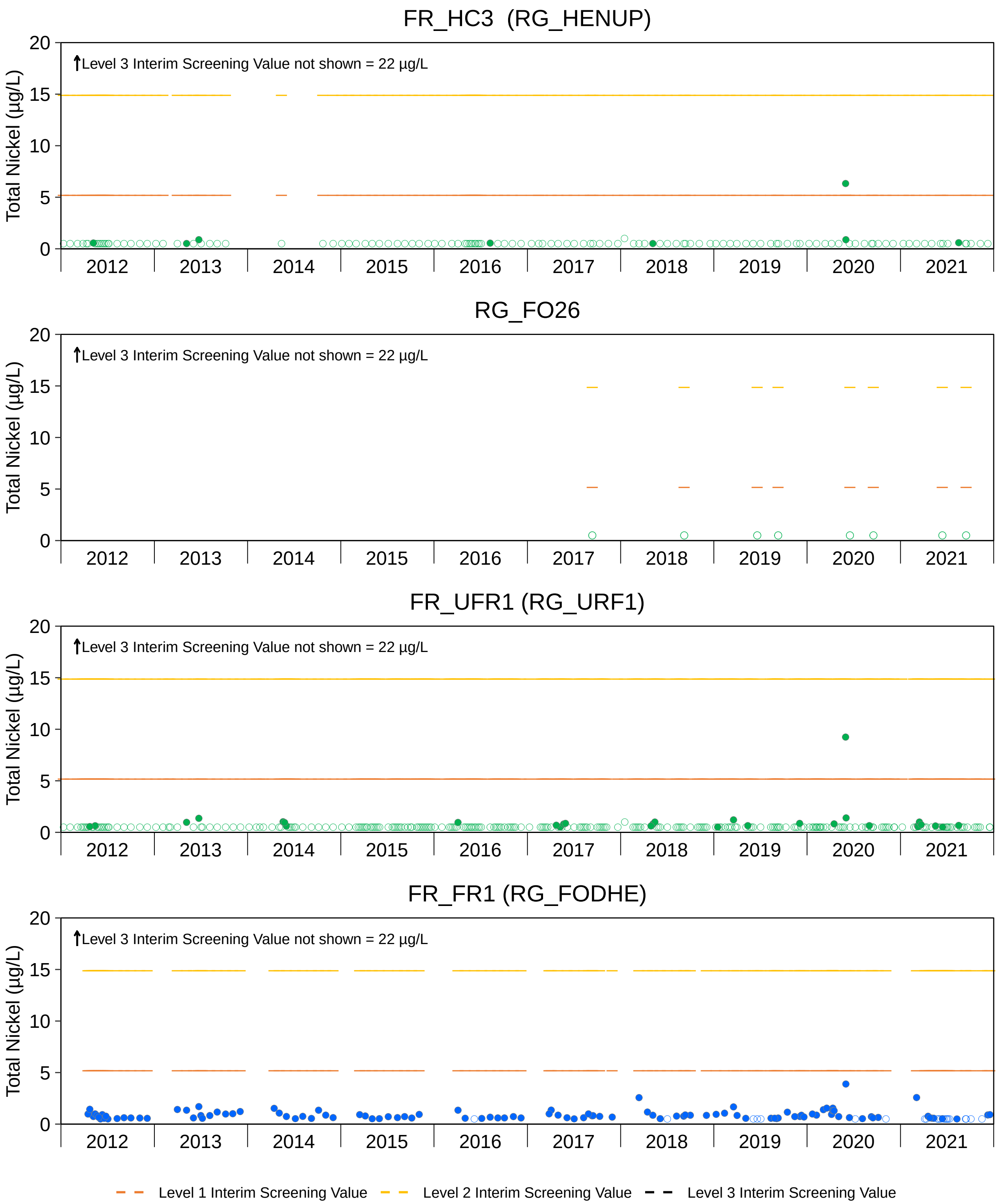

Figure B.10: Time Series Plots for Total Nickel Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

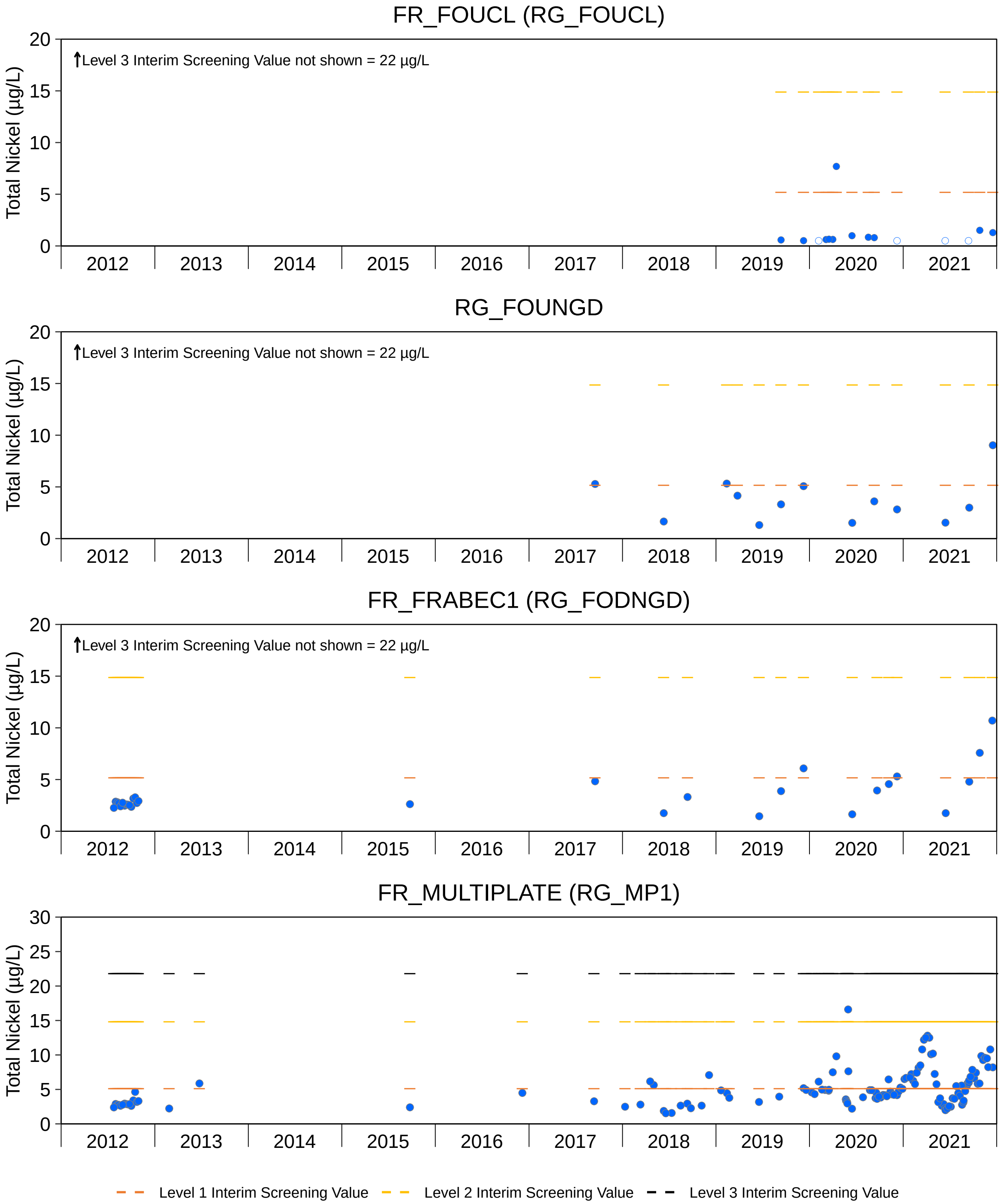

Figure B.10: Time Series Plots for Total Nickel Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

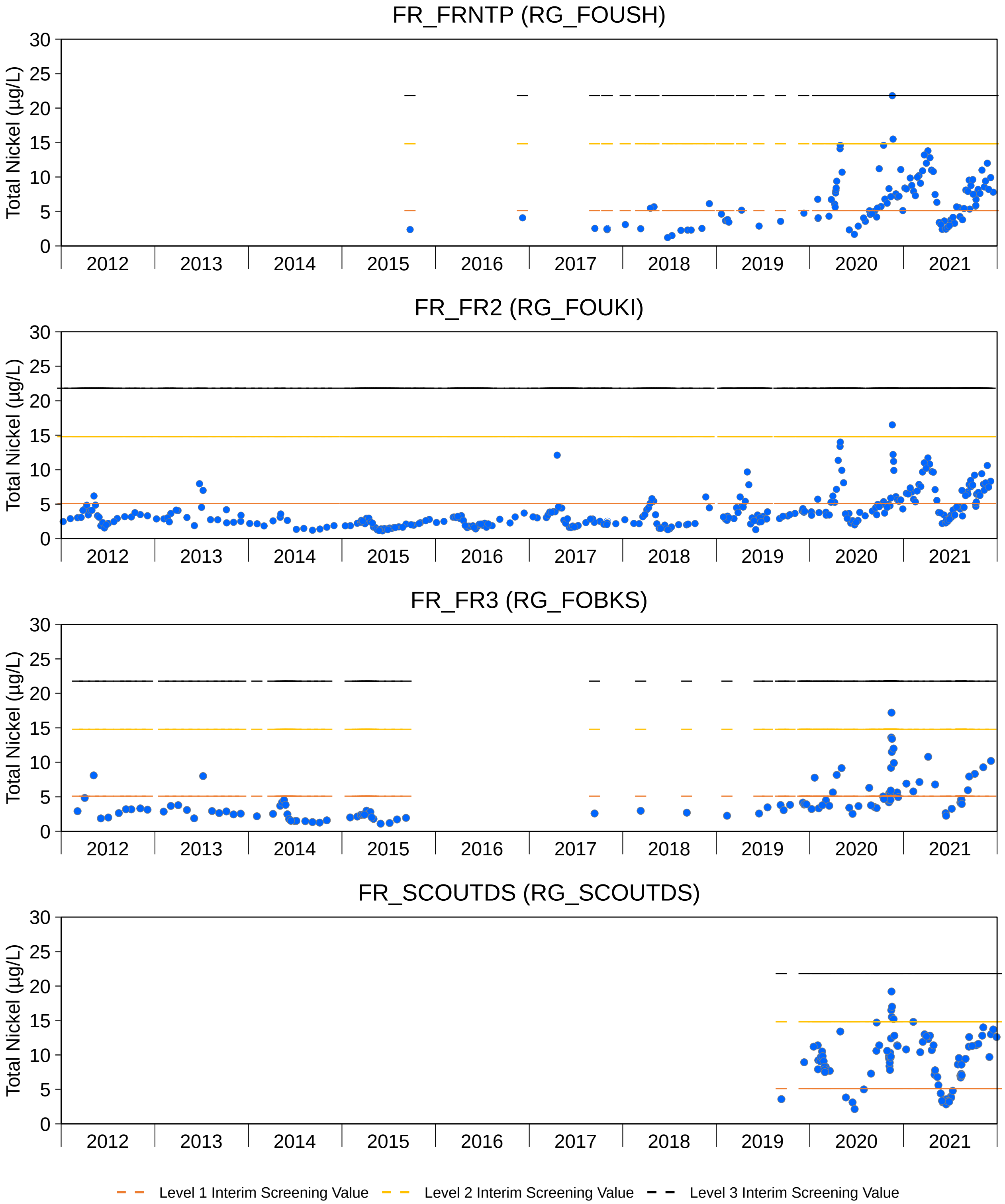

Figure B.10: Time Series Plots for Total Nickel Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

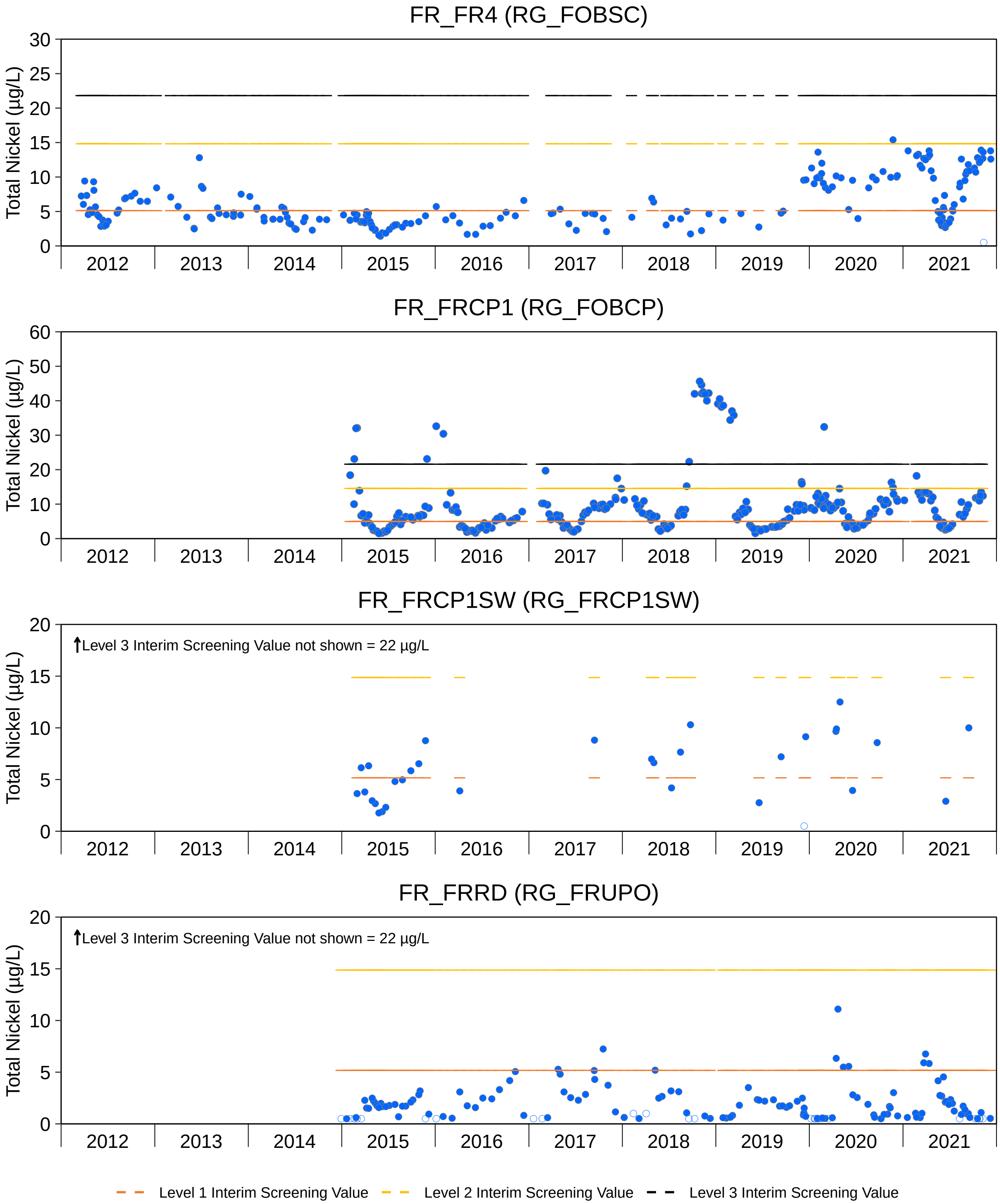

Figure B.10: Time Series Plots for Total Nickel Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

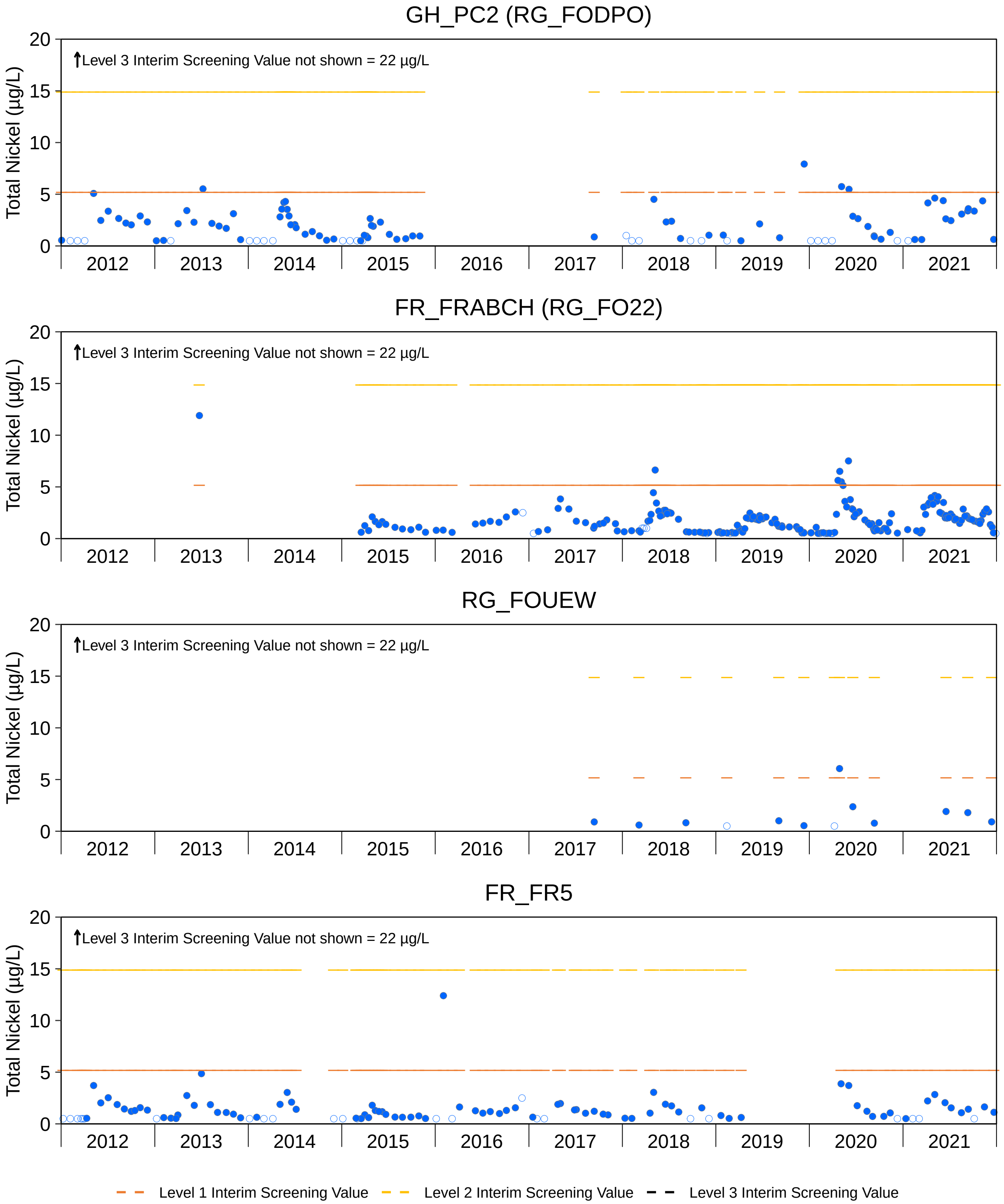

Figure B.10: Time Series Plots for Total Nickel Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

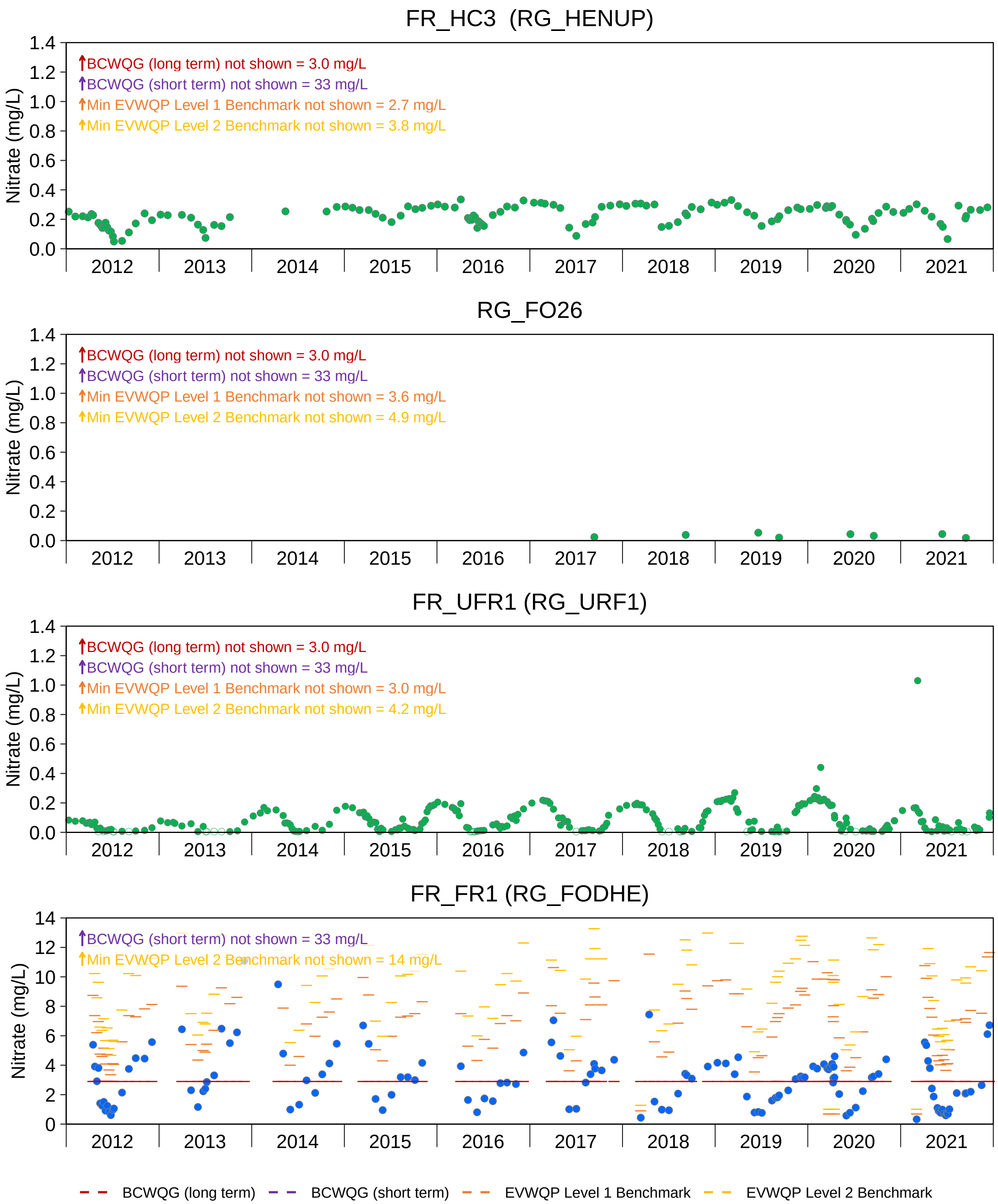

Figure B.11: Time Series Plots for Nitrate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

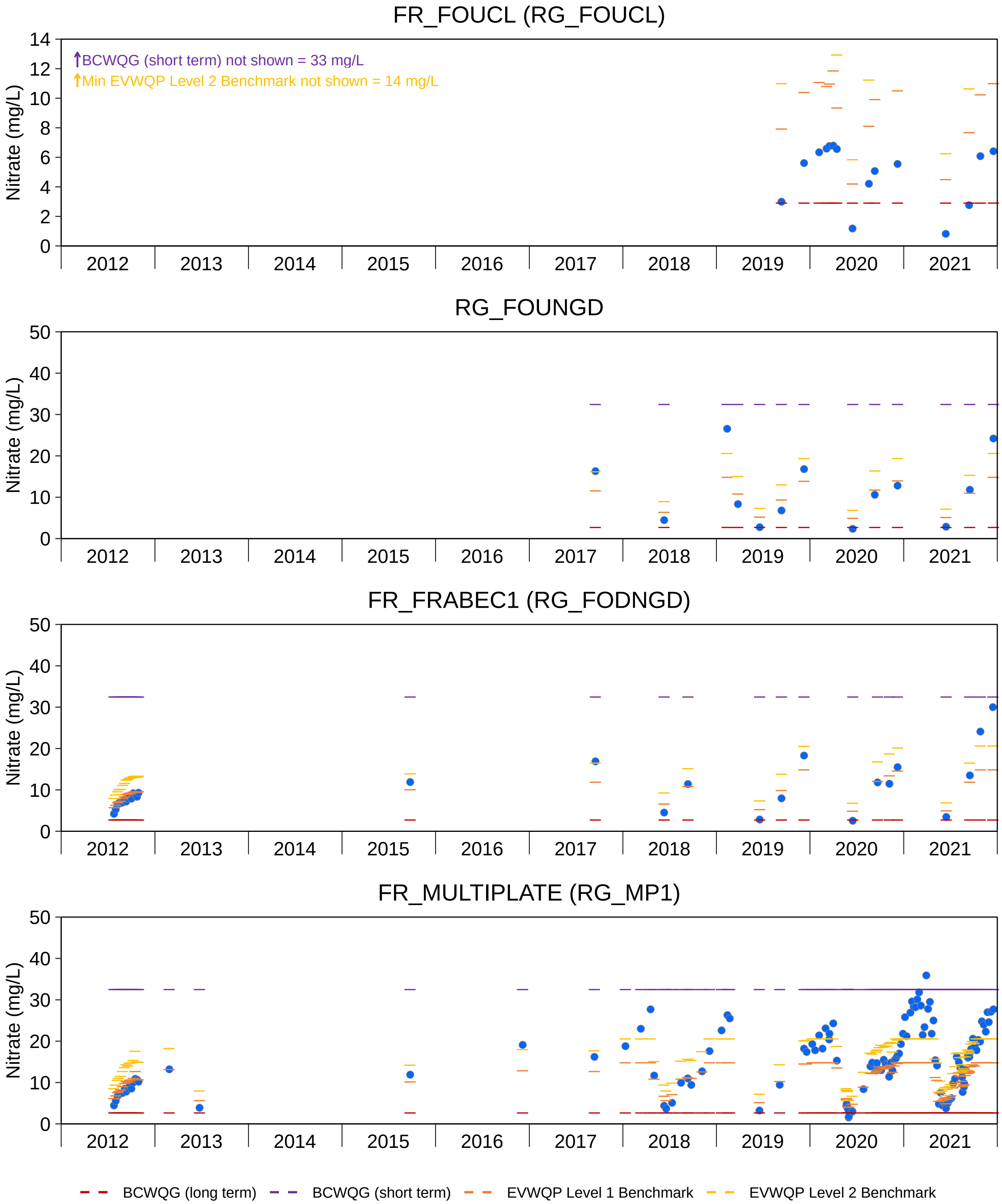

Figure B.11: Time Series Plots for Nitrate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

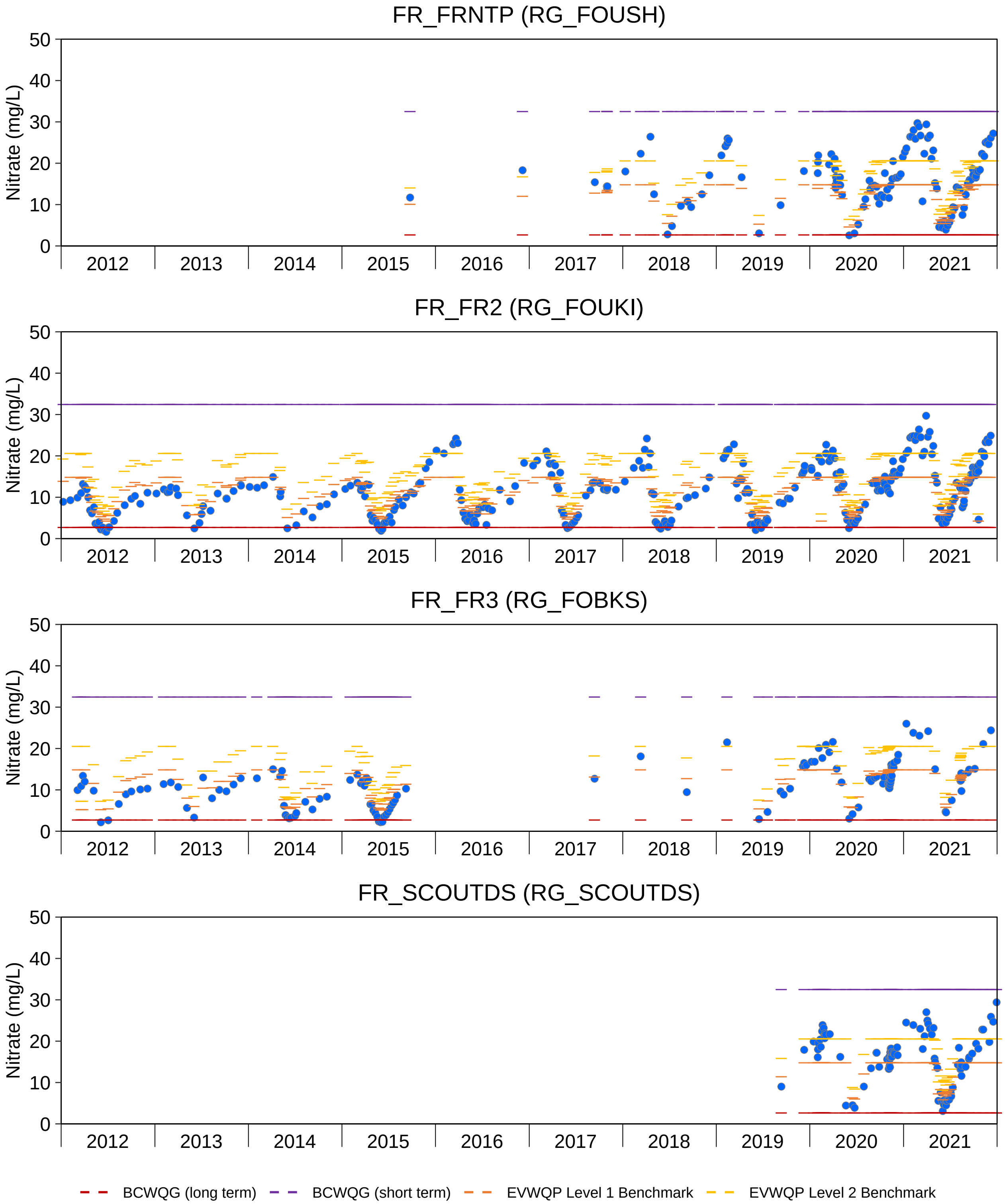

Figure B.11: Time Series Plots for Nitrate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

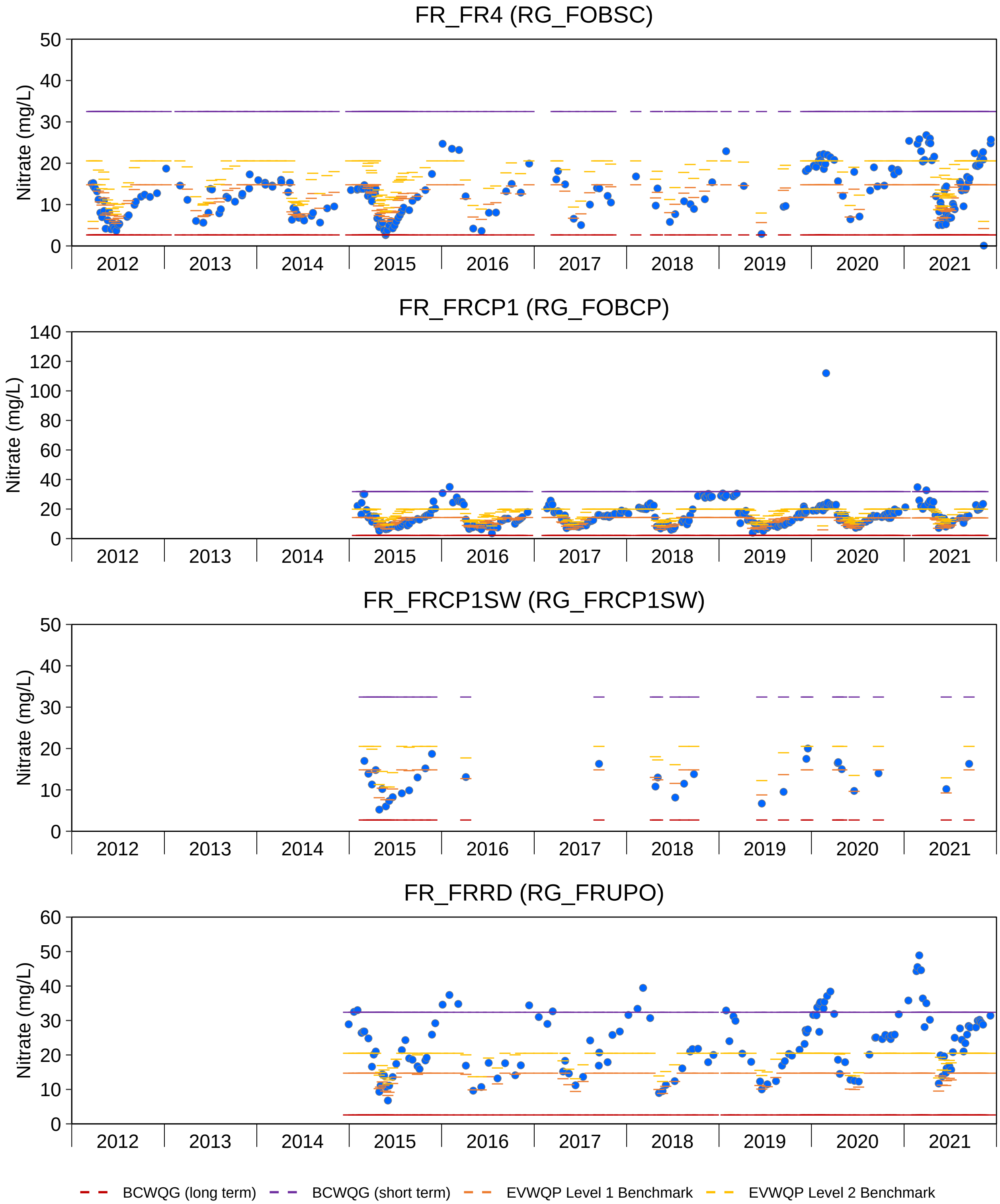

Figure B.11: Time Series Plots for Nitrate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

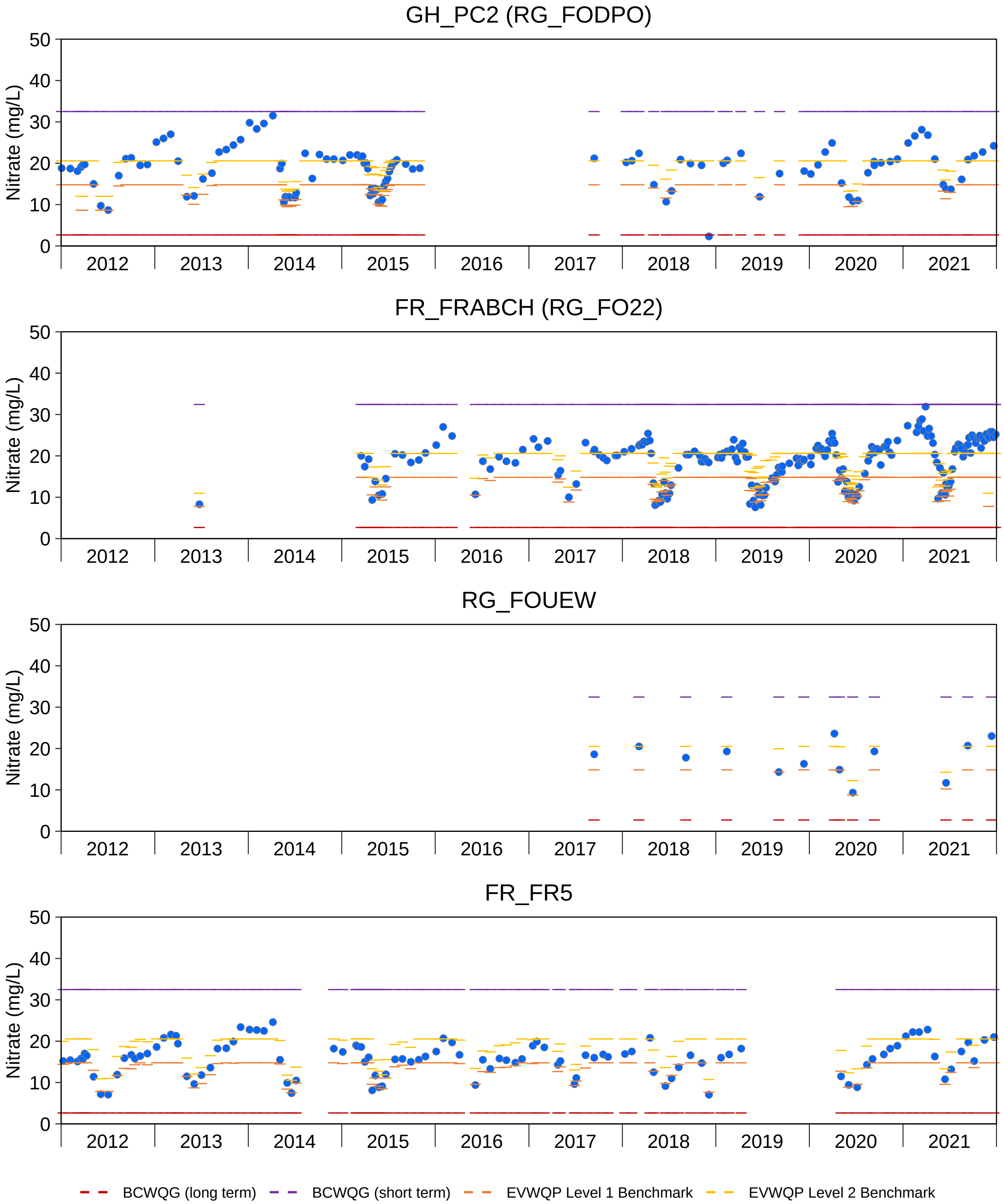

Figure B.11: Time Series Plots for Nitrate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

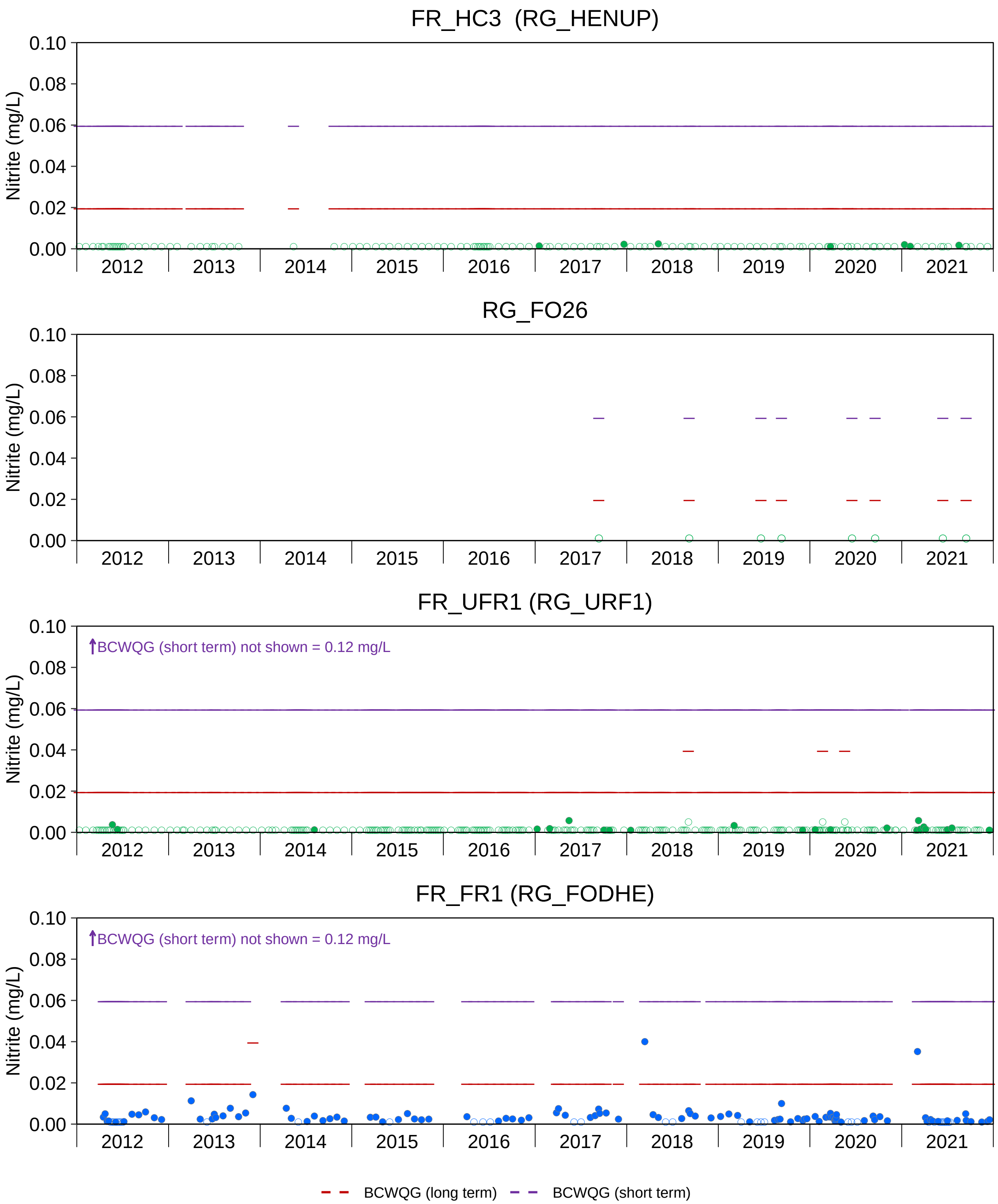

Figure B.12: Time Series Plots for Nitrite Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

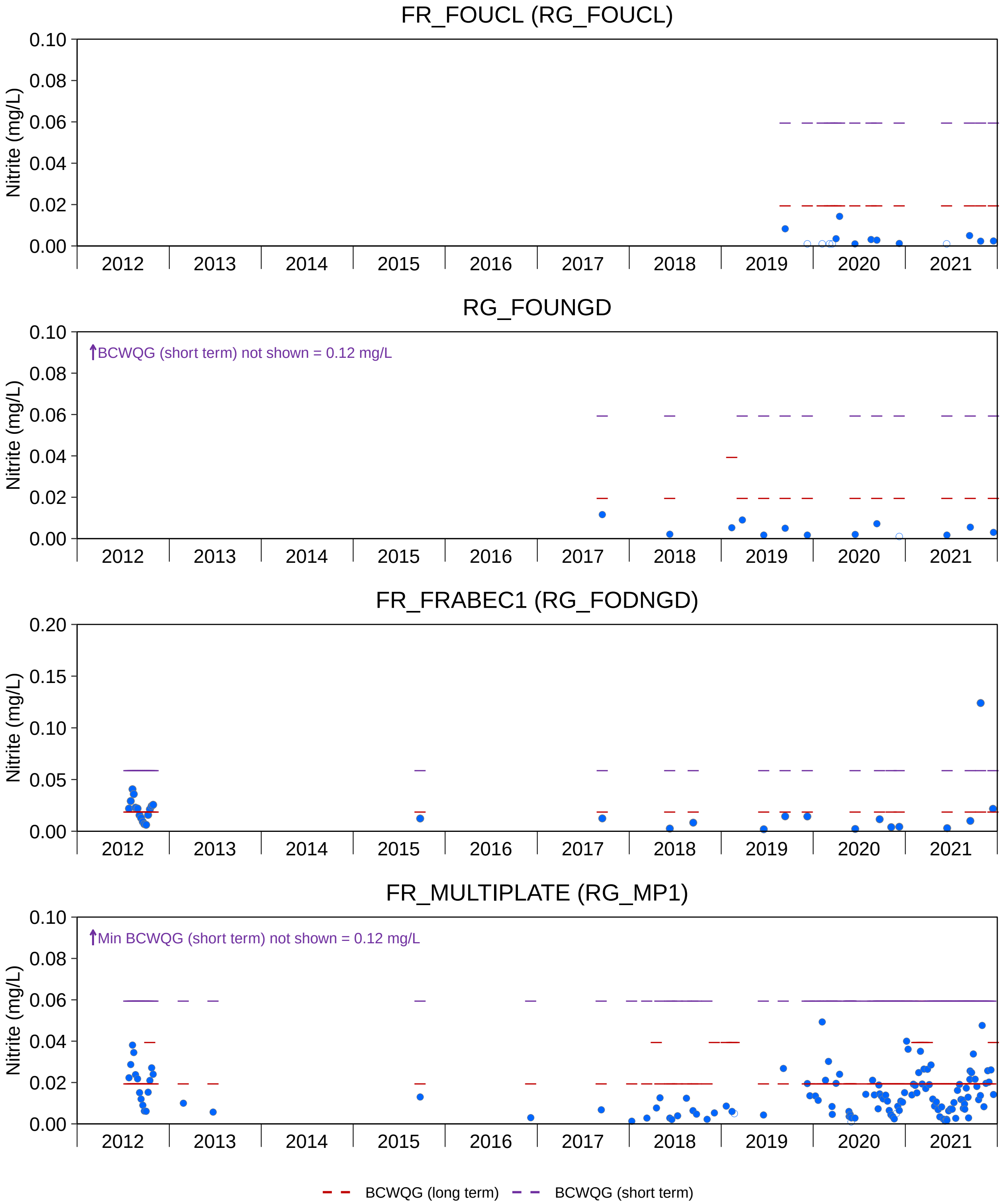

Figure B.12: Time Series Plots for Nitrite Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

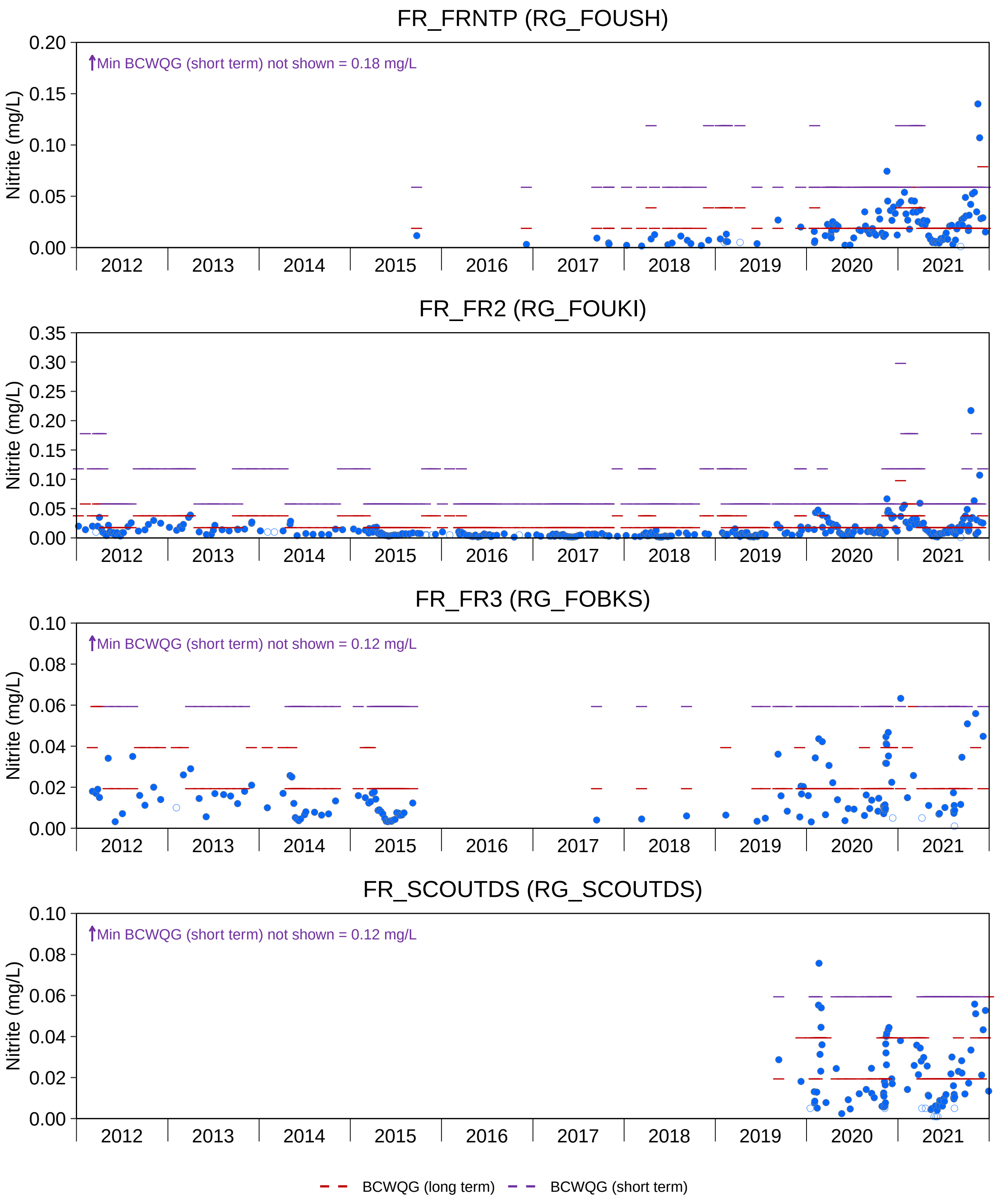

Figure B.12: Time Series Plots for Nitrite Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

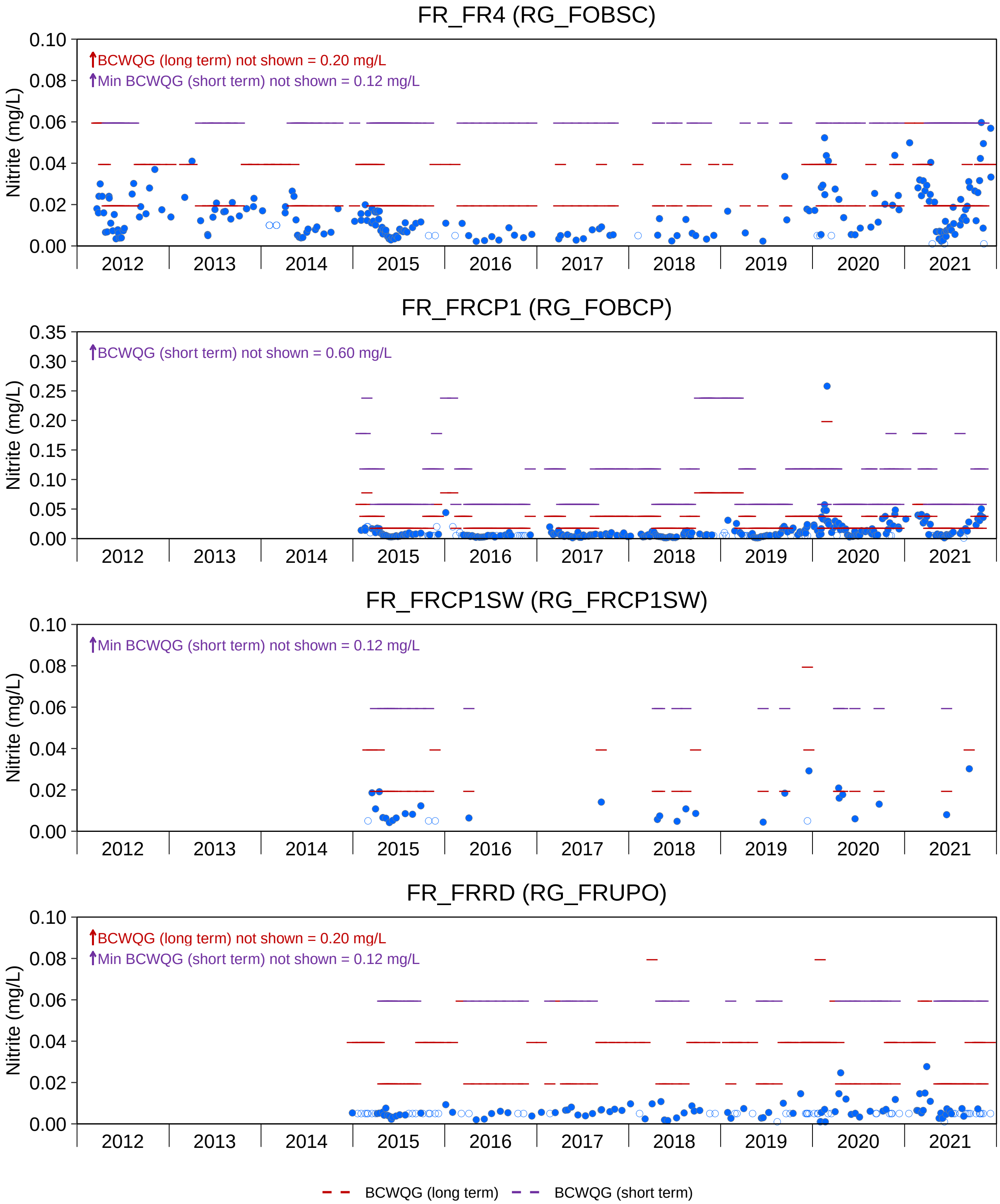

Figure B.12: Time Series Plots for Nitrite Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

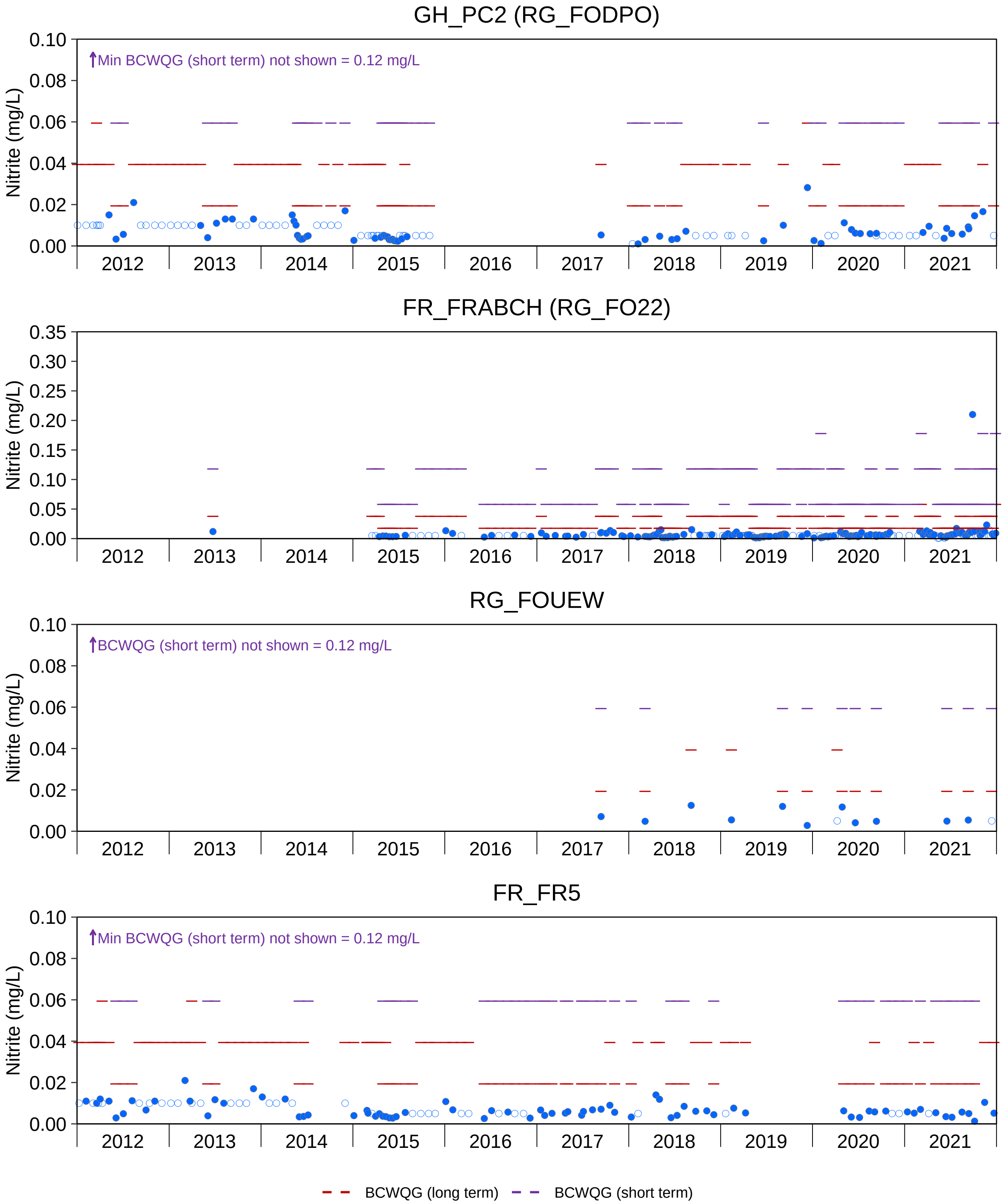

Figure B.12: Time Series Plots for Nitrite Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

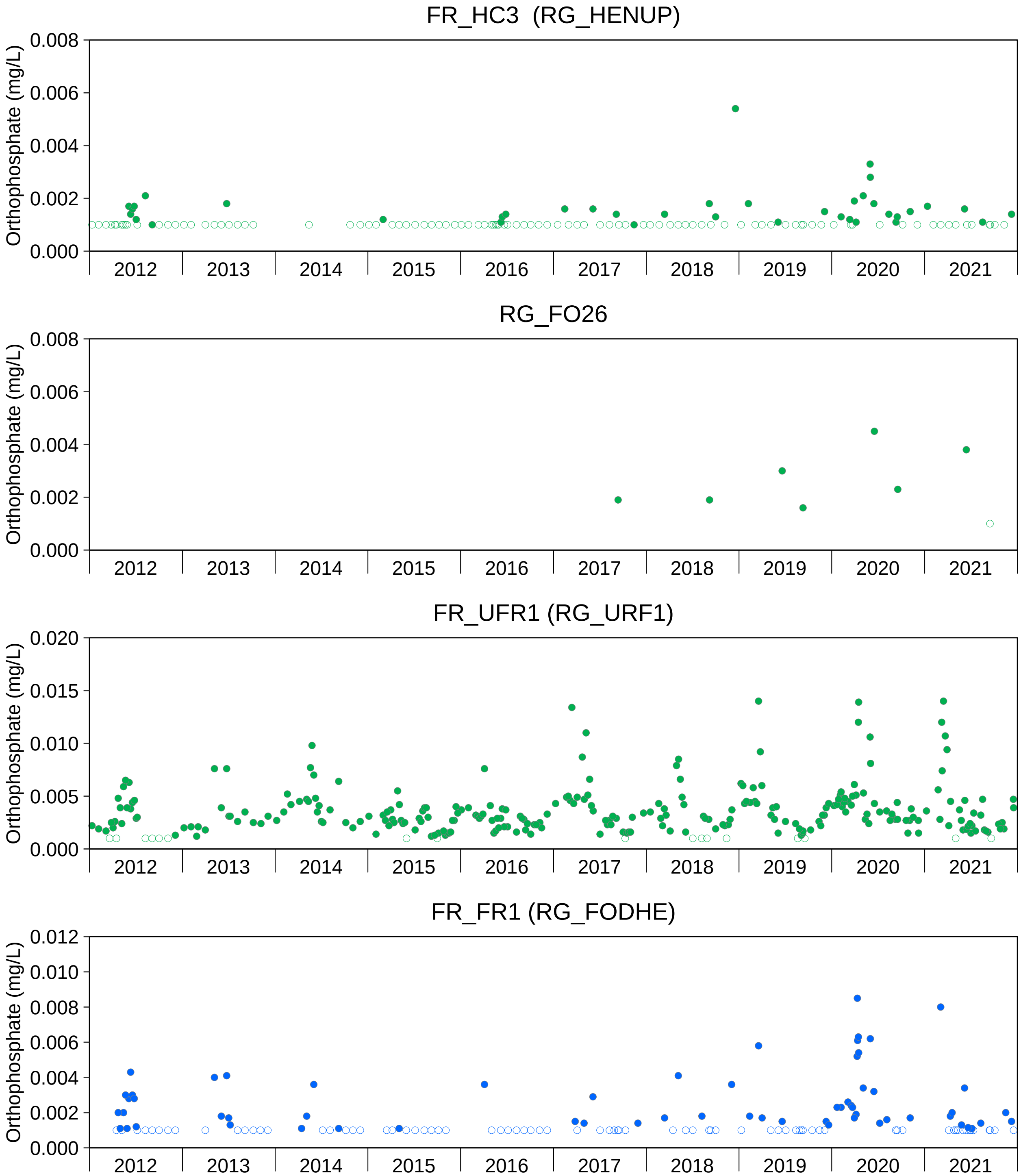

Figure B.13: Time Series Plots for Orthophosphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

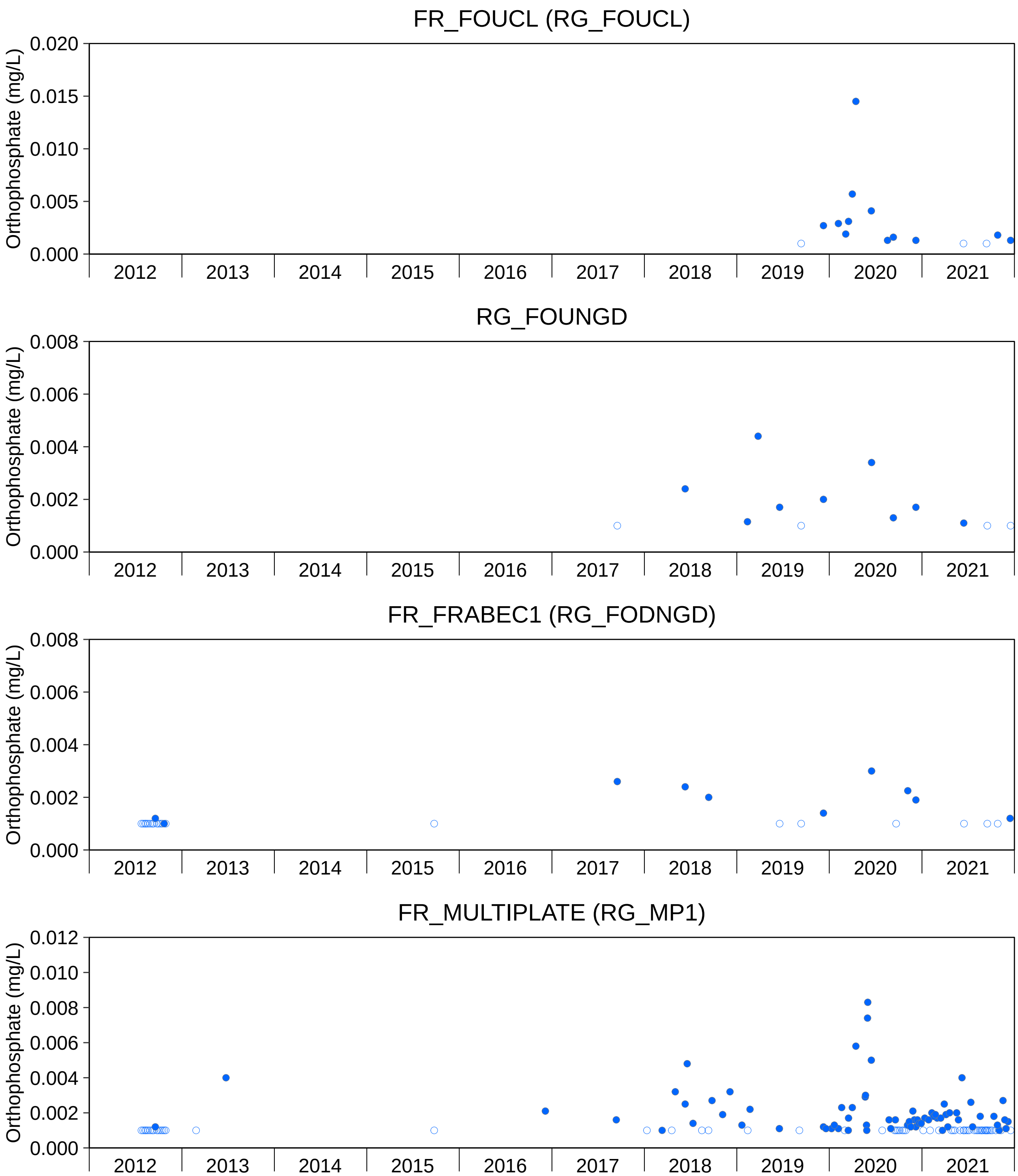

Figure B.13: Time Series Plots for Orthophosphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

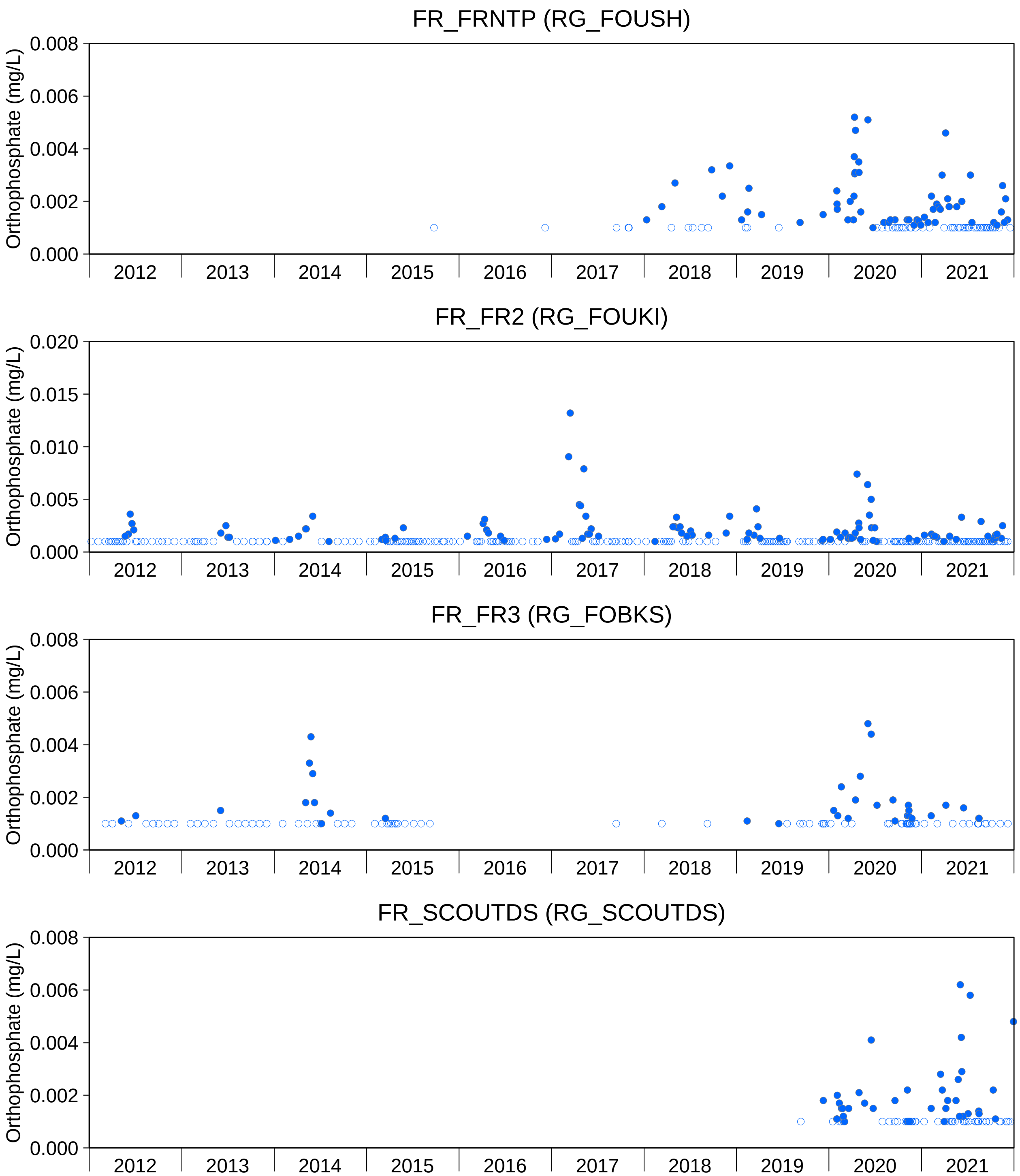

Figure B.13: Time Series Plots for Orthophosphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

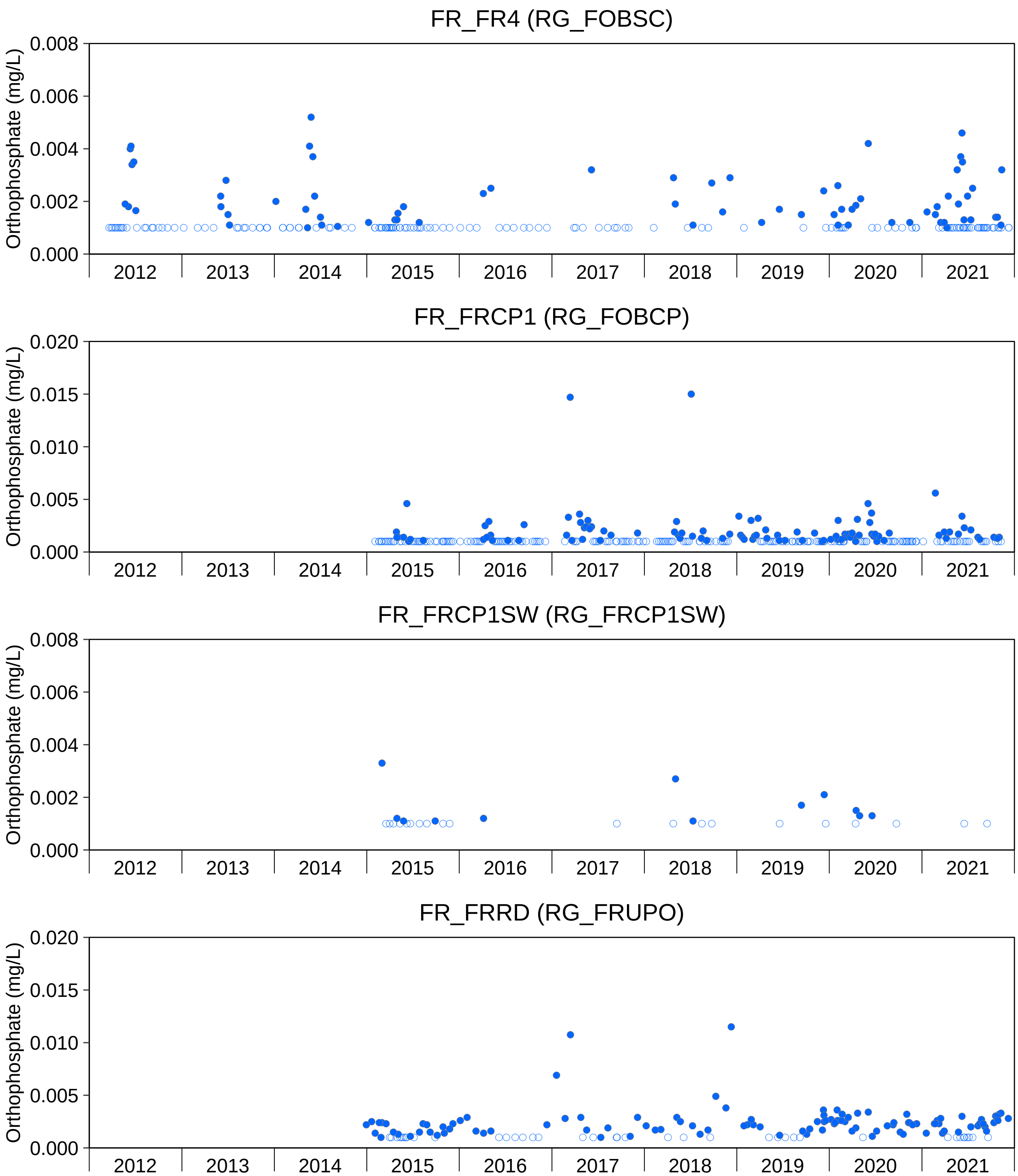

Figure B.13: Time Series Plots for Orthophosphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

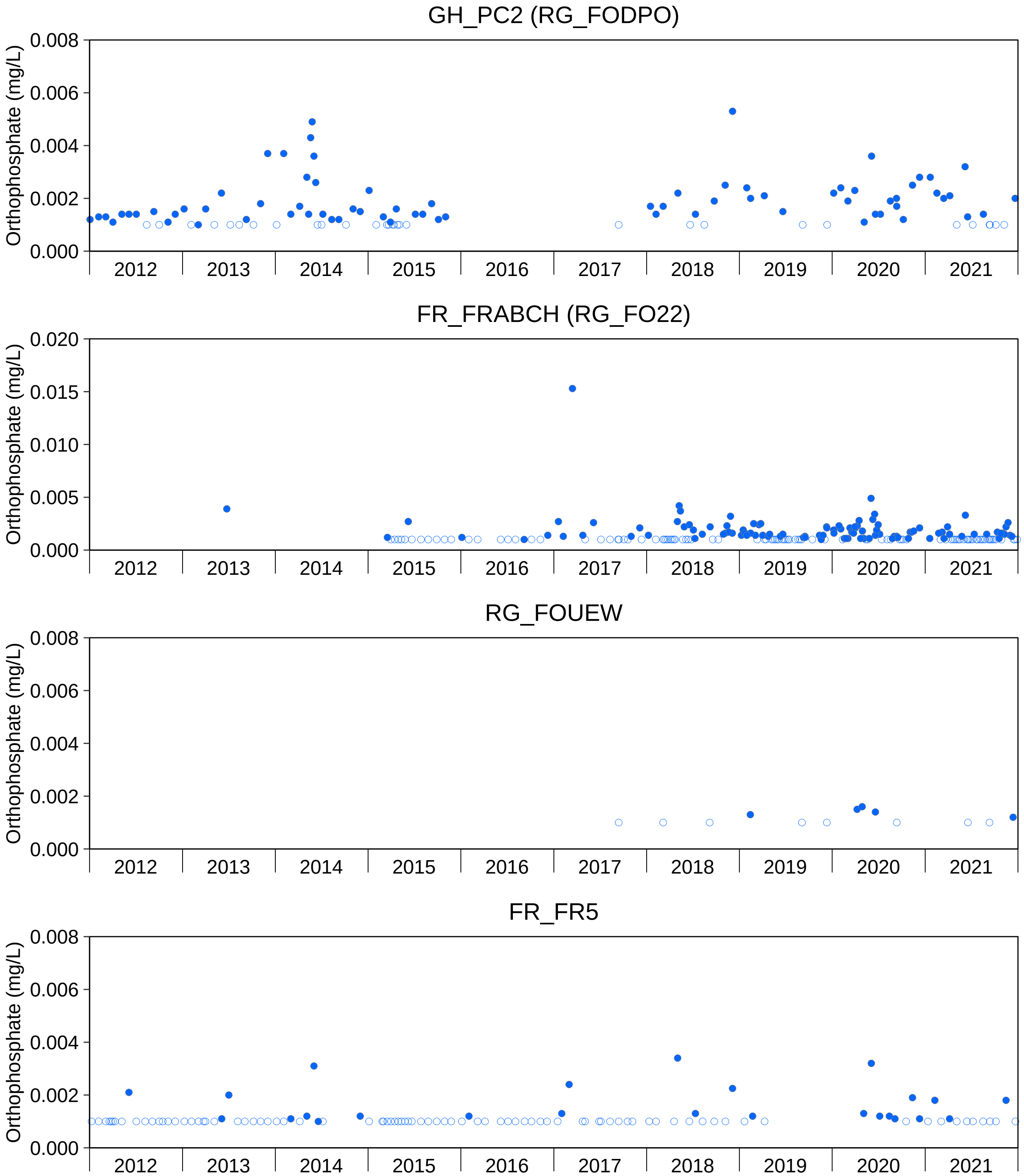

Figure B.13: Time Series Plots for Orthophosphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

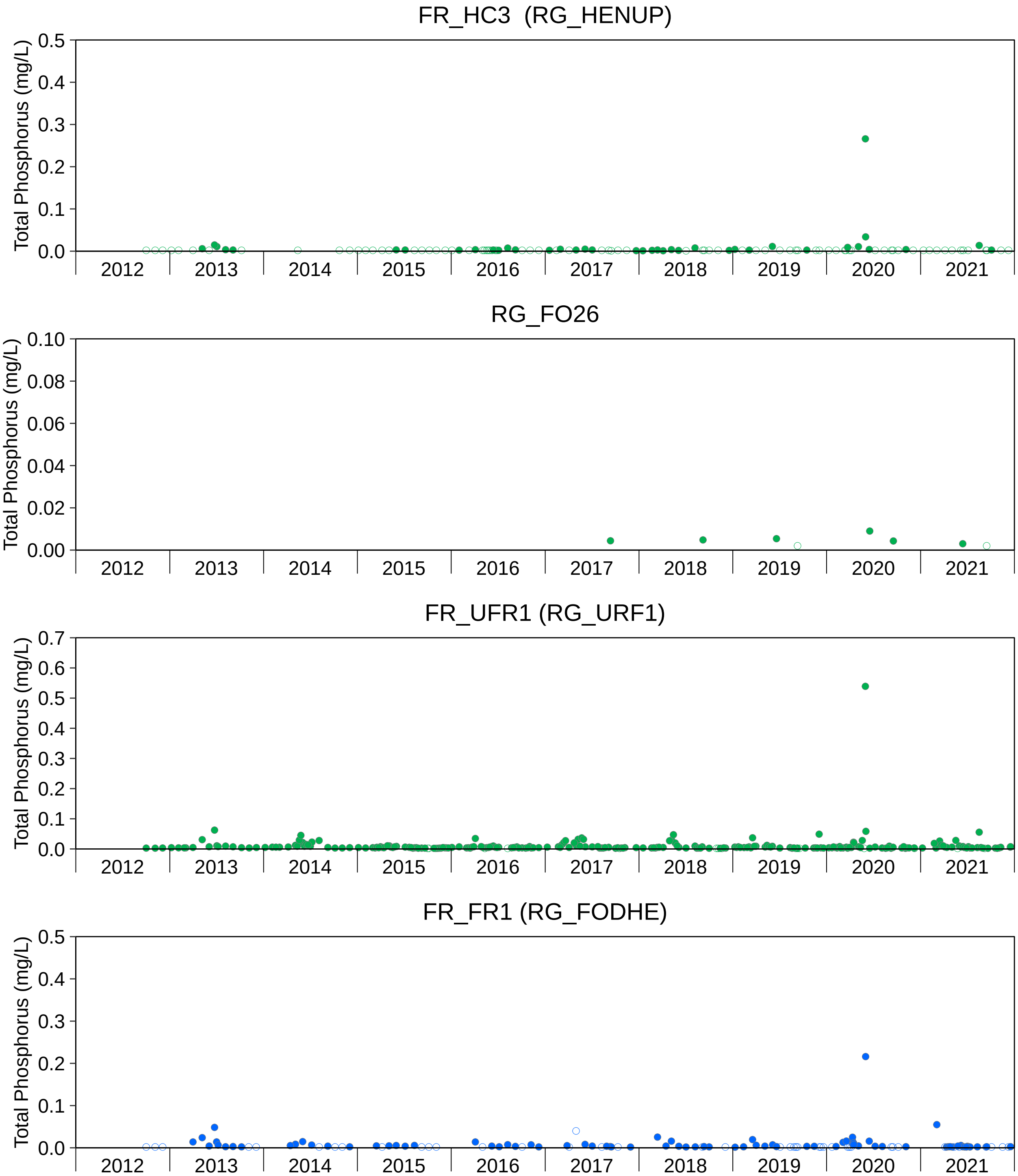

Figure B.14: Time Series Plots for Phosphorus Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. High non−detect data from 2012 was removed. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

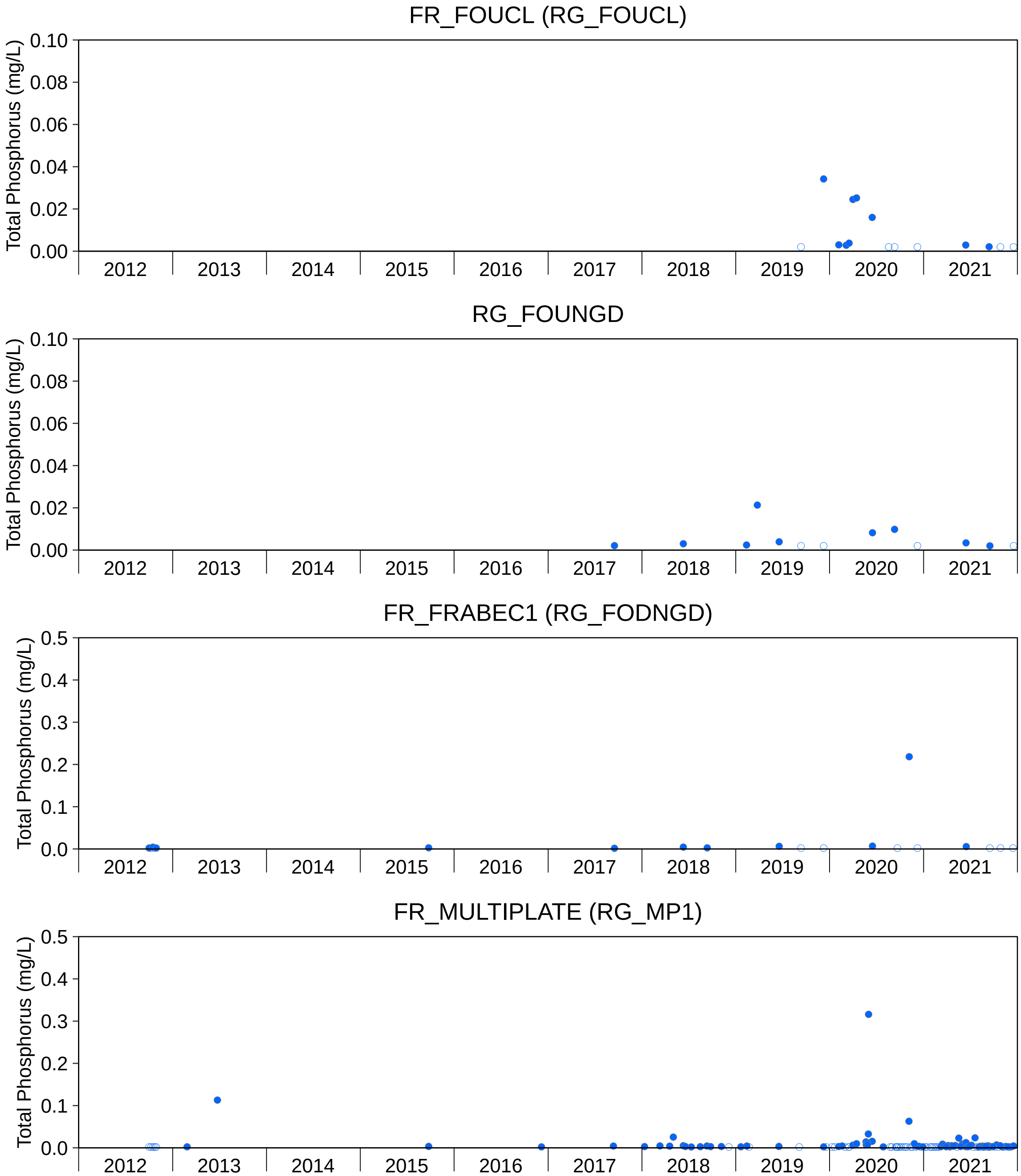

Figure B.14: Time Series Plots for Phosphorus Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. High non−detect data from 2012 was removed. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

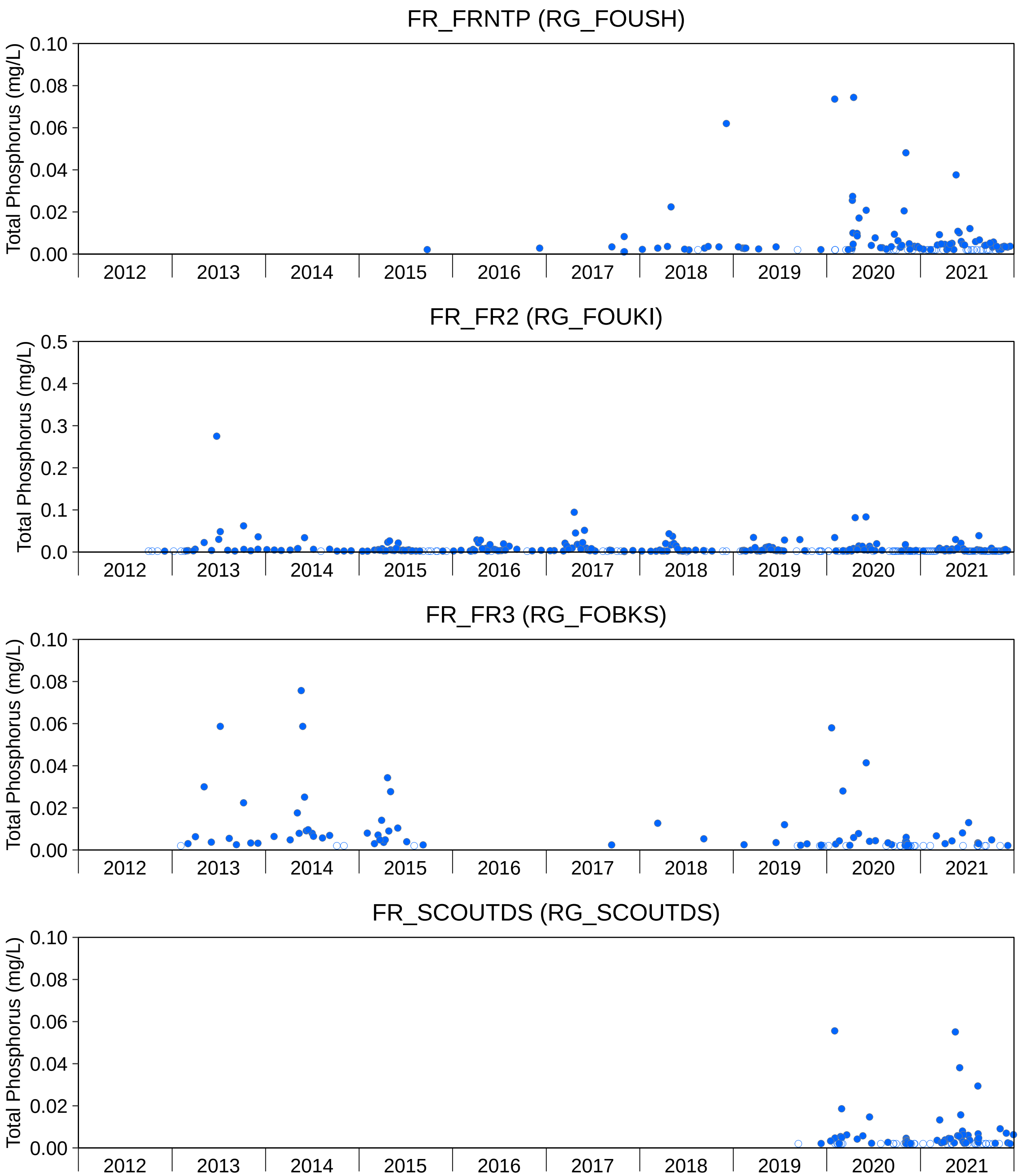

Figure B.14: Time Series Plots for Phosphorus Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. High non−detect data from 2012 was removed. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

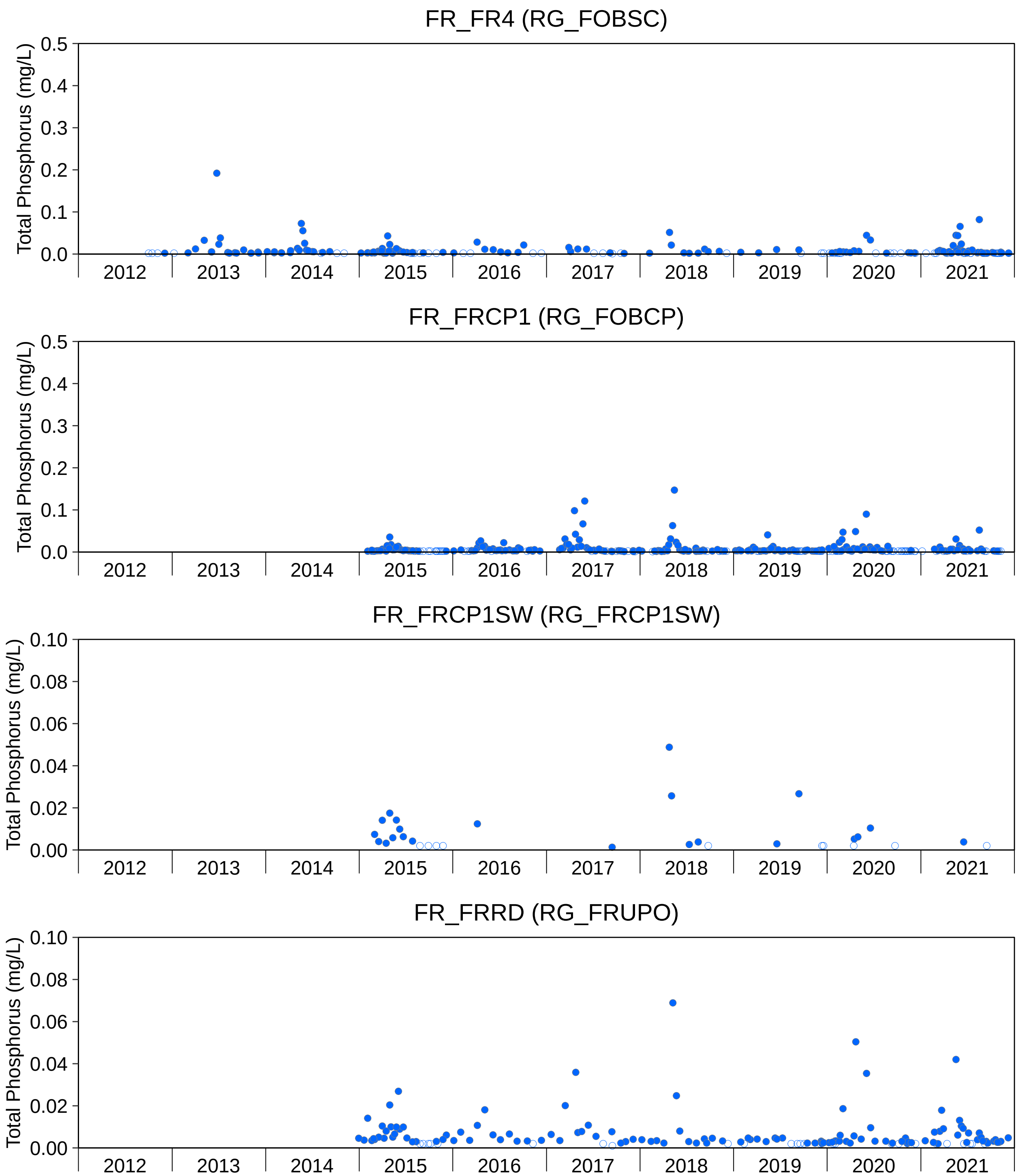

Figure B.14: Time Series Plots for Phosphorus Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. High non−detect data from 2012 was removed. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

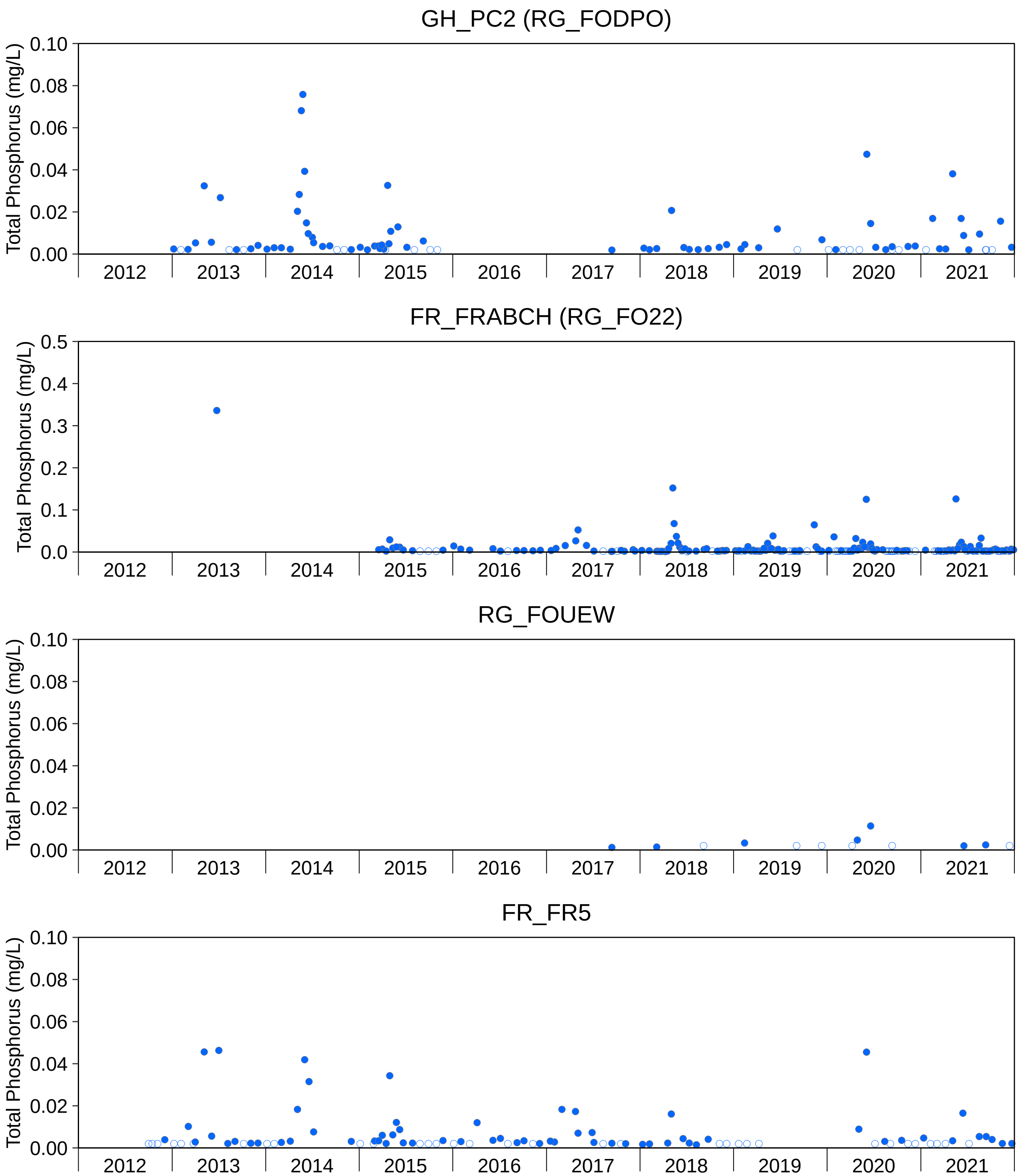

Figure B.14: Time Series Plots for Phosphorus Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. High non−detect data from 2012 was removed. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

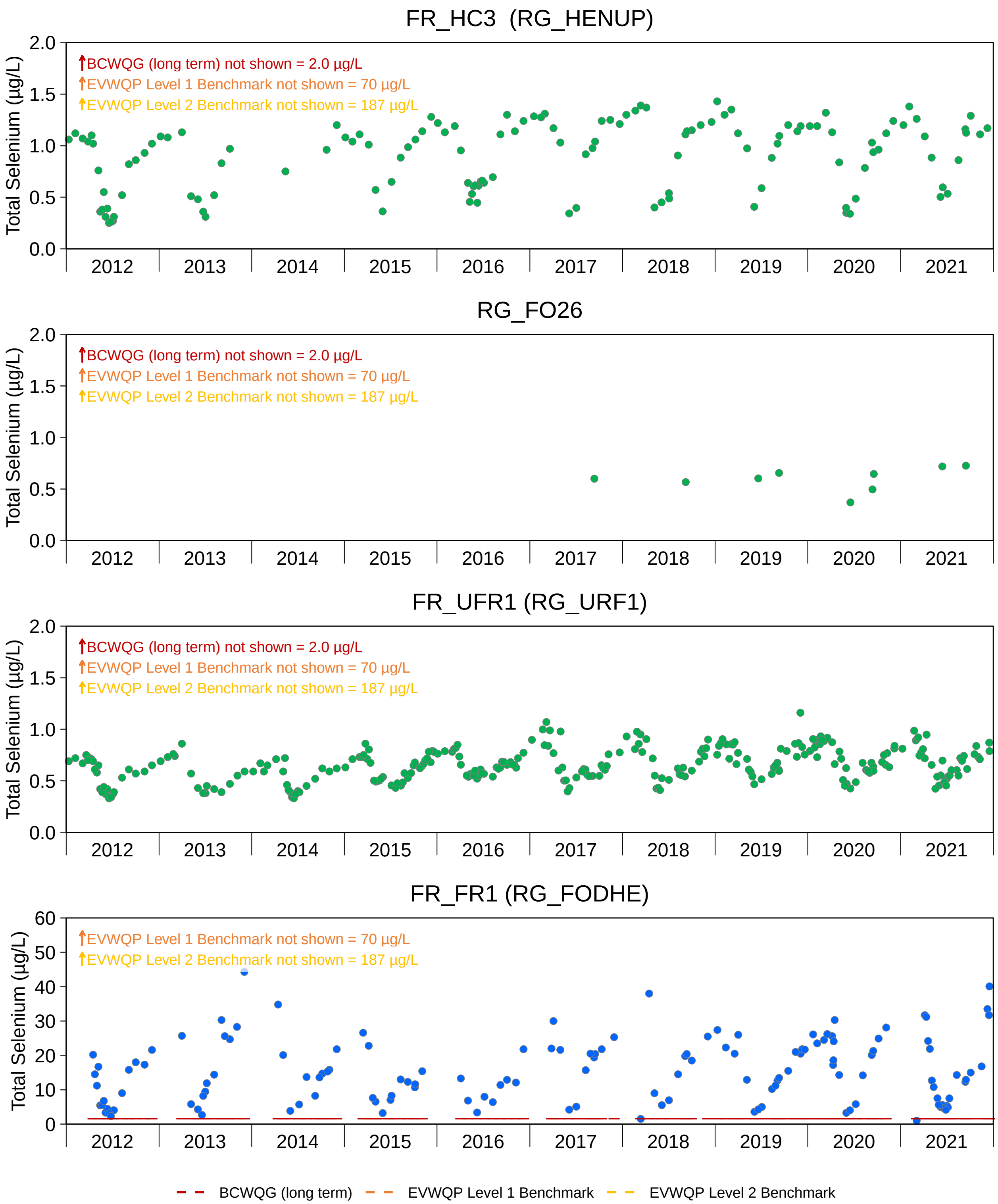

Figure B.15: Time Series Plots for Total Selenium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

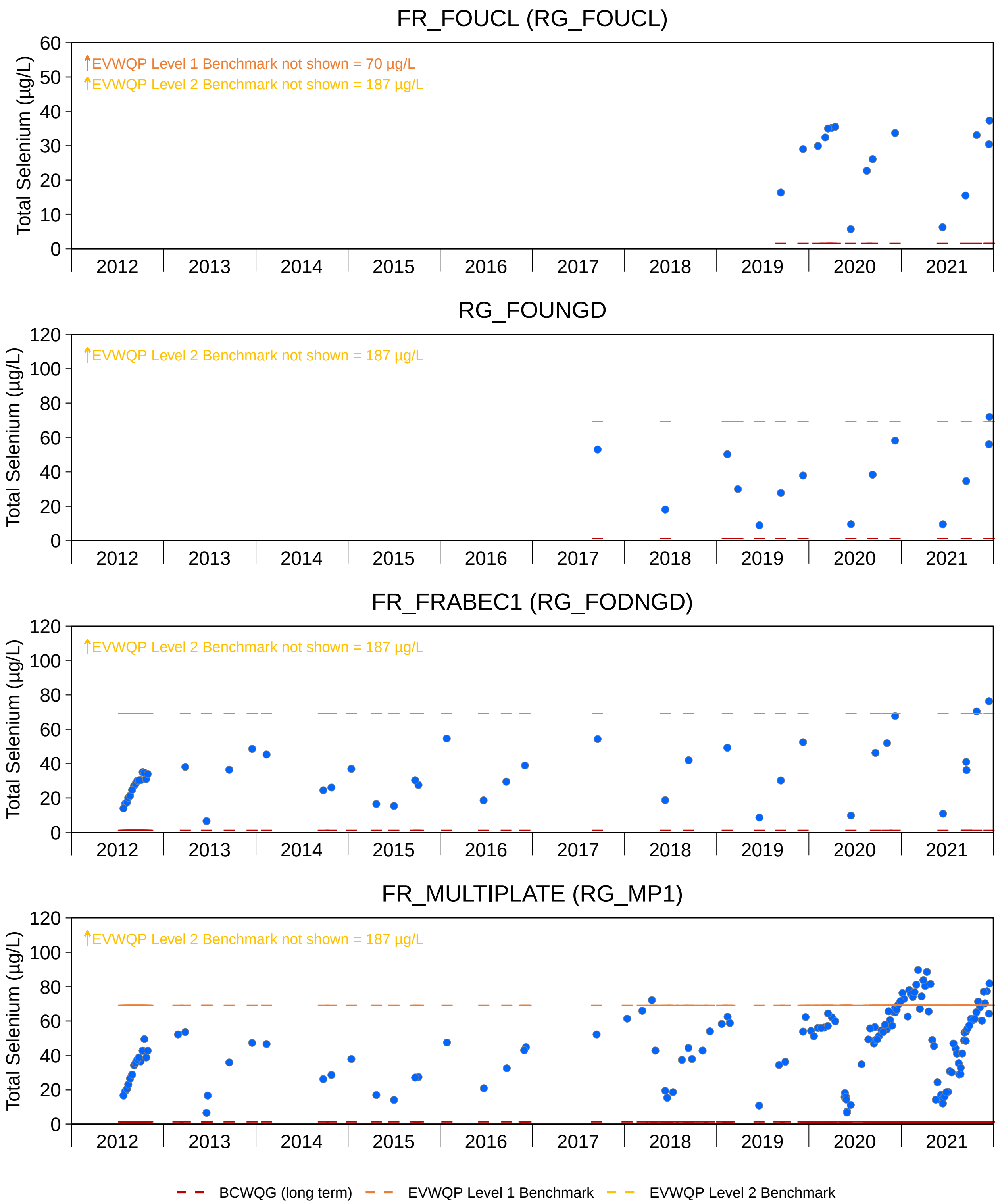

Figure B.15: Time Series Plots for Total Selenium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

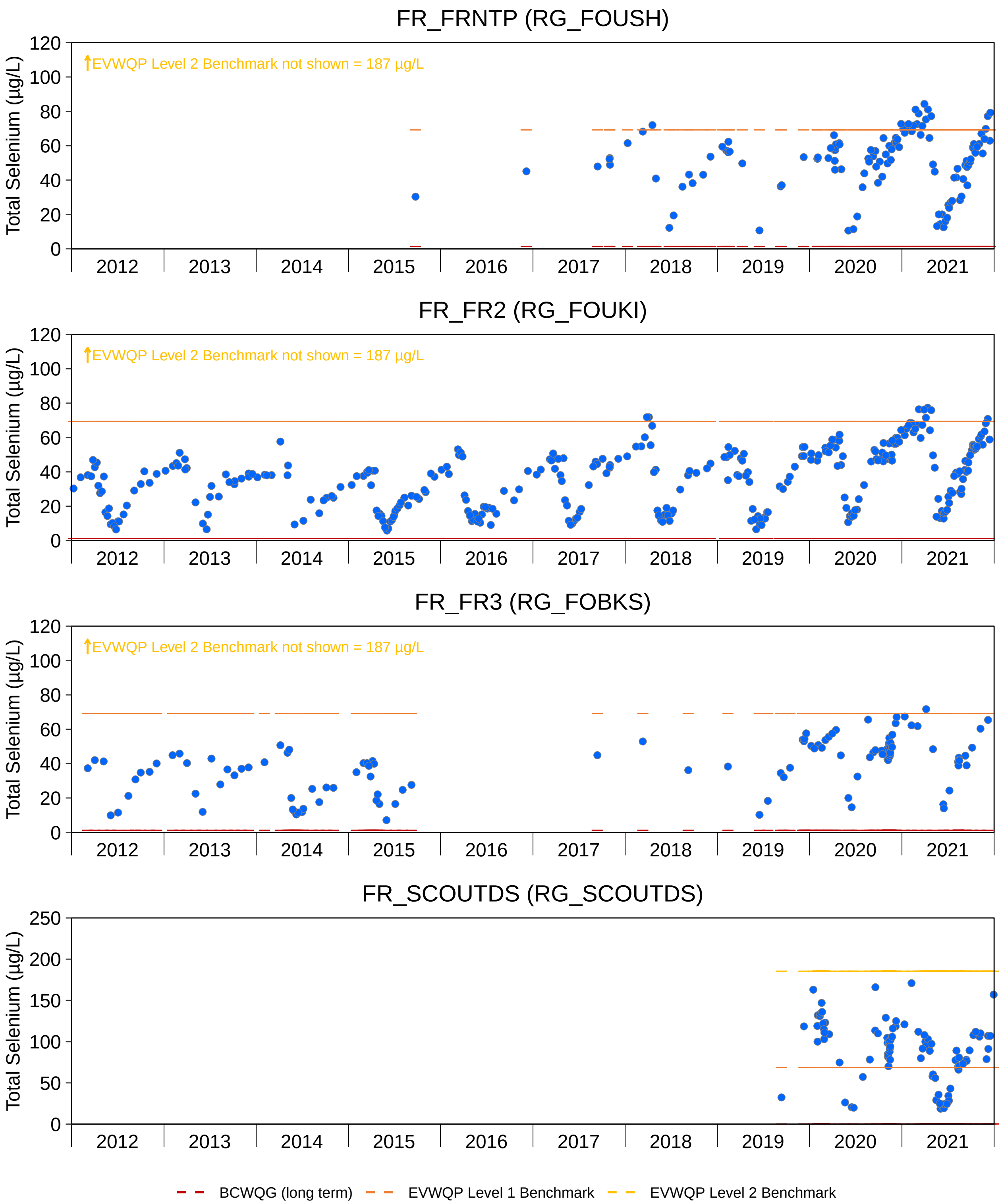

Figure B.15: Time Series Plots for Total Selenium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

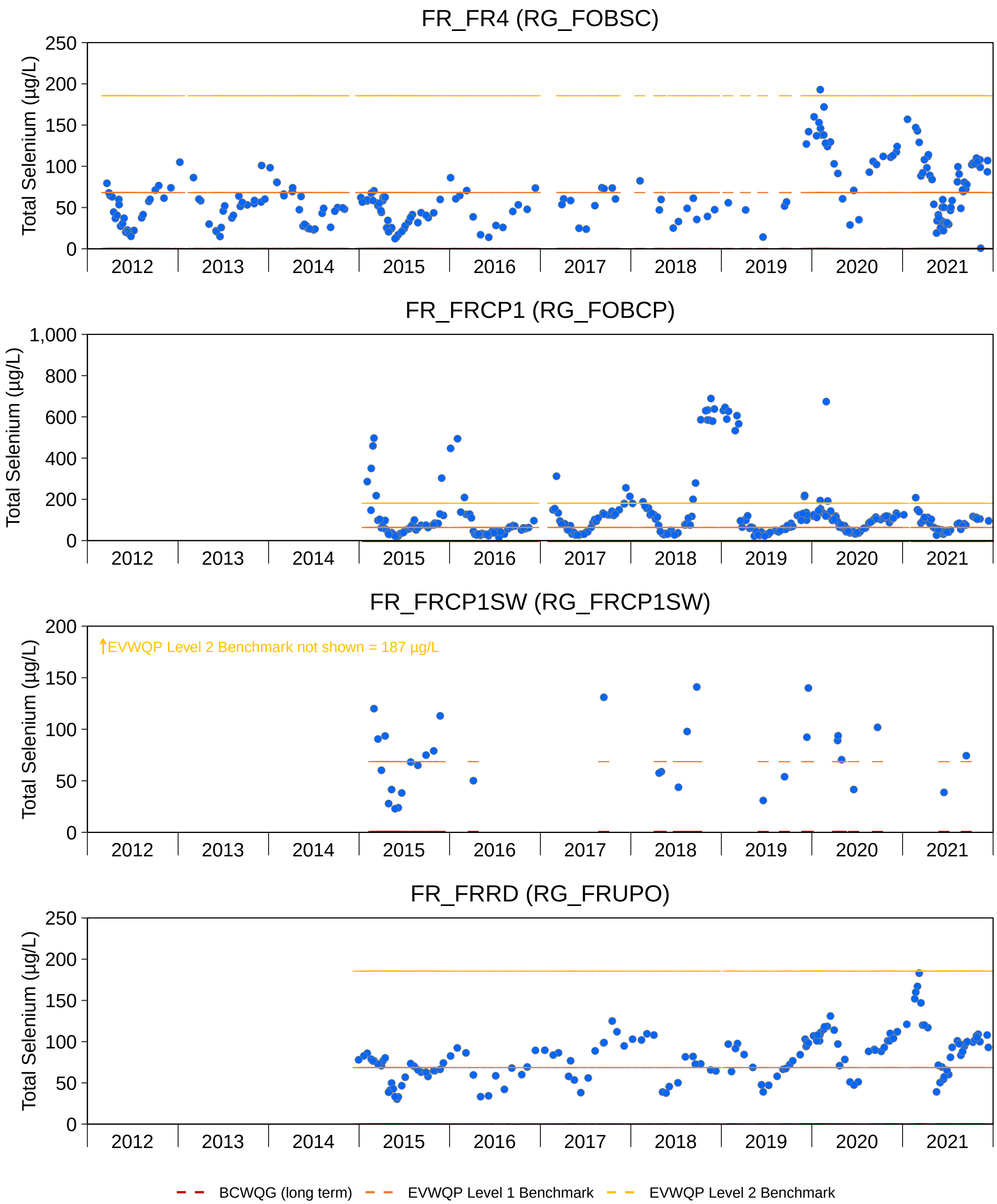

Figure B.15: Time Series Plots for Total Selenium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

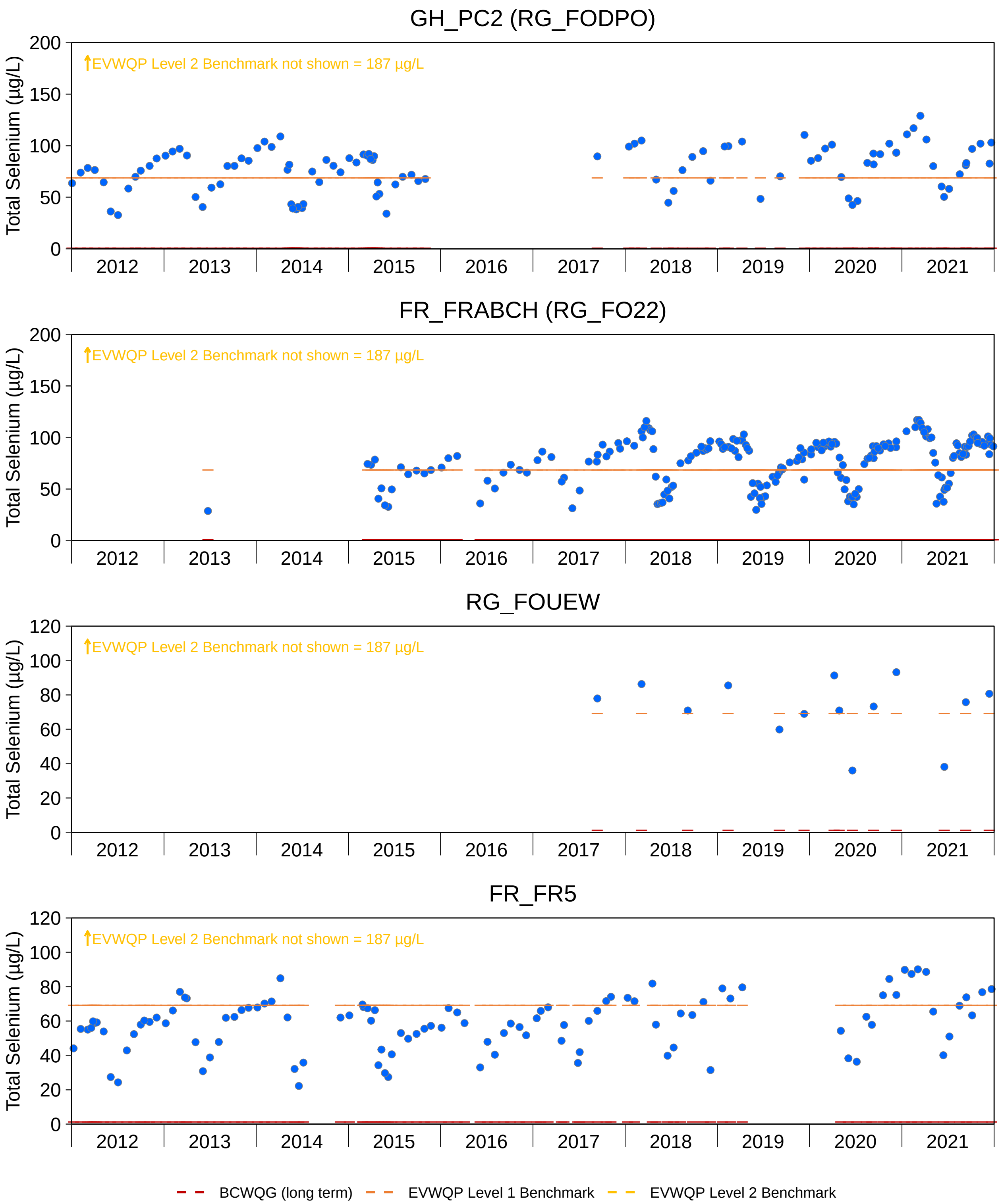

Figure B.15: Time Series Plots for Total Selenium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

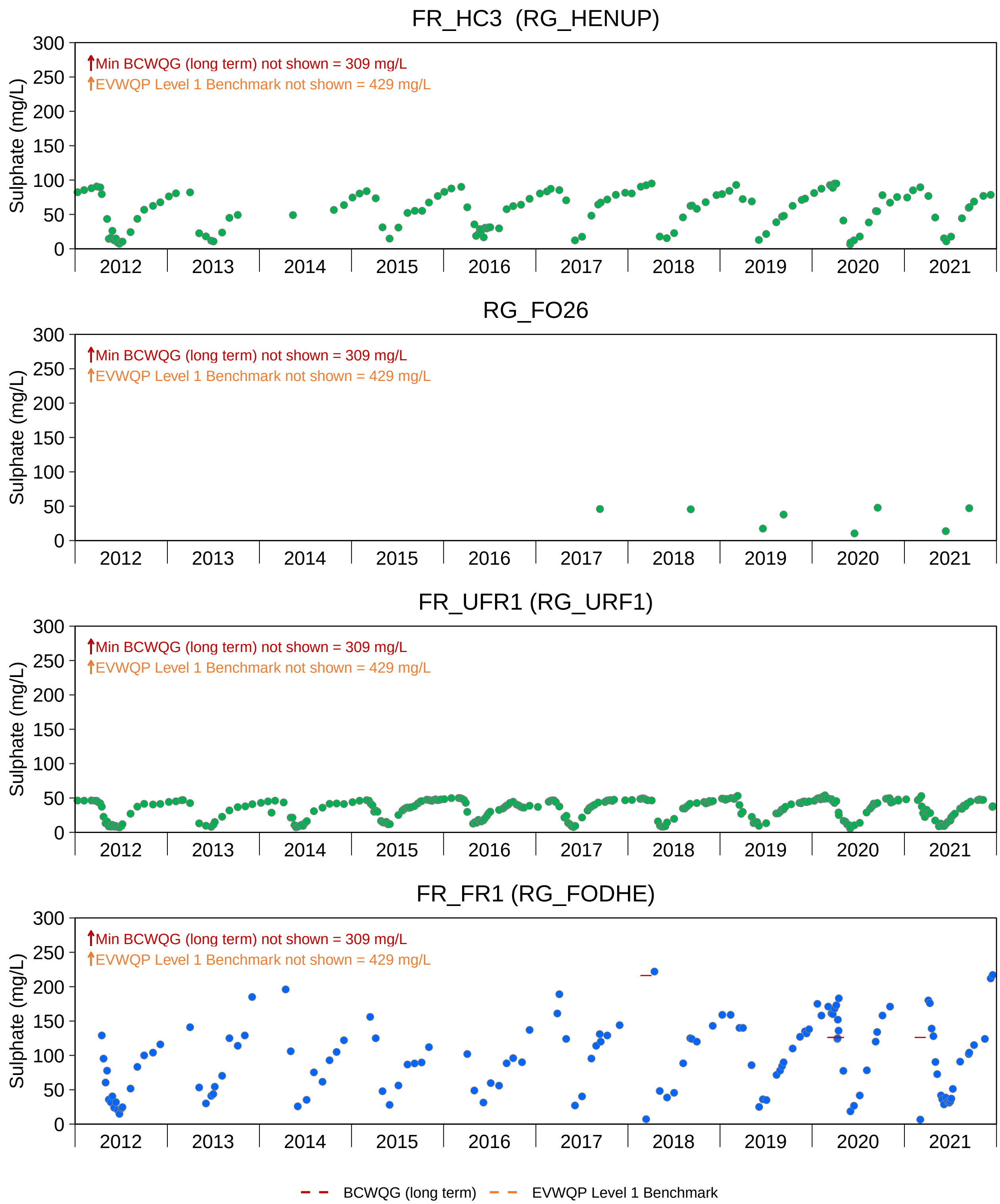

Figure B.16: Time Series Plots for Sulphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

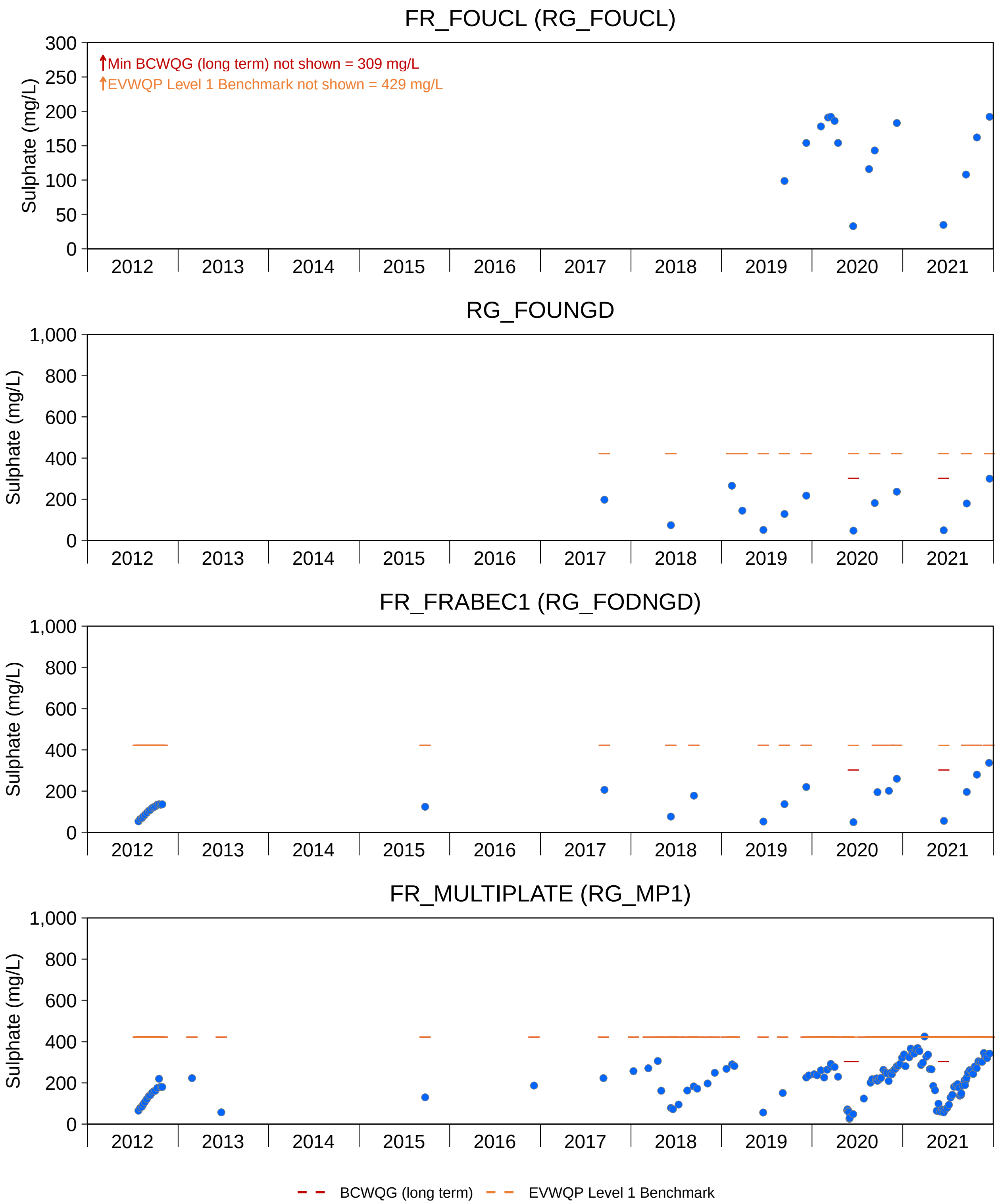

Figure B.16: Time Series Plots for Sulphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

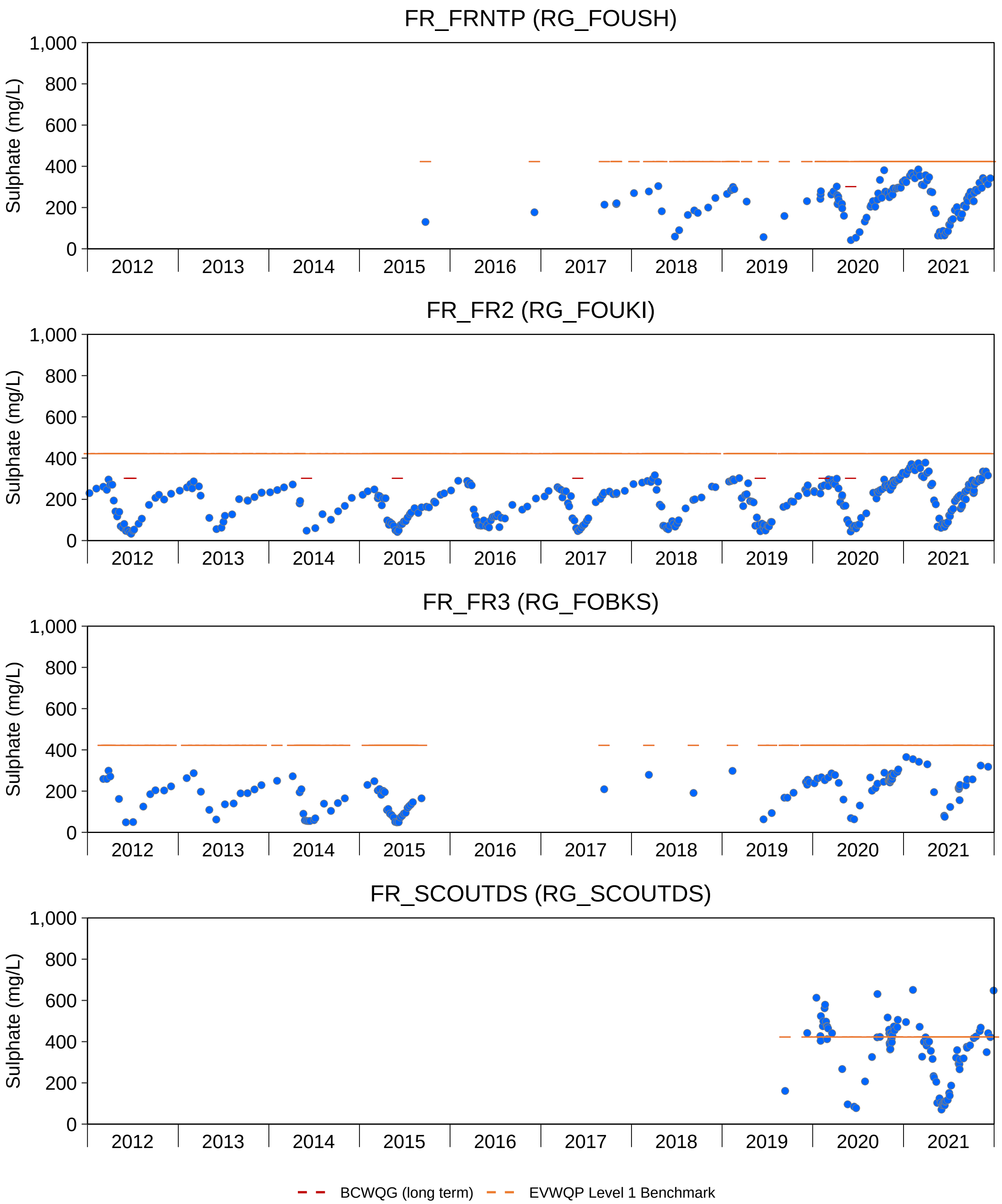

Figure B.16: Time Series Plots for Sulphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

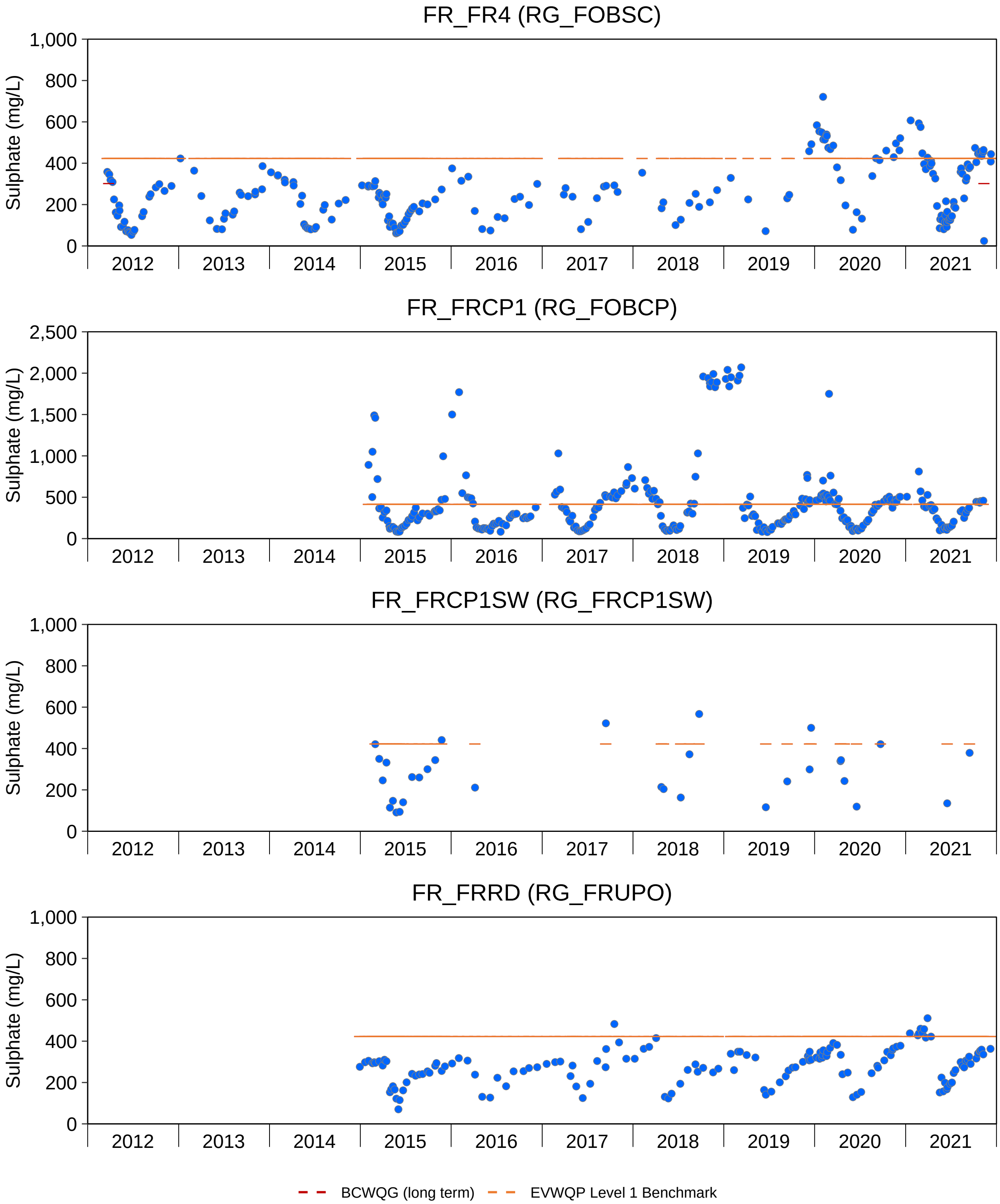

Figure B.16: Time Series Plots for Sulphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

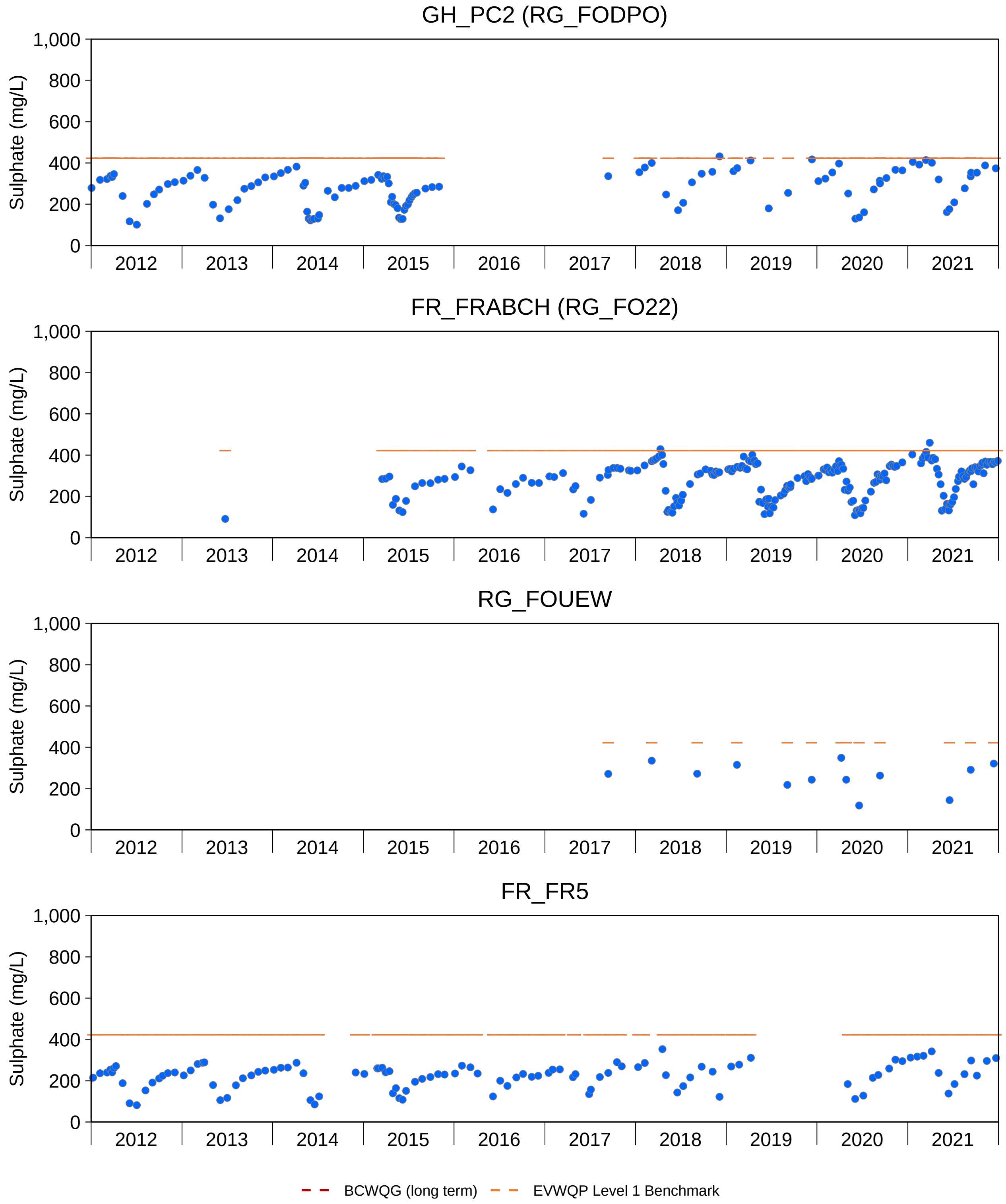

Figure B.16: Time Series Plots for Sulphate Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

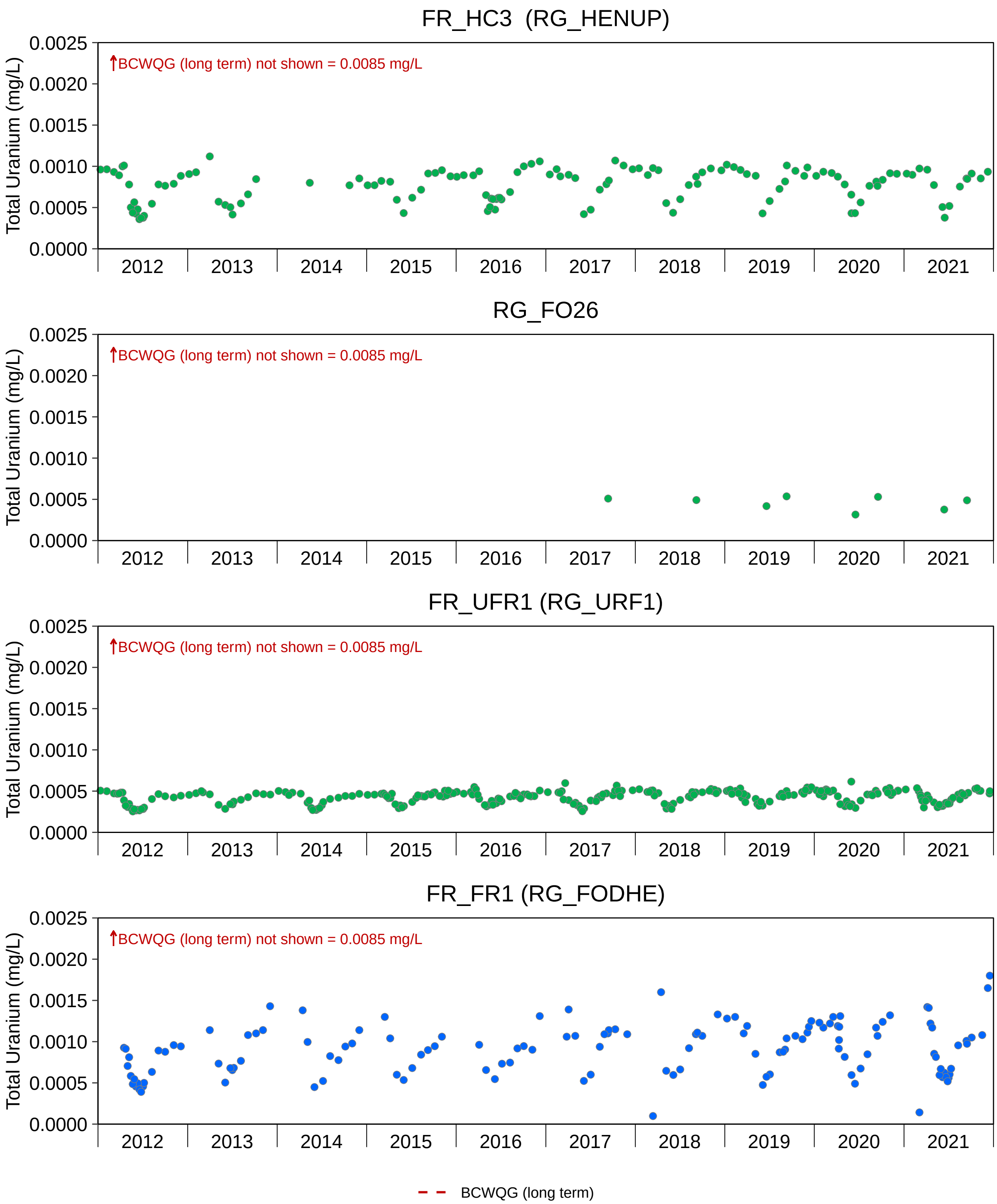

Figure B.17: Time Series Plots for Total Uranium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

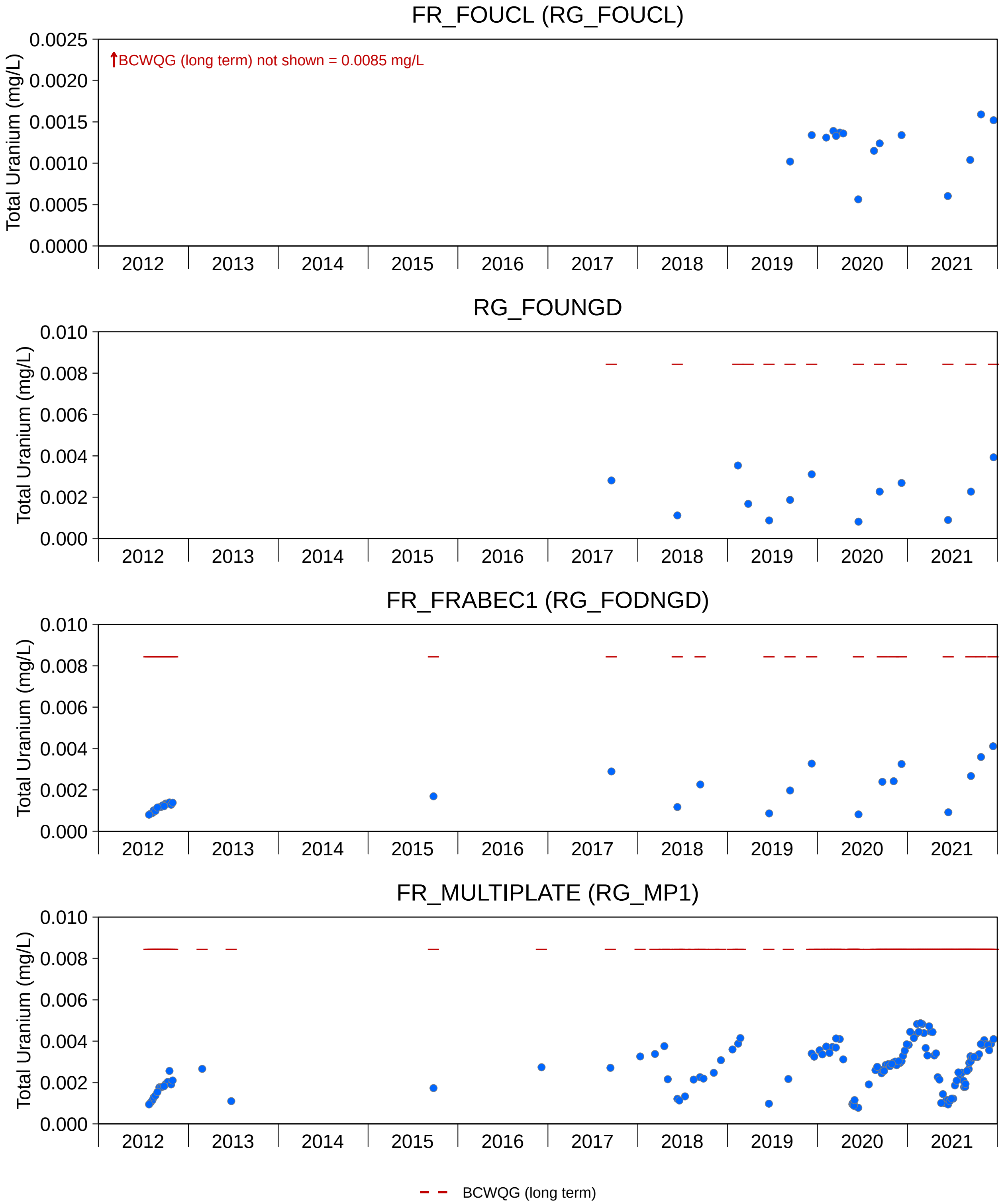

Figure B.17: Time Series Plots for Total Uranium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

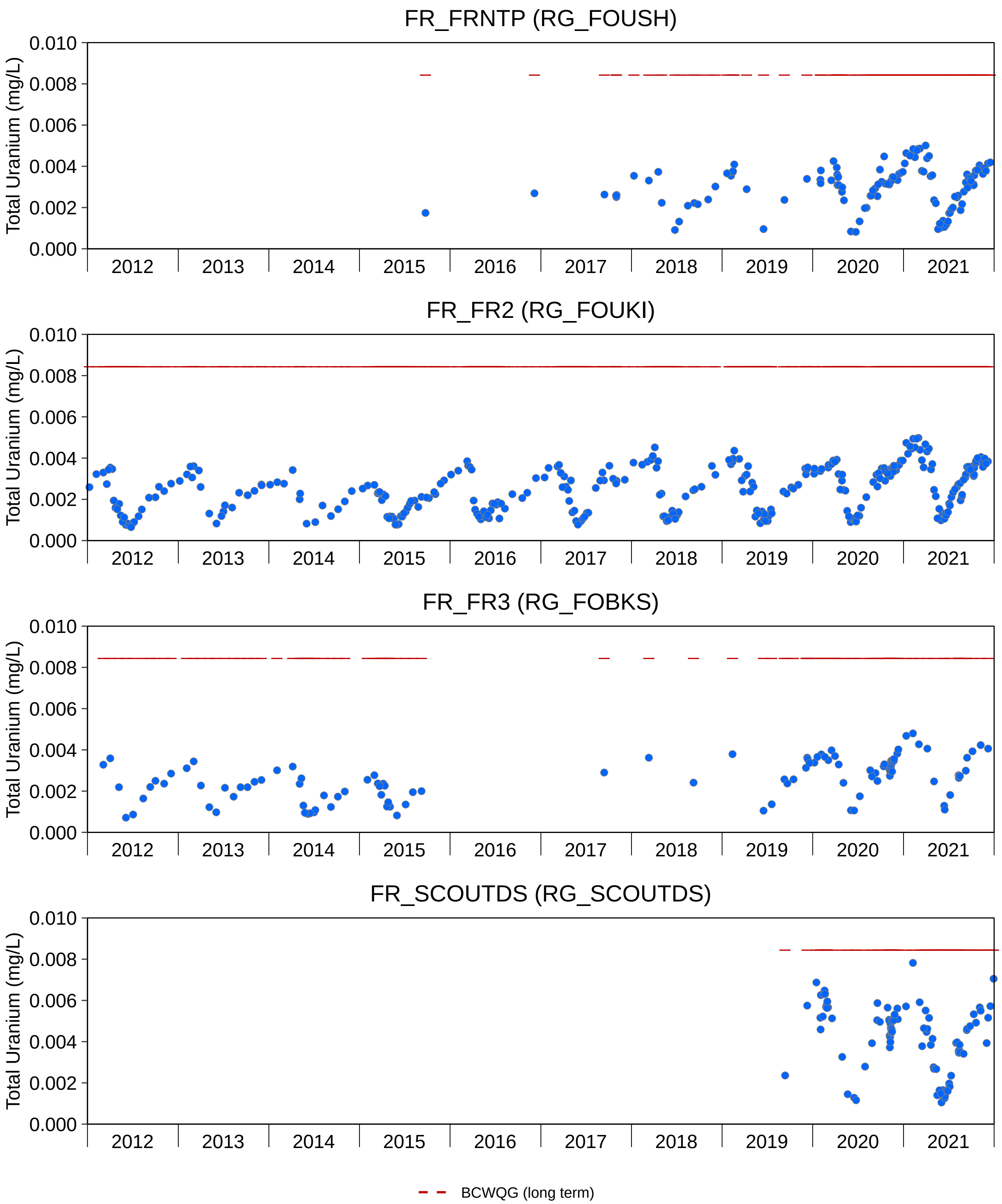

Figure B.17: Time Series Plots for Total Uranium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

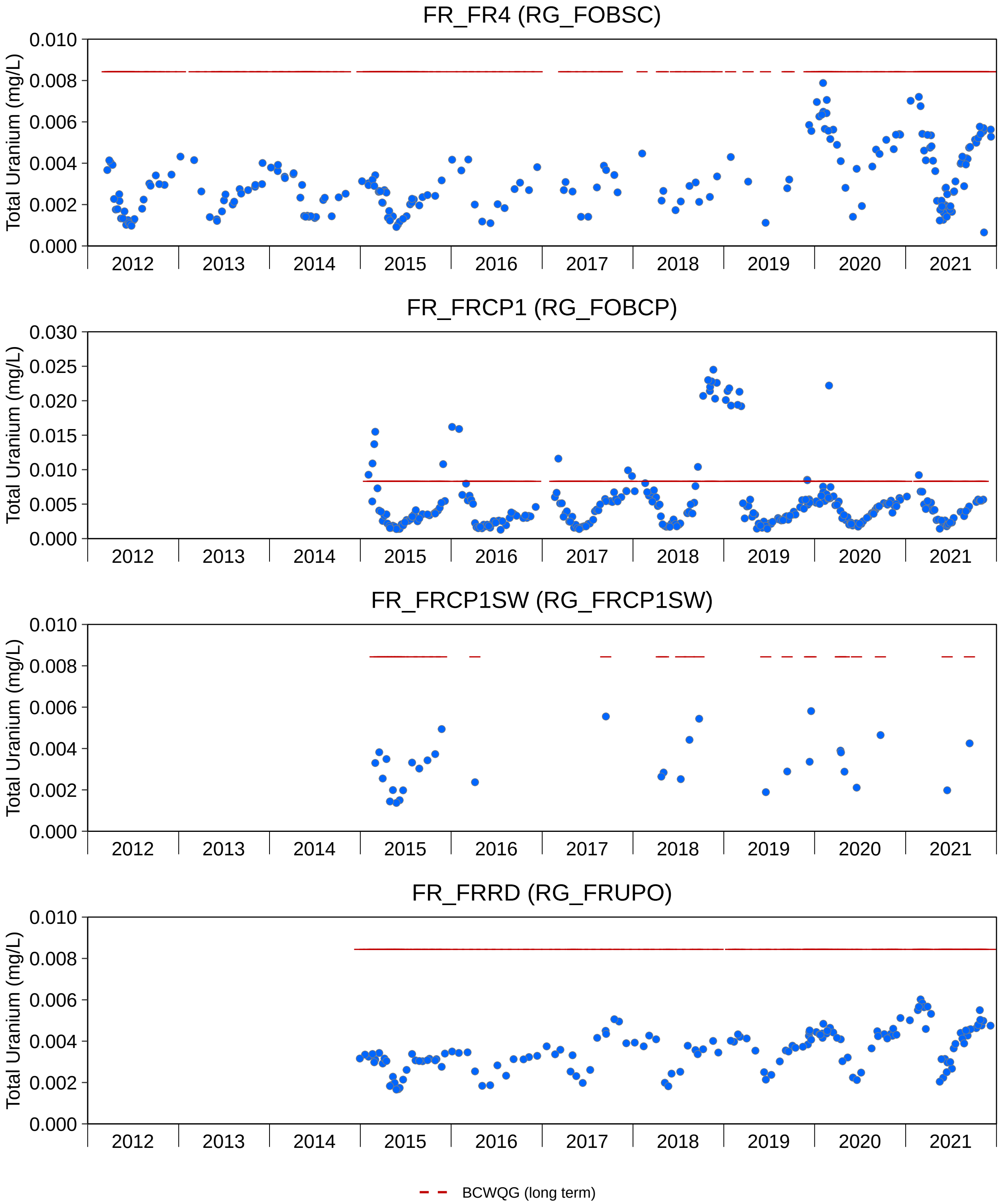

Figure B.17: Time Series Plots for Total Uranium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

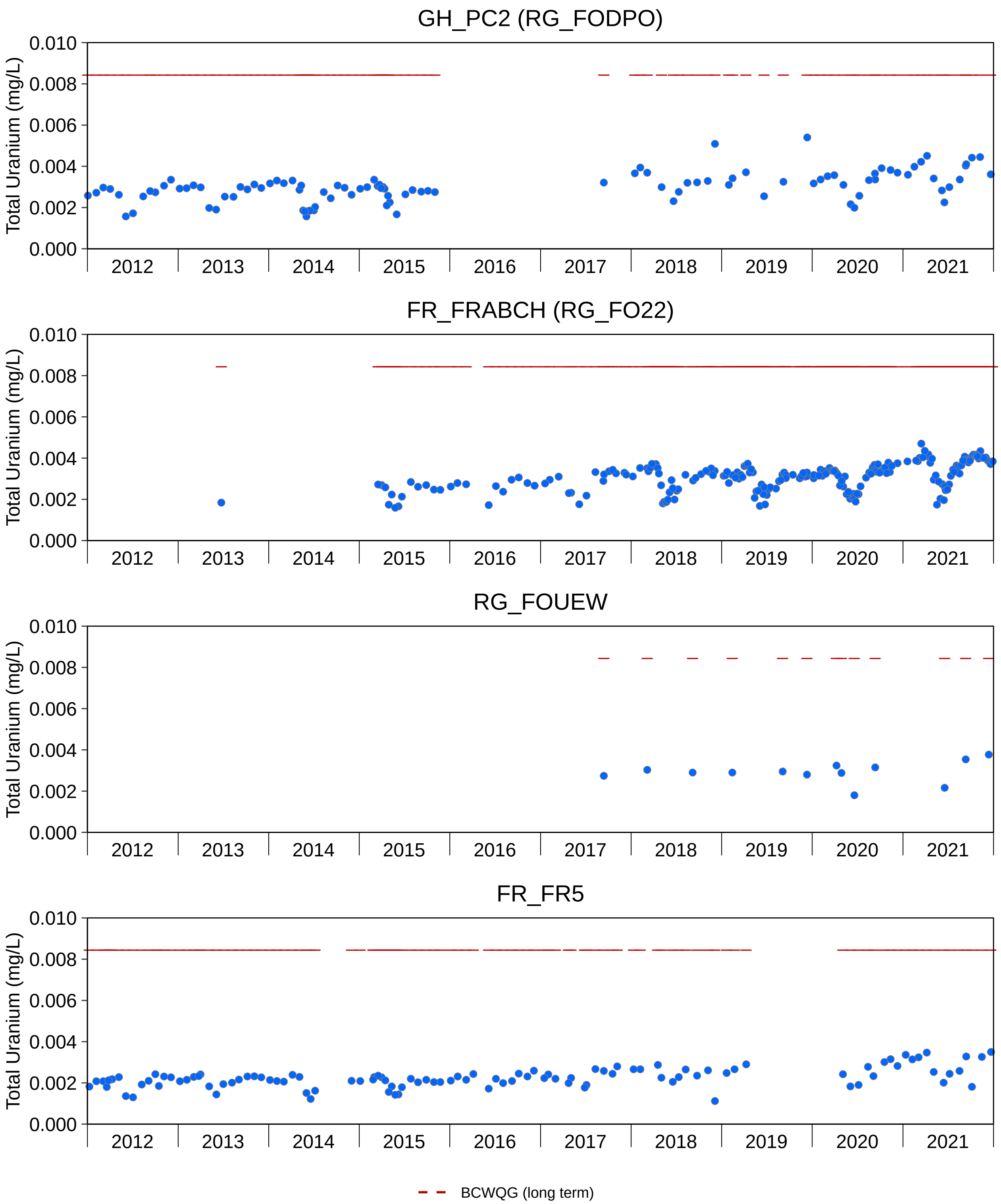

Figure B.17: Time Series Plots for Total Uranium Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

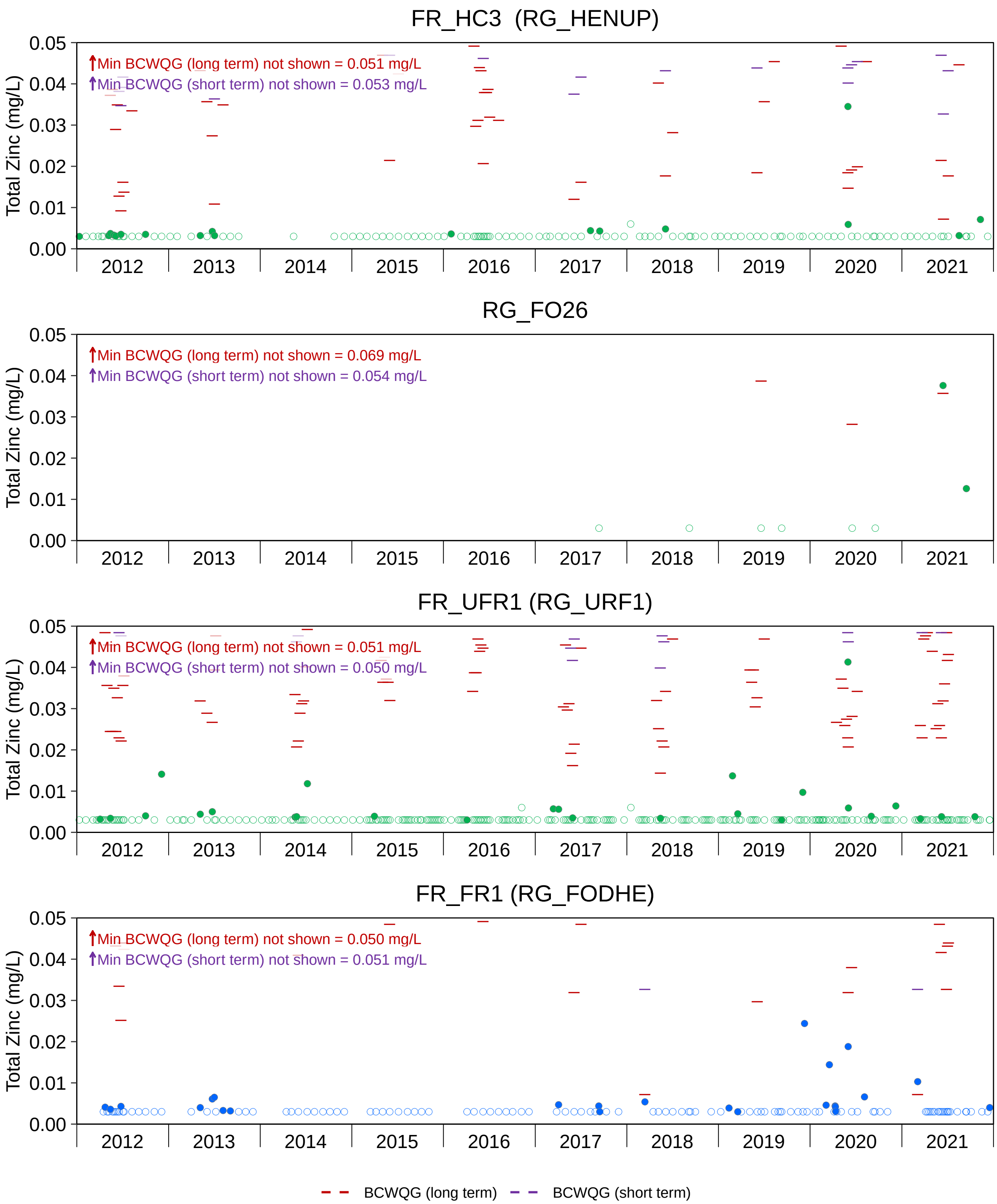

Figure B.18: Time Series Plots for Total Zinc Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

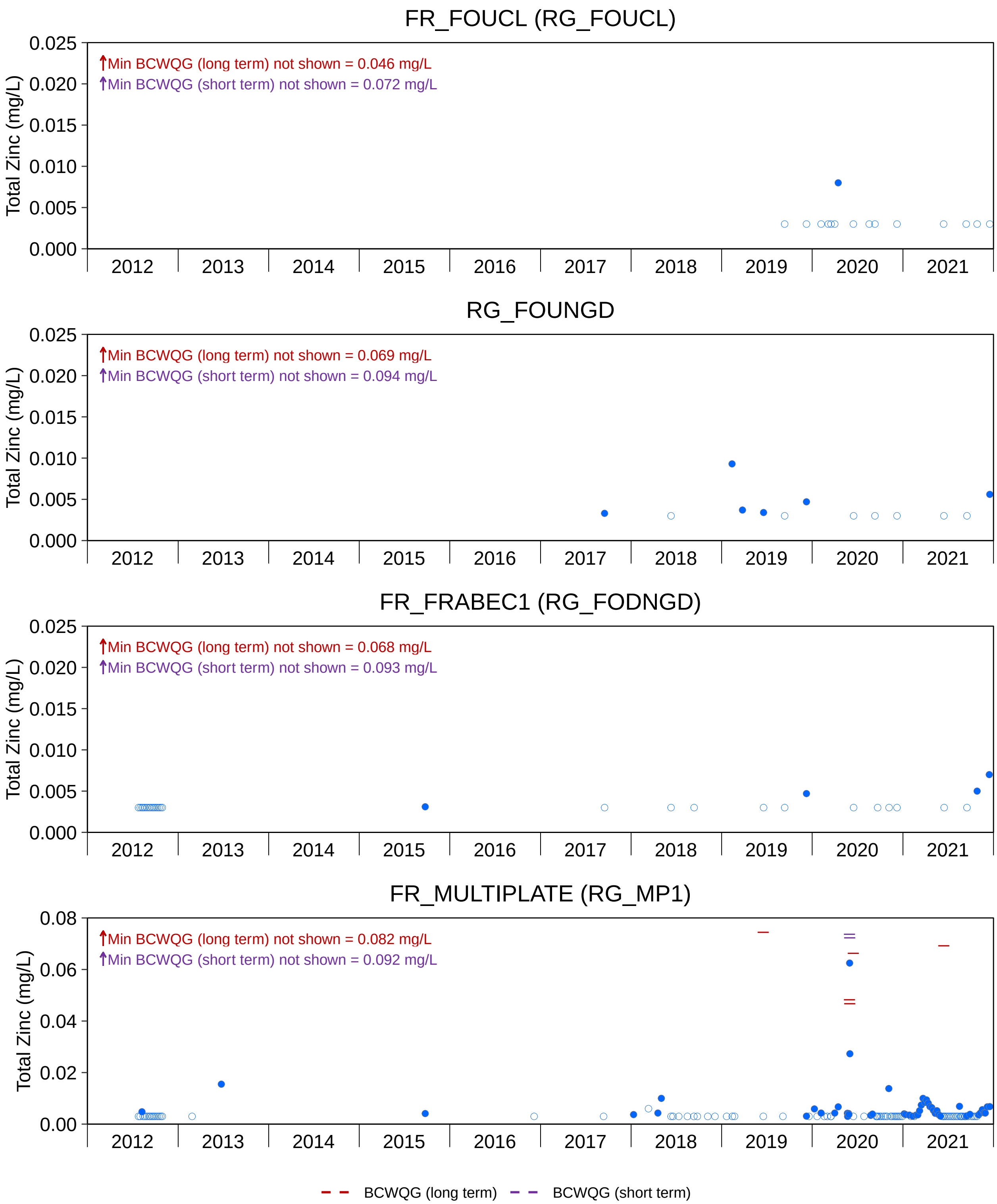

Figure B.18: Time Series Plots for Total Zinc Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

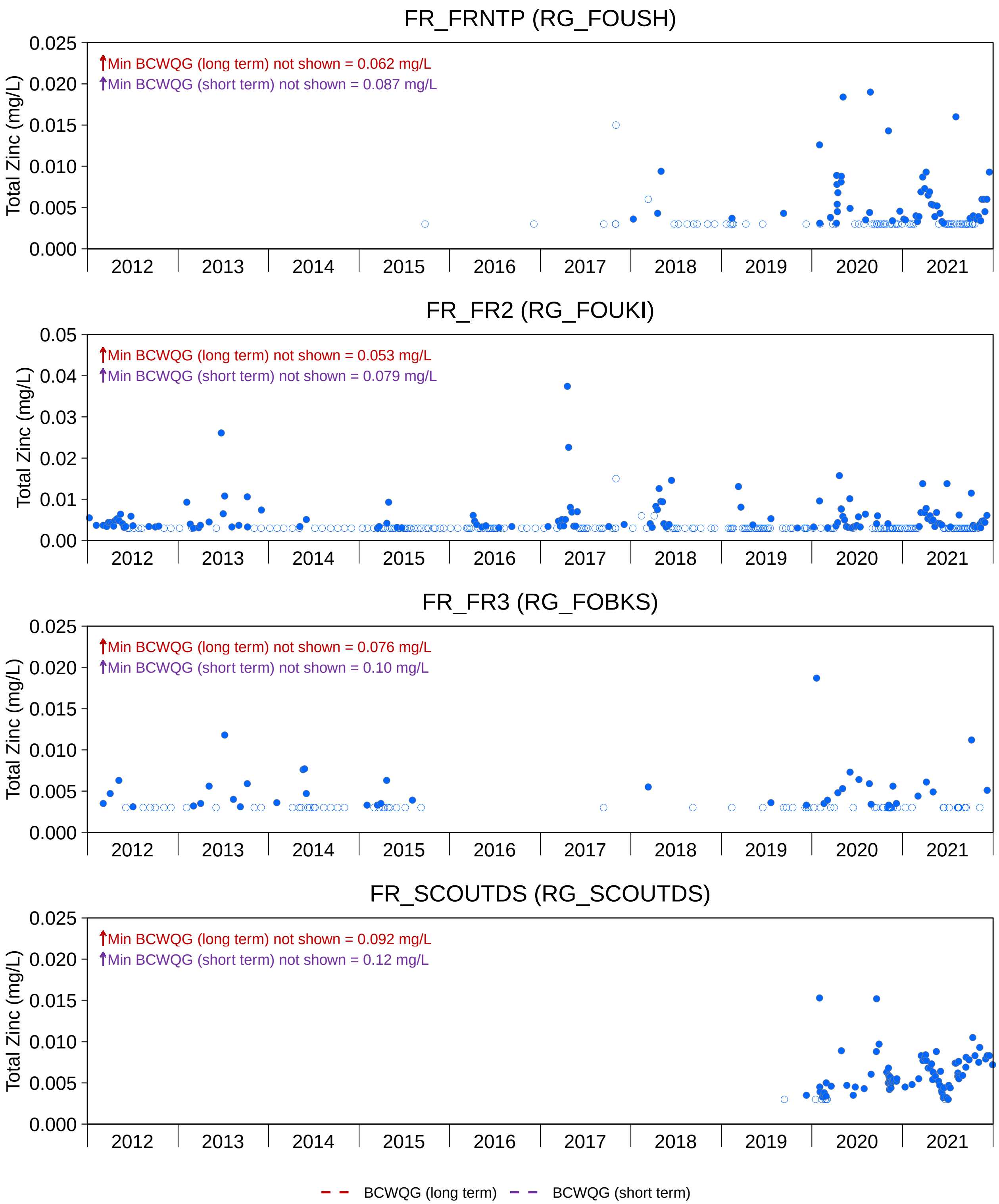

Figure B.18: Time Series Plots for Total Zinc Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

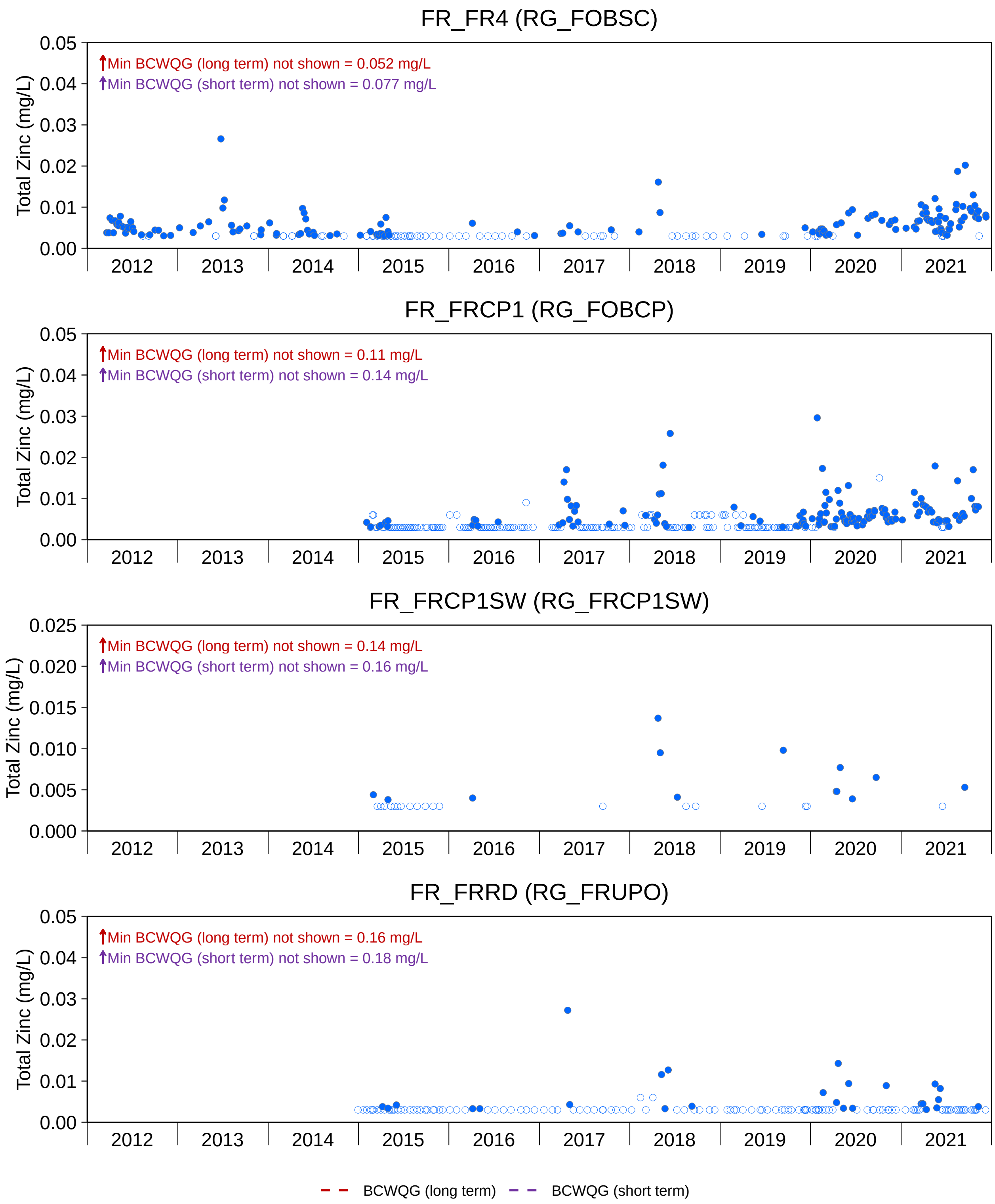

Figure B.18: Time Series Plots for Total Zinc Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine-related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

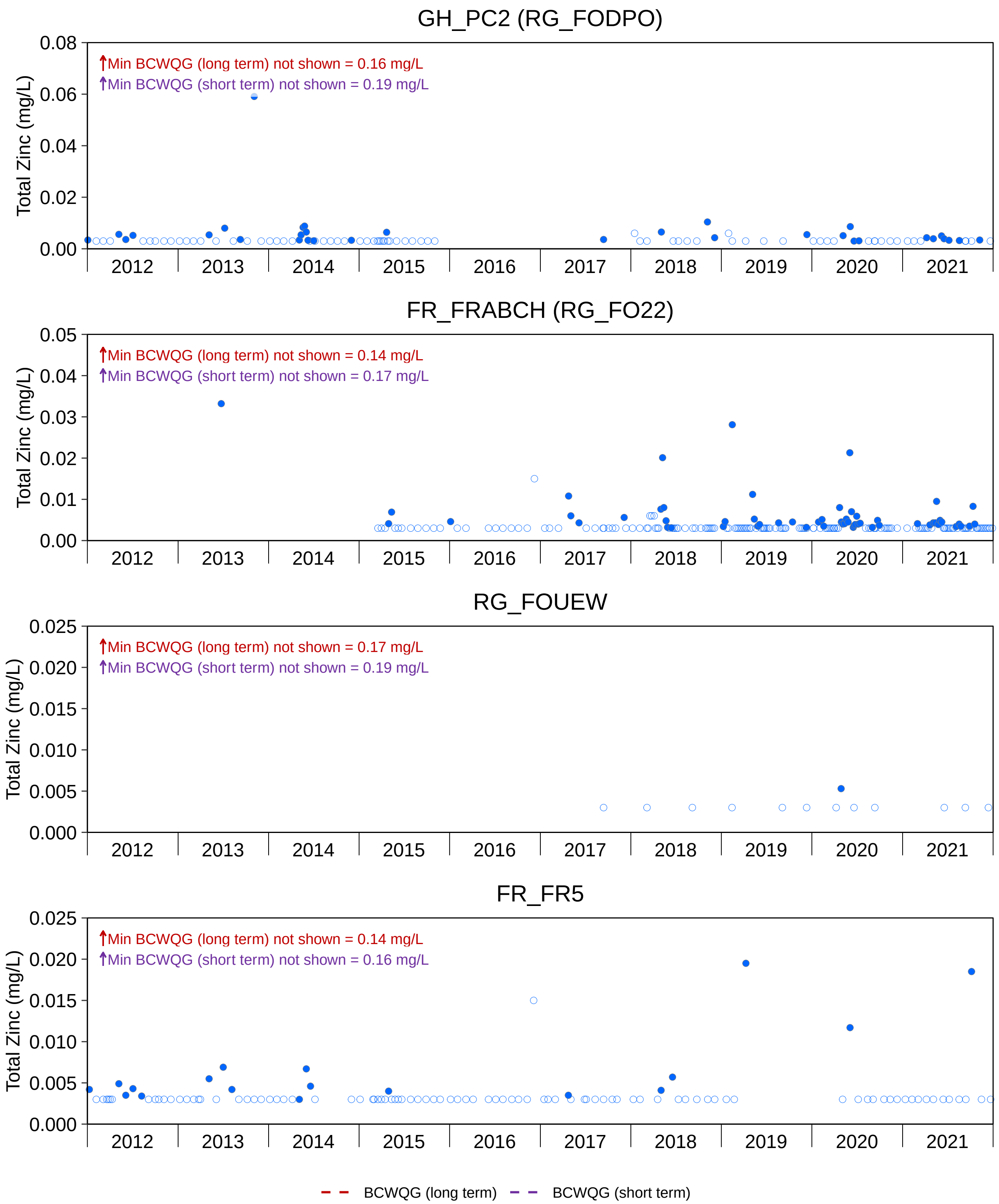

Figure B.18: Time Series Plots for Total Zinc Concentrations from FRO LAEMP Sampling Areas, 2012 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness. Constituent was plotted because it was identified as a mine−related constituent in the Adaptive Management Plan and an early warning trigger was defined (Azimuth 2018). When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and plotted together with the biological monitoring area depicted in parenthesis.

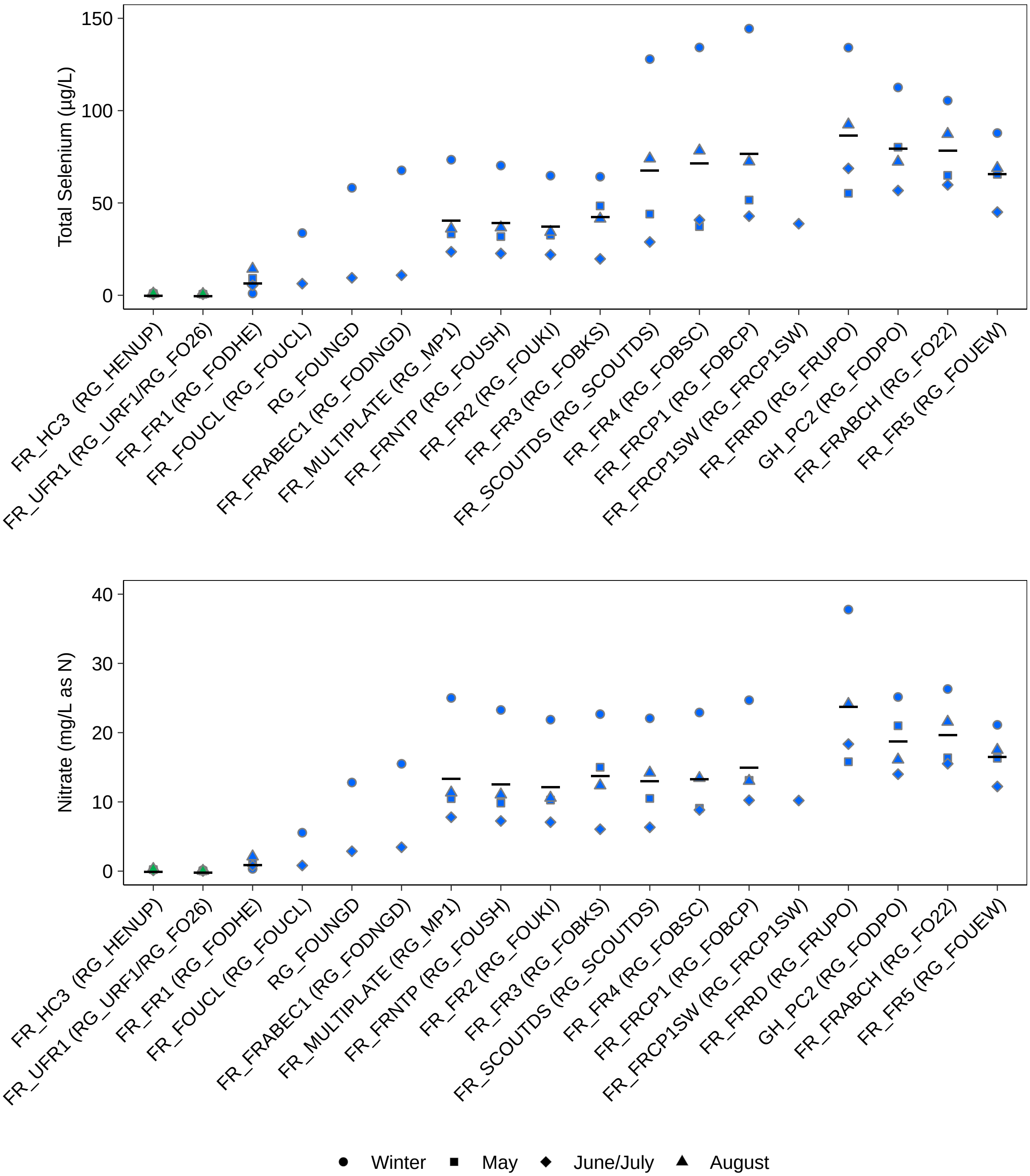

Figure B.19: Seasonal Means for Select Water Quality Parameters, FRO LAEMP, 2021

Notes: Winter is comprised of December 2020 to March 2021. Only annual means are depicted with a black bar and are only presented when data is avalable from all four seasons. Reference areas are shown in green and mine−exposed areas are shown in blue. Censored values are shown with hollow shapes.

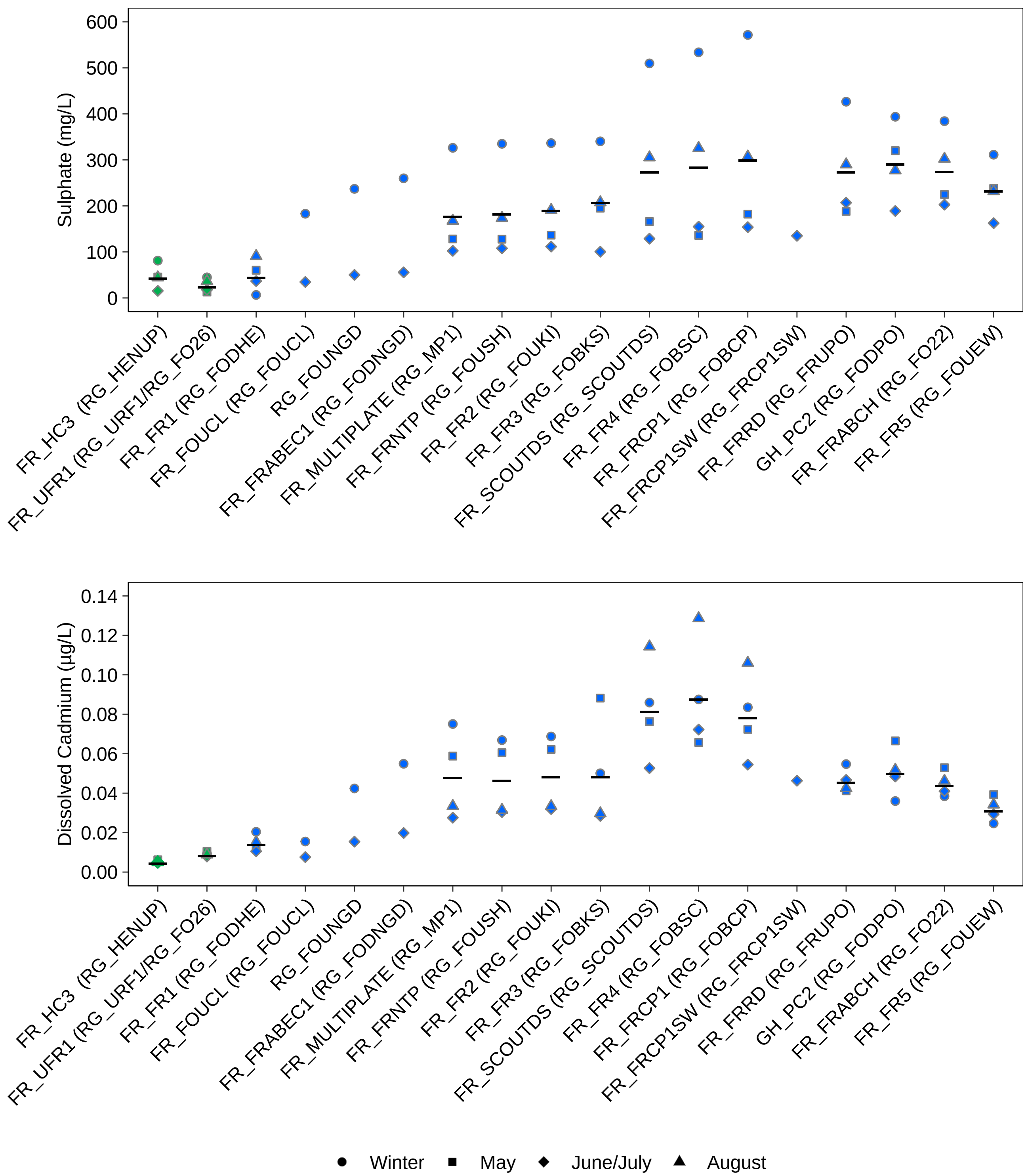

Figure B.19: Seasonal Means for Select Water Quality Parameters, FRO LAEMP, 2021

Notes: Winter is comprised of December 2020 to March 2021. Only annual means are depicted with a black bar and are only presented when data is avalable from all four seasons. Reference areas are shown in green and mine−exposed areas are shown in blue. Censored values are shown with hollow shapes.

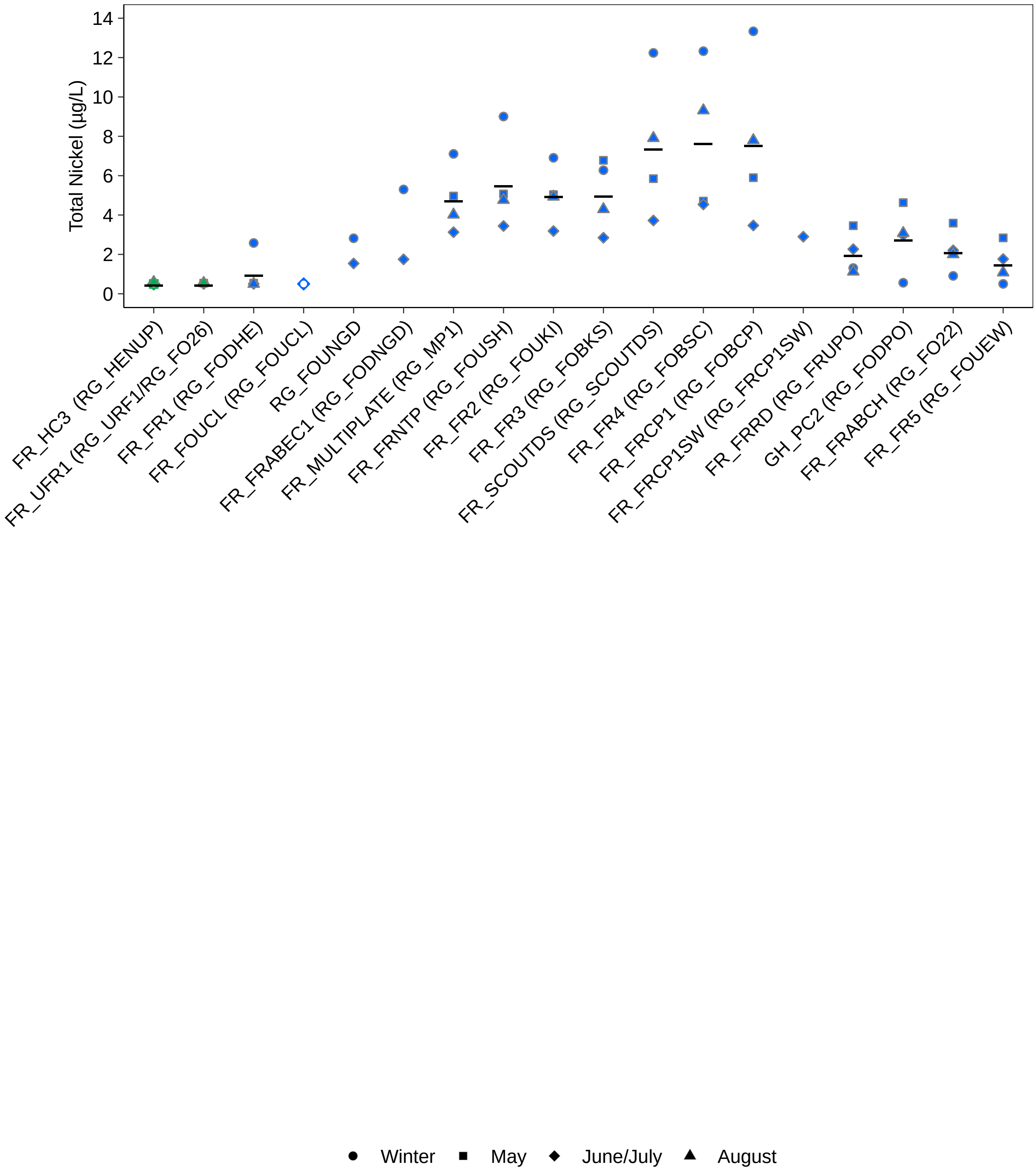

Figure B.19: Seasonal Means for Select Water Quality Parameters, FRO LAEMP, 2021

Notes: Winter is comprised of December 2020 to March 2021. Only annual means are depicted with a black bar and are only presented when data is avalable from all four seasons. Reference areas are shown in green and mine−exposed areas are shown in blue. Censored values are shown with hollow shapes.

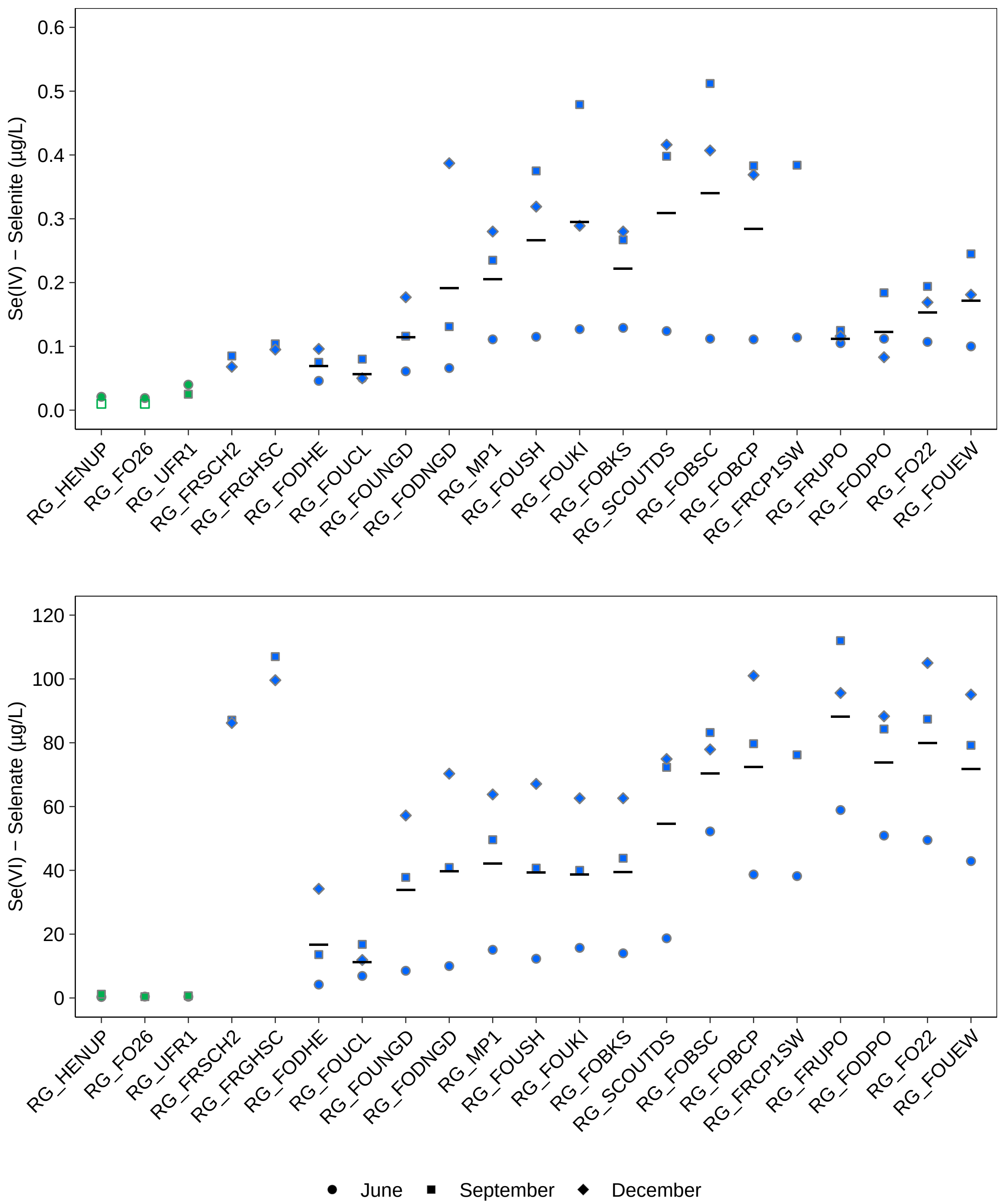

Figure B.20: Concentrations of Selenium Species in June, September, and December, FRO LAEMP, 2021

Notes: Only annual means are depicted with a black bar and are only presented when data is avalable from June, September, and December. Reference areas are shown in green and mine−exposed areas are shown in blue. Censored values are shown with hollow shapes. Selenium species with values below the laboratory detection limit were not plotted.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Dissolved Solids (mg/L)[c]	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)
FR_HC3 (RG_HENUP)	n	14	14	27	28	14	14	14	14	14	14	14	14	14	14	14	14	14
	Annual Minimum	108	8.04	7.75	9.39	81.2	0.0663	<0.001	<0.005	10.8	<0.1	0.169	<0.0001	<0.0001	0.00636	<0.00002	<0.01	0.000110
	Annual Maximum	235	8.33	8.43	11.6	115	0.302	0.00200	0.0453	89.5	1.04	0.381	<0.0001	0.000150	0.0160	<0.00002	<0.01	0.000340
	Annual Mean	181	8.18	8.09	10.7	105	0.229	0.00114	0.0166	57.4	0.265	0.293	<0.0001	0.000107	0.0126	<0.00002	<0.01	0.000164
	Annual Median	198	8.18	8.14	10.7	108	0.251	<0.001	0.0140	64.7	0.200	0.309	<0.0001	<0.0001	0.0134	<0.00002	<0.01	0.000150
	% < LRL	0%	0%	0%	0%	0%	0%	79%	29%	0%	7%	0%	100%	57%	0%	100%	100%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	0%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	0%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_FO26	n	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Annual Minimum	144	8.32	8.21	10.2	113	0.0180	<0.001	<0.005	13.7	<0.1	0.136	<0.0001	0.000160	0.0311	<0.00002	<0.01	0.000130
	Annual Maximum	218	8.48	8.44	10.5	145	0.0442	<0.001	0.0112	47.1	0.170	0.186	<0.0001	<0.0002	0.0472	<0.00002	<0.01	0.000180
	Annual Mean	181	8.40	8.32	10.3	129	0.0311	<0.001	0.00810	30.4	0.135	0.161	<0.0001	0.000160	0.0392	<0.00002	<0.01	0.000155
	Annual Median	181	8.40	8.32	10.3	129	0.0311	<0.001	0.00810	30.4	0.135	0.161	<0.0001	0.000160	0.0392	<0.00002	<0.01	0.000155
	% < LRL	0%	0%	0%	0%	0%	0%	100%	50%	0%	50%	0%	100%	50%	0%	100%	100%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	0%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	0%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_UFR1 (RG_URF1)	n	34	34	36	36	34	34	34	34	34	34	34	34	34	34	34	34	34
	Annual Minimum	121	7.87	7.94	8.78	97.4	<0.005	<0.001	<0.005	8.79	<0.1	0.0340	<0.0001	<0.0001	0.0340	<0.00002	<0.01	<0.0001
	Annual Maximum	221	8.44	8.66	956	158	1.03	0.00570	0.0603	52.8	0.610	0.188	<0.0001	0.000240	0.0760	<0.00002	<0.01	0.00103
	Annual Mean	173	8.25	8.26	37.0	131	0.0803	0.00126	0.0129	31.3	0.152	0.126	<0.0001	0.000142	0.0581	<0.00002	<0.01	0.000245
	Annual Median	171	8.28	8.25	11.0	132	0.0308	<0.001	0.00520	33.5	0.125	0.126	<0.0001	0.000130	0.0610	<0.00002	<0.01	0.000170
	% < LRL	0%	0%	0%	0%	0%	8.8%	76%	35%	0%	32%	0%	100%	15%	0%	100%	100%	3%
	% > BCWQG[a]	-	-	0%	0%	0%	0%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	3%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	0%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FR1 (RG_FODHE)	n	23	23	29	29	23	23	23	23	23	23	23	23	23	23	23	23	23
	Annual Minimum	30.0	7.39	8.00	3.48	24.2	0.328	<0.001	<0.005	6.59	<0.1	0.0250	<0.0001	<0.0001	0.0234	<0.00002	<0.01	<0.0001
	Annual Maximum	508	8.39	8.56	12.2	170	6.72	0.0352	0.254	217	0.520	0.274	0.000210	0.000270	0.0619	0.0000520	<0.01	0.00101
	Annual Mean	269	8.20	8.24	10.4	127	2.39	0.00302	0.0204	90.8	0.197	0.187	0.000107	0.000123	0.0394	0.0000214	<0.01	0.000169
	Annual Median	282	8.24	8.21	10.7	136	2.07	0.00130	0.00780	90.4	0.160	0.191	<0.0001	0.000120	0.0417	<0.00002	<0.01	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	39%	26%	0%	4%	0%	91%	22%	0%	96%	100%	9%
	% > BCWQG[a]	-	-	0%	3%	0%	26%	4%	0%	9%	0%	-	0%	-	0%	0%	0%	4%
	% > BCWQG[b]	-	-	0%	3%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	0%	-	-	-	-	13%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	13%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FOUCL (RG_FOUCL)	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Annual Minimum	183	8.11	7.88	9.37	110	0.819	<0.001	<0.005	34.7	0.110	0.135	<0.0001	<0.0001	0.0258	<0.00002	<0.01	0.000140
	Annual Maximum	487	8.37	8.14	11.3	177	6.41	0.00500	0.00750	192	0.390	0.222	0.000100	0.000170	0.0839	<0.00002	<0.01	0.000160
	Annual Mean	350	8.24	8.00	10.4	148	4.02	0.00268	0.00590	124	0.250	0.181	0.000100	0.000122	0.0650	<0.00002	<0.01	0.000148
	Annual Median	366	8.23	7.99	10.5	152	4.42	0.00235	0.00555	135	0.250	0.184	<0.0001	0.000110	0.0750	<0.00002	<0.01	0.000145
	% < LRL	0%	0%	0%	0%	0%	0%	25%	25%	0%	0%	0%	75%	25%	0%	100%	100%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	50%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	25%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	25%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Dissolved Solids (mg/L)[c]	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)
RG_FOUNGD	n	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Annual Minimum	221	8.16	8.01	8.71	115	2.87	0.00170	<0.005	50.0	0.160	0.154	<0.0001	<0.0001	0.0299	<0.00002	<0.01	<0.0001
	Annual Maximum	758	8.37	8.48	11.8	195	24.2	0.00550	0.0132	300	1.27	0.181	0.000200	0.000170	0.0840	<0.00002	<0.01	0.000160
	Annual Mean	495	8.30	8.20	10.2	160	13.0	0.00340	0.00773	177	0.633	0.167	0.000160	0.000130	0.0653	<0.00002	<0.01	0.000127
	Annual Median	507	8.37	8.12	9.97	171	11.8	0.00300	<0.005	180	0.470	0.167	0.000180	0.000120	0.0821	<0.00002	<0.01	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	67%	0%	0%	0%	33%	33%	0%	100%	100%	33%
	% > BCWQG[a]	-	-	0%	0%	0%	67%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	67%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	33%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FRABEC1 (RG_FODNGD)	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Annual Minimum	226	8.17	7.81	9.43	119	3.45	0.00300	0.00530	55.6	0.170	0.156	0.000100	0.000100	0.0302	<0.00002	<0.01	0.000100
	Annual Maximum	897	8.40	8.80	11.2	209	30.0	0.124	0.0412	337	1.68	0.199	0.000410	0.000170	0.0849	<0.00002	0.0110	0.000140
	Annual Mean	596	8.28	8.20	10.5	174	17.8	0.0397	0.0203	217	0.920	0.179	0.000258	0.000138	0.0676	<0.00002	0.0102	0.000122
	Annual Median	630	8.28	8.09	10.6	184	18.8	0.0159	0.0173	238	0.915	0.181	0.000260	0.000140	0.0778	<0.00002	0.0100	0.000125
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	25%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	50%	0%	25%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	25%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	75%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	50%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_MULTIPLATE (RG_MP1)	n	54	54	74	74	54	54	54	54	54	54	54	54	54	54	54	54	54
	Annual Minimum	216	8.02	7.36	8.48	116	3.76	0.00140	<0.005	56.8	0.160	<0.1	0.000100	<0.0001	0.0300	<0.00002	<0.01	<0.0001
	Annual Maximum	910	8.47	8.75	14.3	221	35.9	0.0476	0.557	425	4.75	0.228	0.000750	<0.0003	0.117	0.0000250	0.0130	0.000800
	Annual Mean	600	8.25	8.17	10.7	174	18.3	0.0163	0.0550	233	1.14	0.159	0.000303	0.000139	0.0761	0.0000201	0.0107	0.000167
	Annual Median	655	8.26	8.18	10.8	180	18.4	0.0146	0.0228	254	0.790	0.157	0.000315	0.000130	0.0804	<0.00002	0.0100	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	2%	0%	0%	2%	0%	9%	0%	98%	41%	15%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	20%	2%	9%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	2%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	78%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	44%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FRNTP (RG_FOUSH)	n	54	54	68	68	54	54	54	54	54	54	54	54	54	54	54	54	54
	Annual Minimum	226	7.64	7.42	7.78	122	3.92	<0.001	0.00700	63.9	0.210	0.0310	0.000130	<0.0001	0.0328	<0.00002	<0.01	<0.0001
	Annual Maximum	939	8.45	8.70	15.2	241	29.7	0.140	1.38	385	7.43	10.6	0.00102	0.000240	0.124	<0.00002	0.0180	0.000520
	Annual Mean	633	8.22	8.20	10.7	192	17.4	0.0274	0.0998	244	1.35	0.353	0.000368	0.000149	0.0794	<0.00002	0.0129	0.000150
	Annual Median	662	8.24	8.20	10.8	198	17.0	0.0228	0.0520	265	0.895	0.162	0.000350	0.000140	0.0856	<0.00002	0.0130	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	2%	0%	0%	0%	6%	0%	2%	0%	100%	22%	26%
	% > BCWQG[a]	-	-	0%	1%	0%	100%	50%	6%	13%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	4%	2%	-	0%	2%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	70%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	41%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FR2 (RG_FOUKI)	n	60	61	80	80	60	61	61	61	60	60	60	60	60	60	60	60	60
	Annual Minimum	222	7.39	7.53	7.81	121	3.69	<0.001	<0.005	61.5	0.260	<0.1	0.000120	<0.0001	0.0333	<0.00002	<0.01	<0.0001
	Annual Maximum	933	8.45	9.59	15.7	250	29.7	5.26	0.895	378	8.18	0.249	0.000960	0.000320	0.120	0.0000350	0.0200	0.000920
	Annual Mean	623	8.23	8.31	10.7	198	15.9	0.111	0.0630	242	1.79	0.168	0.000340	0.000145	0.0785	0.0000203	0.0136	0.000174
	Annual Median	667	8.25	8.29	10.8	204	15.8	0.0171	0.0245	262	1.35	0.161	0.000325	0.000140	0.0845	<0.00002	0.0135	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	2%	5%	0%	0%	2%	0%	5%	0%	97%	15%	23%
	% > BCWQG[a]	-	-	1%	1%	0%	100%	30%	3%	7%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	1%	0%	-	0%	7%	2%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark	0%	-	-	-	-	62%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	34%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

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[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Dissolved Solids (mg/L)[c]	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)
FR_FR3 (RG_FOBKS)	n	19	19	37	27	32	19	19	19	19	19	19	19	19	19	19	19	19
	Annual Minimum	266	8.08	7.99	1.64	121	4.55	<0.001	<0.005	75.2	0.390	<0.1	0.000150	0.000100	0.0352	<0.00002	<0.01	<0.0001
	Annual Maximum	822	8.36	8.90	13.5	242	26.0	0.0633	0.221	365	5.52	0.225	0.000720	0.000190	0.110	<0.00002	0.0210	0.000200
	Annual Mean	602	8.23	8.30	10.6	196	15.4	0.0206	0.0527	237	1.46	0.167	0.000336	0.000142	0.0762	<0.00002	0.0144	0.000130
	Annual Median	604	8.24	8.28	11.0	201	14.2	0.0111	0.0179	228	1.19	0.168	0.000280	0.000140	0.0768	<0.00002	0.0140	0.000120
	% < LRL	0%	0%	0%	0%	0%	0.0%	11%	5%	0%	0%	5%	0%	0%	0%	100%	11%	26%
	% > BCWQG[a]	-	-	0%	4%	0%	100%	26%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	4%	-	0%	5%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	0%	-	-	-	-	53%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	32%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_SCOUTDS (RG_SCOUTDS)	n	48	48	57	50	59	48	48	48	48	48	48	48	48	48	48	48	48
	Annual Minimum	251	7.63	7.49	8.90	128	3.11	<0.001	<0.005	70.6	0.290	0.0680	0.000140	0.000100	0.0350	<0.00002	<0.01	<0.0001
	Annual Maximum	1,340	8.53	8.66	13.4	344	29.4	0.0558	0.200	651	4.19	0.218	0.000850	0.000290	0.0974	0.0000220	0.0180	0.00434
	Annual Mean	702	8.29	8.27	10.9	214	15.4	0.0178	0.0318	299	1.45	0.152	0.000338	0.000163	0.0668	0.0000200	0.0126	0.000254
	Annual Median	752	8.30	8.25	11.0	220	15.4	0.0119	0.0161	318	1.27	0.151	0.000360	0.000150	0.0725	<0.00002	0.0125	0.000153
	% < LRL	0%	0%	0%	0%	0%	0.0%	13%	10%	0%	0%	6%	0%	0%	0%	98%	29%	27%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	23%	0%	15%	0%	-	0%	-	0%	0%	0%	2%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	10%	-	-	-	-	54%	-	-	15%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	35%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FR4 (RG_FOBSC)	n	52	52	40	40	52	52	52	52	52	52	52	52	52	52	52	52	52
	Annual Minimum	165	8.09	7.47	8.29	128	0.0707	<0.001	<0.005	23.9	0.140	0.0680	<0.0001	<0.0001	0.0353	<0.00002	<0.01	<0.0001
	Annual Maximum	1,240	8.53	9.00	9,719	298	26.8	0.0597	0.209	607	24.5	0.253	0.000830	0.000600	0.102	0.0000700	0.0180	0.00174
	Annual Mean	710	8.32	8.31	253	208	15.6	0.0190	0.0372	301	1.87	0.165	0.000343	0.000179	0.0675	0.0000218	0.0127	0.000238
	Annual Median	806	8.34	8.34	10.8	217	15.2	0.0134	0.0194	349	1.28	0.162	0.000340	0.000160	0.0660	<0.00002	0.0130	0.000140
	% < LRL	0%	0%	0%	0%	0%	0.0%	6%	12%	0%	0%	2%	2%	4%	0%	92%	29%	27%
	% > BCWQG[a]	-	-	0%	0%	0%	98%	25%	0%	23%	0%	-	0%	-	0%	0%	0%	6%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	15%	-	-	-	-	60%	-	-	23%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	31%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FRCP1 (RG_FOBCP)	n	35	35	33	33	35	35	35	35	35	35	35	35	35	35	35	35	35
	Annual Minimum	322	8.03	7.65	4.70	144	7.16	<0.001	<0.005	99.5	0.390	<0.1	0.000180	0.000120	0.0436	<0.00002	<0.01	<0.0001
	Annual Maximum	1,590	8.47	8.45	12.6	334	34.8	0.0503	0.172	811	4.93	0.248	0.000710	0.000340	0.105	0.0000360	0.0180	0.000660
	Annual Mean	770	8.31	8.19	10.6	217	17.7	0.0184	0.0348	332	1.83	0.170	0.000350	0.000172	0.0724	0.0000210	0.0130	0.000196
	Annual Median	766	8.33	8.21	10.9	219	15.9	0.0126	0.0234	350	1.78	0.169	0.000360	0.000150	0.0750	<0.00002	0.0130	0.000140
	% < LRL	0%	0%	0%	0%	0%	0.0%	9%	14%	0%	0%	11%	0%	0%	0%	91%	20%	20%
	% > BCWQG[a]	-	-	0%	3%	0%	100%	11%	0%	31%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	3%	-	3%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	20%	-	-	-	-	71%	-	-	31%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	34%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FRCP1SW (RG_FRCP1SW)	n	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Annual Minimum	395	8.41	8.18	10.0	168	10.2	0.00800	0.0108	135	0.530	0.190	0.000200	0.000160	0.0444	<0.00002	<0.01	<0.0001
	Annual Maximum	818	8.55	8.61	10.5	244	16.3	0.0302	0.0162	379	2.37	0.245	0.000380	<0.0003	0.0745	<0.00002	0.0160	0.000120
	Annual Mean	606	8.48	8.39	10.3	206	13.2	0.0191	0.0135	257	1.45	0.218	0.000290	0.000160	0.0594	<0.00002	0.0130	0.000110
	Annual Median	606	8.48	8.39	10.3	206	13.2	0.0191	0.0135	257	1.45	0.218	0.000290	0.000160	0.0594	<0.00002	0.0130	0.000110
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%	0%	0%	50%	0%	100%	50%	50%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	0%	-	-	-	-	100%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Dissolved Solids (mg/L)[c]	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)
FR_FRRD (RG_FRUPO)	n	33	33	30	30	33	33	33	33	33	33	33	33	33	33	33	33	33
	Annual Minimum	431	7.95	7.06	7.59	160	11.7	<0.001	<0.005	152	0.750	<0.1	<0.0001	<0.0001	0.0511	<0.00002	<0.01	<0.0001
	Annual Maximum	1,240	8.38	9.07	11.4	331	48.9	0.0277	0.274	511	14.8	0.204	0.000270	0.000340	0.121	0.0000290	0.0190	0.00113
	Annual Mean	858	8.20	7.92	9.85	263	27.6	0.00581	0.0211	318	2.39	0.140	0.000148	0.000131	0.0895	0.0000204	0.0153	0.000211
	Annual Median	914.5	8.22	7.88	9.84	278	28.0	0.00460	0.00720	316	1.92	0.136	0.000130	0.000110	0.0918	<0.00002	0.0160	0.000150
	% < LRL	0%	0%	0%	0%	0%	0.0%	45%	33%	0%	0%	9%	21%	33%	0%	94%	6%	6%
	% > BCWQG[a]	-	-	3%	3%	0%	100%	0%	0%	18%	0%	-	0%	-	0%	0%	0%	3%
	% > BCWQG[b]	-	-	3%	0%	-	21%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	24%	-	-	-	-	100%	-	-	18%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	79%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_PC2 (RG_FODPO)	n	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Annual Minimum	492	7.72	7.64	9.02	186	13.7	0.00370	<0.005	162	0.600	<0.1	<0.0001	<0.0001	0.0564	<0.00002	<0.01	0.000120
	Annual Maximum	1,020	8.43	8.01	10.7	266	28.1	0.0166	0.0870	414	2.80	0.180	0.000260	0.000200	0.0972	<0.00002	0.0150	0.000350
	Annual Mean	778	8.18	7.84	9.80	235	21.2	0.00739	0.0251	326	1.69	0.146	0.000181	0.000131	0.0804	<0.00002	0.0121	0.000181
	Annual Median	851	8.19	7.84	9.77	240	21.4	0.00625	0.00960	353	1.85	0.148	0.000190	0.000130	0.0849	<0.00002	0.0120	0.000160
	% < LRL	0%	0%	0%	0%	0%	0.0%	29%	29%	0%	0%	21%	21%	36%	0%	100%	7%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	7%	-	-	-	-	100%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	71%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FRABCH (RG_FO22)	n	49	49	51	51	49	50	50	49	49	49	49	49	49	49	49	49	49
	Annual Minimum	370	7.97	7.51	9.12	159	9.68	<0.001	<0.005	131	0.630	0.0780	<0.0001	<0.0001	0.0441	<0.00002	<0.01	<0.0001
	Annual Maximum	1,020	8.46	8.19	11.5	285	31.9	0.210	0.0557	460	5.37	0.418	0.000260	0.000370	0.124	0.0000350	0.0160	0.00111
	Annual Mean	792	8.22	7.98	10.2	236	22.0	0.0112	0.0151	309	2.04	0.140	0.000158	0.000129	0.0884	0.0000203	0.0126	0.000177
	Annual Median	854	8.22	8.00	10.4	244	23.4	0.00680	0.0106	334	1.93	0.139	0.000160	0.000110	0.0935	<0.00002	0.0130	0.000140
	% < LRL	0%	0%	0%	0%	0%	0.0%	26%	29%	0%	0%	14%	8%	39%	0%	98%	10%	10%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	2%	0%	2%	0%	-	0%	-	0%	0%	0%	2%
	% > BCWQG[b]	-	-	0%	0%	-	0%	2%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	2%	-	-	-	-	100%	-	-	2%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	70%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_FOUEW	n	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Annual Minimum	446	8.22	8.05	8.91	177	11.7	0.00490	<0.005	144	0.730	0.107	0.000110	<0.0001	0.0508	<0.00002	<0.01	0.000110
	Annual Maximum	809	8.26	8.21	11.6	265	23.0	0.00540	0.0178	321	1.64	0.186	0.000160	0.000160	0.0983	<0.00002	0.0140	0.000150
	Annual Mean	675	8.24	8.14	10.4	229	18.5	0.00507	0.0119	252	1.32	0.149	0.000137	0.000120	0.0798	<0.00002	0.0123	0.000137
	Annual Median	769	8.24	8.17	10.6	244	20.7	0.00490	0.0129	291	1.59	0.154	0.000140	0.000100	0.0902	<0.00002	0.0130	0.000150
	% < LRL	0%	0%	0%	0%	0%	0.0%	33%	33%	0%	0%	0%	0%	33%	0%	100%	33%	0%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	0%	-	-	-	-	100%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	33%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_FR5	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	444	7.88	7.92	9.26	175	10.8	0.00130	<0.005	138	0.780	<0.1	<0.0001	<0.0001	0.0550	<0.00002	<0.01	<0.0001
	Annual Maximum	846	8.37	8.31	12.2	270	22.8	0.0104	0.0459	342	2.78	0.184	0.000160	0.000150	0.128	<0.00002	0.0130	0.000200
	Annual Mean	676	8.24	8.11	10.9	223	18.5	0.00503	0.0162	268	1.81	0.131	0.000125	0.000112	0.0979	<0.00002	0.0106	0.000148
	Annual Median	708	8.27	8.10	10.9	227	20.0	0.00520	0.0118	297	1.83	0.120	0.000120	0.000105	0.0993	<0.00002	0.0100	0.000140
	% < LRL	0%	0%	0%	0%	0%	0.0%	8%	33%	0%	0%	17%	42%	42%	0%	100%	42%	8%
	% > BCWQG[a]	-	-	0%	0%	0%	100%	0%	0%	0%	0%	-	0%	-	0%	0%	0%	0%
	% > BCWQG[b]	-	-	0%	0%	-	0%	0%	0%	-	0%	0%	-	0%	-	-	-	-
	% > Level 1 Benchmark[c]	0%	-	-	-	-	100%	-	-	0%	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	50%	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.

> 50% of samples exceed the guideline or benchmark.

> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Cobalt (ug/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (ug/L)[c]	Total Selenium (ug/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (ug/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
FR_HC3 (RG_HENUP)	n	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Annual Minimum	<0.1	<0.01	<0.00005	<0.001	<0.0001	<0.0000005	0.000375	<0.5	0.503	<0.00001	<0.00001	0.000377	<0.003	<0.001	<0.005	<0.0002	<0.01
	Annual Maximum	<0.1	0.0730	0.0000720	0.00110	0.00245	0.000000920	0.000692	0.590	1.38	<0.00001	0.0000120	0.000973	0.00710	0.00320	0.00620	<0.0002	<0.01
	Annual Mean	<0.1	0.0165	0.0000516	0.00101	0.000411	0.000000530	0.000575	0.506	1.01	<0.00001	0.0000101	0.000790	0.00331	0.00189	0.00516	<0.0002	<0.01
	Annual Median	<0.1	<0.01	<0.00005	<0.001	<0.0001	<0.0000005	0.000602	<0.5	1.12	<0.00001	<0.00001	0.000852	<0.003	0.00175	<0.005	<0.0002	<0.01
	% < LRL	100%	71%	93%	86%	57%	93%	0%	93%	0%	100%	93%	0%	86%	7%	79%	100%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
RG_FO26	n	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Annual Minimum	<0.1	<0.01	<0.00005	0.00120	0.000420	<0.0000005	0.000664	<0.5	0.719	<0.00001	<0.00001	0.000376	0.0126	<0.001	0.00720	<0.0002	<0.01
	Annual Maximum	<0.1	0.0250	<0.00005	0.00140	0.00206	0.000000790	0.000724	<0.5	0.726	<0.00001	<0.00001	0.000488	0.0376	0.00290	0.00850	0.000230	<0.01
	Annual Mean	<0.1	0.0175	<0.00005	0.00130	0.00124	0.000000645	0.000694	<0.5	0.723	<0.00001	<0.00001	0.000432	0.0251	0.00195	0.00785	0.000215	<0.01
	Annual Median	<0.1	0.0175	<0.00005	0.00130	0.00124	0.000000645	0.000694	<0.5	0.723	<0.00001	<0.00001	0.000432	0.0251	0.00195	0.00785	0.000215	<0.01
	% < LRL	100%	50%	100%	0%	0%	50%	0%	100%	0%	100%	100%	0%	0%	50%	0%	50%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	0%	0%	0%	0%	50%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_UFR1 (RG_URF1)	n	34	34	34	34	34	33	34	34	34	34	34	34	34	34	34	34	34
	Annual Minimum	<0.1	<0.01	<0.00005	0.00120	0.000300	<0.0000005	0.000477	<0.5	0.423	<0.00001	<0.00001	0.000301	<0.003	<0.001	<0.005	<0.0002	<0.01
	Annual Maximum	0.130	0.228	0.000242	0.00210	0.0183	0.00000476	0.000720	1.00	0.986	0.0000420	0.0000200	0.000536	0.00380	0.0344	0.0166	0.000560	0.0350
	Annual Mean	0.102	0.0526	0.0000779	0.00156	0.00240	0.00000117	0.000614	0.535	0.694	0.0000117	0.0000106	0.000422	0.00306	0.00522	0.00928	0.000253	0.0115
	Annual Median	<0.1	0.0280	<0.00005	0.00160	0.000920	0.000000660	0.000608	<0.5	0.714	<0.00001	<0.00001	0.000424	<0.003	0.00250	0.00845	<0.0002	<0.01
	% < LRL	91%	44%	65%	0%	0%	36%	0%	79%	0%	85%	91%	0%	91%	18%	9%	56%	88%
	% > BCWQG[a]	0%	-	0%	-	0%	33%	0%	-	0%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FR1 (RG_FODHE)	n	23	23	23	23	23	22	23	23	24	23	23	23	23	23	23	23	23
	Annual Minimum	<0.1	<0.01	<0.00005	0.00120	0.000490	<0.0000005	0.000523	<0.5	1.01	<0.00001	<0.00001	0.000142	<0.003	<0.001	0.00860	<0.0002	<0.01
	Annual Maximum	0.540	0.682	0.000738	0.0154	0.0164	<0.000008	0.000944	2.58	40.1	0.0000240	0.0000270	0.00180	0.0103	0.00630	0.0207	0.000570	0.0100
	Annual Mean	0.119	0.0601	0.0000799	0.00653	0.00226	0.000000789	0.000759	0.649	15.0	0.0000106	0.0000115	0.000910	0.00336	0.00234	0.0139	0.000220	0.0100
	Annual Median	<0.1	0.0115	<0.00005	0.00640	0.00147	0.000000730	0.000763	<0.5	12.5	<0.00001	<0.00001	0.000853	<0.003	0.00190	0.0132	<0.0002	<0.01
	% < LRL	96%	43%	96%	0%	0%	36%	0%	61%	0%	96%	91%	0%	91%	9%	0%	87%	96%
	% > BCWQG[a]	0%	-	0%	-	0%	14%	0%	-	96%	0%	0%	0%	4%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FOUCL (RG_FOUCL)	n	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
	Annual Minimum	<0.1	<0.01	<0.00005	0.00350	0.000490	<0.0000005	0.000591	<0.5	6.29	<0.00001	<0.00001	0.000603	<0.003	<0.001	0.00760	<0.0002	<0.01
	Annual Maximum	<0.1	0.0160	<0.00005	0.0115	0.00219	0.000000730	0.000831	1.51	37.3	<0.00001	<0.00001	0.00159	<0.003	0.00310	0.0297	<0.0002	<0.01
	Annual Mean	<0.1	0.0115	<0.00005	0.00785	0.00103	0.000000558	0.000716	0.950	24.5	<0.00001	<0.00001	0.00119	<0.003	0.00198	0.0181	<0.0002	<0.01
	Annual Median	<0.1	<0.01	<0.00005	0.00820	0.000730	<0.0000005	0.000722	0.895	30.4	<0.00001	<0.00001	0.00128	<0.003	0.00190	0.0175	<0.0002	<0.01
	% < LRL	100%	75%	100%	0%	0%	75%	0%	50%	0%	100%	100%	0%	100%	50%	0%	100%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Cobalt (ug/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (ug/L)[c]	Total Selenium (ug/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (ug/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
RG_FOUNGD	n	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3
	Annual Minimum	<0.1	<0.01	<0.00005	0.0115	0.000580	<0.0000005	0.000674	1.54	9.46	<0.00001	<0.00001	0.000900	<0.003	<0.001	0.0154	<0.0002	<0.01
	Annual Maximum	<0.1	0.0360	<0.00005	0.0792	0.00286	0.000000700	0.00123	9.03	72.0	<0.00001	<0.00001	0.00393	0.00560	0.00220	0.119	<0.0002	<0.01
	Annual Mean	<0.1	0.0187	<0.00005	0.0447	0.00136	0.000000567	0.000958	4.52	43.0	<0.00001	<0.00001	0.00237	0.00387	0.00147	0.0539	<0.0002	<0.01
	Annual Median	<0.1	<0.01	<0.00005	0.0435	0.000640	<0.0000005	0.000971	2.99	45.3	<0.00001	<0.00001	0.00227	<0.003	0.00120	0.0274	<0.0002	<0.01
	% < LRL	100%	67%	100%	0%	0%	67%	0%	0%	0%	100%	100%	0%	67%	33%	0%	100%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	33%	25%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FRABEC1 (RG_FODNGD)	n	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
	Annual Minimum	<0.1	<0.01	<0.00005	0.0129	0.00118	<0.0000005	0.000735	1.75	10.8	<0.00001	<0.00001	0.000916	<0.003	<0.001	0.0198	<0.0002	<0.01
	Annual Maximum	0.230	0.0420	<0.00005	0.0747	0.00376	0.000000730	0.00193	10.7	76.3	<0.00001	0.0000130	0.00411	0.00700	0.00220	0.0925	<0.0002	<0.01
	Annual Mean	0.135	0.0195	<0.00005	0.0484	0.00209	0.000000558	0.00127	6.20	46.9	<0.00001	0.0000112	0.00282	0.00450	0.00135	0.0435	<0.0002	<0.01
	Annual Median	0.105	0.0130	<0.00005	0.0530	0.00172	<0.0000005	0.00121	6.18	41.0	<0.00001	0.0000110	0.00313	0.00400	0.00110	0.0308	<0.0002	<0.01
	% < LRL	50%	50%	100%	0%	0%	75%	0%	0%	0%	100%	50%	0%	50%	50%	0%	100%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	50%	40%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_MULTIPLATE (RG_MP1)	n	54	54	54	54	54	54	54	54	55	54	54	54	54	54	54	54	54
	Annual Minimum	<0.1	<0.01	<0.00005	0.0105	0.00110	<0.0000005	0.000735	1.99	12.0	<0.00001	<0.00001	0.000940	<0.003	<0.001	0.0221	<0.0002	<0.01
	Annual Maximum	0.500	0.409	0.000456	0.0926	0.0154	0.00000235	0.00338	12.8	89.7	0.000188	0.0000200	0.00487	0.0100	0.00840	0.171	0.00157	0.0110
	Annual Mean	0.179	0.0391	0.0000722	0.0476	0.00342	0.000000689	0.00161	6.51	54.0	0.0000133	0.0000111	0.00301	0.00424	0.00196	0.0612	0.000265	0.0100
	Annual Median	0.120	0.0145	<0.00005	0.0478	0.00278	<0.0000005	0.00159	6.27	60.2	<0.00001	<0.00001	0.00324	0.00315	0.00140	0.0422	<0.0002	<0.01
	% < LRL	39%	28%	76%	0%	0%	63%	0%	0%	0%	94%	67%	0%	46%	33%	0%	56%	96%
	% > BCWQG[a]	0%	-	0%	-	0%	7%	0%	-	100%	0%	0%	0%	0%	0%	0%	2%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	69%	33%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FRNTP (RG_FOUSH)	n	54	54	54	54	54	53	54	54	56	54	54	54	54	54	54	54	54
	Annual Minimum	<0.1	<0.01	<0.00005	0.0102	0.00216	<0.0000005	0.000758	2.40	12.5	<0.00001	<0.00001	0.000952	<0.003	<0.001	0.0220	<0.0002	<0.01
	Annual Maximum	0.960	0.240	0.000268	0.0946	0.0283	0.00000287	0.00488	13.8	84.3	<0.00001	0.0000200	0.00501	0.0160	0.00640	0.150	0.00127	0.0300
	Annual Mean	0.384	0.0335	0.0000577	0.0530	0.0102	0.000000747	0.00192	7.47	52.5	<0.00001	0.0000124	0.00320	0.00437	0.00183	0.0563	0.000260	0.0104
	Annual Median	0.330	0.0220	<0.00005	0.0572	0.00853	<0.0000005	0.00180	7.86	57.2	<0.00001	0.0000110	0.00348	0.00330	0.00115	0.0395	<0.0002	<0.01
	% < LRL	4%	17%	87%	0%	0%	57%	0%	0%	0%	100%	43%	0%	46%	43%	0%	56%	98%
	% > BCWQG[a]	0%	-	0%	-	0%	9%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	76%	21%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FR2 (RG_FOUKI)	n	60	60	60	60	60	60	60	60	61	60	60	60	60	60	60	60	60
	Annual Minimum	<0.1	0.0140	<0.00005	0.0105	0.00594	<0.0000005	0.000758	2.19	12.8	<0.00001	<0.00001	0.000982	<0.003	<0.001	0.0231	<0.0002	<0.01
	Annual Maximum	0.730	0.474	0.000417	0.0865	0.0505	<0.000005	0.00463	11.7	77.3	0.0000120	0.0000220	0.00498	0.0138	0.00500	0.138	0.000490	0.0420
	Annual Mean	0.331	0.0694	0.0000721	0.0519	0.0186	0.000000695	0.00181	6.35	48.4	0.0000101	0.0000119	0.00318	0.00422	0.00177	0.0535	0.000241	0.0156
	Annual Median	0.315	0.0460	<0.00005	0.0567	0.0172	<0.0000005	0.00176	6.47	53.3	<0.00001	0.0000100	0.00344	<0.003	0.00140	0.0396	<0.0002	0.0130
	% < LRL	2%	0%	75%	0%	0%	62%	0%	0%	0%	97%	50%	0%	55%	37%	0%	57%	38%
	% > BCWQG[a]	0%	-	0%	-	0%	12%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark	-	-	-	-	-	-	-	65%	10%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.

> 50% of samples exceed the guideline or benchmark.

> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Cobalt (ug/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (ug/L)[c]	Total Selenium (ug/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (ug/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
FR_FR3 (RG_FOBKS)	n	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	Annual Minimum	0.110	0.0220	<0.00005	0.0165	0.00596	<0.0000005	0.000959	2.25	14.0	<0.00001	<0.00001	0.00110	<0.003	<0.001	0.0158	<0.0002	<0.01
	Annual Maximum	0.550	0.169	0.0000980	0.0805	0.0394	0.00000128	0.00332	10.8	71.7	<0.00001	0.0000260	0.00480	0.0112	0.00460	0.121	0.000380	0.0270
	Annual Mean	0.283	0.0470	0.0000528	0.0515	0.0143	0.000000595	0.00175	5.95	46.0	<0.00001	0.0000124	0.00314	0.00388	0.00163	0.0424	0.000227	0.0142
	Annual Median	0.220	0.0360	<0.00005	0.0520	0.0121	<0.0000005	0.00145	5.77	43.4	<0.00001	<0.00001	0.00277	<0.003	0.00110	0.0298	<0.0002	0.0150
	% < LRL	0%	0%	84%	0%	0%	68%	0%	0%	0%	100%	63%	0%	74%	42%	0%	58%	37%
	% > BCWQG[a]	0%	-	0%	-	0%	5%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	53%	5%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_SCOUTDS (RG_SCOUTDS)	n	48	48	48	48	48	47	48	48	49	48	48	48	48	48	48	48	48
	Annual Minimum	0.130	0.0130	<0.00005	0.0103	0.00565	<0.0000005	0.00100	2.83	18.7	<0.00001	<0.00001	0.00105	<0.003	<0.001	0.0360	<0.0002	<0.01
	Annual Maximum	0.790	0.415	0.000303	0.0818	0.0405	0.00000286	0.00548	14.8	171	0.0000110	0.0000240	0.00782	0.0105	0.00970	0.168	0.00198	0.0210
	Annual Mean	0.295	0.0654	0.0000684	0.0461	0.0133	0.000000812	0.00257	8.58	73.6	0.0000100	0.0000136	0.00366	0.00631	0.00227	0.100	0.000308	0.0118
	Annual Median	0.245	0.0450	<0.00005	0.0498	0.0114	0.000000520	0.00251	9.03	77.6	<0.00001	0.0000120	0.00381	0.00635	0.00160	0.102	0.000250	<0.01
	% < LRL	0%	0%	73%	0%	0%	47%	0%	0%	0%	96%	35%	0%	2%	25%	0%	29%	54%
	% > BCWQG[a]	0%	-	0%	-	0%	13%	0%	-	100%	0%	0%	0%	0%	0%	0%	2%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	73%	59%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FR4 (RG_FOBSC)	n	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
	Annual Minimum	<0.1	<0.01	<0.00005	0.00430	0.00127	<0.0000005	0.000562	<0.5	0.685	<0.00001	<0.00001	0.000654	<0.003	<0.001	0.00570	<0.0002	<0.01
	Annual Maximum	1.09	1.10	0.00102	0.0820	0.0444	<0.000005	0.00586	13.9	157	0.0000300	0.0000560	0.00721	0.0202	0.00440	0.174	0.000610	0.0220
	Annual Mean	0.328	0.121	0.000117	0.0477	0.0160	0.000000920	0.00260	8.73	74.1	0.0000107	0.0000154	0.00377	0.00738	0.00191	0.102	0.000259	0.0119
	Annual Median	0.315	0.0465	<0.00005	0.0522	0.0139	0.000000660	0.00278	10.1	79.4	<0.00001	0.0000145	0.00408	0.00680	0.00160	0.108	0.000235	<0.01
	% < LRL	6%	2%	65%	0%	0%	42%	0%	2%	0%	94%	31%	0%	8%	29%	0%	31%	62%
	% > BCWQG[a]	0%	-	0%	-	0%	21%	0%	-	98%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	2%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	67%	56%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FRCP1 (RG_FOBCP)	n	35	35	35	35	35	34	35	35	36	35	35	35	35	35	35	35	35
	Annual Minimum	<0.1	<0.01	<0.00005	0.0161	0.00376	<0.0000005	0.000919	2.55	25.9	<0.00001	<0.00001	0.00143	<0.003	<0.001	0.0310	<0.0002	<0.01
	Annual Maximum	0.730	0.505	0.000480	0.103	0.0594	<0.000005	0.00597	18.2	208	0.0000120	0.0000270	0.00921	0.0179	0.00440	0.166	0.000480	0.0190
	Annual Mean	0.301	0.0857	0.0000937	0.0523	0.0143	0.00000103	0.00272	9.00	84.6	0.0000101	0.0000144	0.00418	0.00716	0.00178	0.0958	0.000249	0.0112
	Annual Median	0.270	0.0400	<0.00005	0.0531	0.0111	0.000000680	0.00276	10.6	84.3	<0.00001	0.0000120	0.00416	0.00670	0.00160	0.0979	0.000220	<0.01
	% < LRL	3%	3%	74%	0%	0%	44%	0%	0%	0%	94%	26%	0%	9%	37%	0%	43%	74%
	% > BCWQG[a]	0%	-	0%	-	0%	24%	0%	-	100%	0%	0%	3%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	74%	64%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	3%	3%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FRCP1SW (RG_FRCP1SW)	n	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Annual Minimum	0.100	0.0320	<0.00005	0.0300	0.00518	<0.0000005	0.00140	2.90	38.8	<0.00001	<0.00001	0.00198	<0.003	0.00120	0.0463	<0.0002	<0.01
	Annual Maximum	0.370	0.0340	<0.00005	0.0582	0.0103	0.000000750	0.00296	10.0	74.4	<0.00001	0.0000140	0.00425	0.00530	0.00590	0.103	0.000260	0.0130
	Annual Mean	0.235	0.0330	<0.00005	0.0441	0.00774	0.000000625	0.00218	6.45	56.6	<0.00001	0.0000120	0.00312	0.00415	0.00355	0.0746	0.000230	0.0115
	Annual Median	0.235	0.0330	<0.00005	0.0441	0.00774	0.000000625	0.00218	6.45	56.6	<0.00001	0.0000120	0.00312	0.00415	0.00355	0.0746	0.000230	0.0115
	% < LRL	0%	0%	100%	0%	0%	50%	0%	0%	0%	100%	50%	0%	50%	0%	0%	50%	50%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	50%	50%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Constituents at Monitoring Stations Monitoring Stations, FRO LAEMP, 2021

Station	Summary Statistic	Total Cobalt (ug/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (ug/L)[c]	Total Selenium (ug/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (ug/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
FR_FRRD (RG_FRUPO)	n	33	33	33	33	33	33	33	33	34	33	33	33	33	33	33	33	33
	Annual Minimum	<0.1	<0.01	<0.00005	0.0218	0.000200	<0.0000005	0.000554	<0.5	39.1	<0.00001	<0.00001	0.00204	<0.003	<0.001	0.0303	<0.0002	<0.01
	Annual Maximum	0.480	0.625	0.000423	0.0703	0.0342	<0.000005	0.00212	6.76	183	0.0000130	0.0000210	0.00602	0.00930	<0.003	0.0852	0.00831	<0.01
	Annual Mean	0.143	0.0683	0.0000794	0.0527	0.00479	0.000000692	0.00105	1.82	100	0.0000101	0.0000104	0.00434	0.00356	0.00126	0.0493	0.000458	<0.01
	Annual Median	<0.1	0.0130	<0.00005	0.0542	0.00178	<0.0000005	0.00101	1.03	99.7	<0.00001	<0.00001	0.00458	<0.003	<0.001	0.0458	<0.0002	<0.01
	% < LRL	55%	33%	79%	0%	0%	70%	0%	15%	0%	97%	94%	0%	76%	73%	0%	76%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	9%	0%	-	100%	0%	0%	0%	0%	0%	0%	3%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	3%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	9%	79%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
GH_PC2 (RG_FODPO)	n	14	14	14	14	14	14	14	14	15	14	14	14	14	14	14	14	14
	Annual Minimum	<0.1	<0.01	<0.00005	0.0301	0.000470	<0.0000005	0.000749	<0.5	50.4	<0.00001	<0.00001	0.00225	<0.003	<0.001	0.0299	<0.0002	<0.01
	Annual Maximum	0.220	0.205	0.000150	0.0553	0.0113	0.00000215	0.00197	4.63	129	<0.00001	0.0000100	0.00451	0.00500	0.00310	0.0867	0.000440	<0.01
	Annual Mean	0.139	0.0554	0.0000651	0.0432	0.00458	0.000000776	0.00141	2.74	88.9	<0.00001	0.0000100	0.00370	0.00343	0.00144	0.0477	0.000238	<0.01
	Annual Median	0.140	0.0305	<0.00005	0.0419	0.00376	<0.0000005	0.00148	3.22	83.2	<0.00001	<0.00001	0.00380	0.00310	0.00105	0.0437	<0.0002	<0.01
	% < LRL	36%	21%	64%	0%	0%	64%	0%	7%	0%	100%	93%	0%	50%	50%	0%	64%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	14%	0%	-	100%	0%	0%	0%	0%	0%	0%	7%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	0%	80%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FRABCH (RG_FO22)	n	49	49	49	49	49	48	49	49	50	49	49	49	49	49	49	49	49
	Annual Minimum	<0.1	<0.01	<0.00005	0.0184	0.00210	<0.0000005	0.000668	<0.5	35.8	<0.00001	<0.00001	0.00174	<0.003	<0.001	0.0296	<0.0002	<0.01
	Annual Maximum	0.510	0.617	0.000520	0.0513	0.0441	0.00000579	0.00176	4.17	117	0.0000130	0.0000210	0.00470	0.00950	0.00420	0.0671	0.00177	0.0620
	Annual Mean	0.124	0.0654	0.0000801	0.0423	0.00788	0.000000763	0.00118	2.11	87.0	0.0000101	0.0000103	0.00359	0.00349	0.00150	0.0437	0.000248	0.0118
	Annual Median	<0.1	0.0360	<0.00005	0.0437	0.00656	<0.0000005	0.00123	2.00	92.6	<0.00001	<0.00001	0.00385	<0.003	0.00120	0.0414	<0.0002	<0.01
	% < LRL	55%	2%	67%	0%	0%	65%	0%	2%	0%	98%	96%	0%	71%	43%	0%	78%	82%
	% > BCWQG[a]	0%	-	0%	-	0%	10%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	0%	80%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
RG_FOUEW	n	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Annual Minimum	<0.1	0.0160	<0.00005	0.0267	0.00420	<0.0000005	0.00112	0.910	38.1	<0.00001	<0.00001	0.00216	<0.003	0.00160	0.0299	<0.0002	<0.01
	Annual Maximum	<0.1	0.0480	<0.00005	0.0492	0.00573	0.000000670	0.00121	1.91	80.6	<0.00001	<0.00001	0.00377	<0.003	0.00240	0.0384	0.000440	0.0170
	Annual Mean	<0.1	0.0330	<0.00005	0.0401	0.00512	0.000000557	0.00116	1.54	64.8	<0.00001	<0.00001	0.00316	<0.003	0.00187	0.0350	0.000280	0.0123
	Annual Median	<0.1	0.0350	<0.00005	0.0445	0.00543	<0.0000005	0.00116	1.80	75.8	<0.00001	<0.00001	0.00354	<0.003	0.00160	0.0367	<0.0002	<0.01
	% < LRL	100%	0%	100%	0%	0%	67%	0%	0%	0%	100%	100%	0%	100%	0%	0%	67%	67%
	% > BCWQG[a]	0%	-	0%	-	0%	0%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	0%	67%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
FR_FR5	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	<0.1	<0.01	<0.00005	0.0185	0.000990	<0.0000005	0.000554	<0.5	40.1	<0.00001	<0.00001	0.00181	<0.003	<0.001	0.0192	<0.0002	<0.01
	Annual Maximum	0.130	0.105	0.000108	0.0401	0.00936	0.00000131	0.00125	2.84	90.1	<0.00001	<0.00001	0.00350	0.0185	0.00300	0.0393	<0.0002	<0.01
	Annual Mean	0.103	0.0288	0.0000548	0.0319	0.00350	0.000000638	0.000929	1.33	72.8	<0.00001	<0.00001	0.00288	0.00429	0.00127	0.0286	<0.0002	<0.01
	Annual Median	<0.1	0.0210	<0.00005	0.0312	0.00306	<0.0000005	0.000978	1.27	75.3	<0.00001	<0.00001	0.00319	<0.003	<0.001	0.0288	<0.0002	<0.01
	% < LRL	75%	33%	92%	0%	0%	67%	0%	25%	0%	100%	100%	0%	92%	58%	0%	100%	100%
	% > BCWQG[a]	0%	-	0%	-	0%	8%	0%	-	100%	0%	0%	0%	0%	0%	0%	0%	-
	% > BCWQG[b]	0%	0%	0%	-	0%	-	0%	-	-	0%	-	-	0%	0%	0%	0%	0%
	% > Level 1 Benchmark[c]	-	-	-	-	-	-	-	0%	58%	-	-	-	-	-	0%	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	0%	0%	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-

> 5% of samples exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures.

[c] Total Dissolved Solids was screened again one screening value. Nickel was screened against Levels 1, 2, and 3 interim screening values.

Table B.2: British Columbia Water Quality Guidelines, Site-Specific Elk Valley Water Quality Plan (EVWQP) Benchmarks, and Interim Screening Values for Constituents Assessed, FRO LAEMP, 2021

Variable		Units	British Columbia Water Quality Guidelines [a]				Site-Specific Benchmark [b]
			Long-term Average	Short-term Maximum	Year	Status	
Non-Metals	Total Alkalinity	mg/L	For dissolved calcium = < 4mg/L, WQG = <10 For dissolved calcium = 4 to 8 mg/L, WQG = 10 to 20 For dissolved calcium = > 8 mg/L, WQG = > 20	-	2015	Working	-
	Unionized Ammonia [c]	mg/L	pH and Temperature dependent (tabular)	pH and Temperature dependent (tabular)	2009	Approved	-
	Chloride	mg/L	150	600	2003	Approved	-
	Fluoride	mg/L	-	For hardness ≤ 10 mg/L, WQG = 0.4 For hardness > 10 mg/L, WQG = [-51.73 + 92.57 × $\log_{10}$(hardness)]×0.01 Maximum applicable hardness = 385 mg/L	1990	Approved	-
	Nitrate-N	mg/L	3	33	2009	Approved	Level 1 EVWQP benchmark= $10^{1.0003[\log(\text{hardness})]-1.52}$ Maximum applicable hardness = 500 mg/L Level 2 EVWQP benchmark= $10^{1.0003[\log(\text{hardness})]-1.38}$ Maximum applicable hardness = 500 mg/L
	Nitrite-N [d]	mg/L	0.02 to 0.20	0.06 to 0.60	2009	Approved	-
	Dissolved oxygen [e]	mg/L	For buried embryo/alevin life stages, WQG (water column) = 11 WQG (interstitial) = 8 For other life stages, WQG (water column) = 8	For buried embryo/alevin life stages, WQG (water column) = 9 WQG (interstitial) = 6 For other life stages, WQG (water column) = 5	1997	Approved	-
	pH [f]	pH units	6.5 - 9.0		1991	Approved	-
	Sulphate [g]	mg/L	128 to 429 Maximum applicable hardness = 250 mg/L	-	2013	Approved	Level 1 EVWQP Benchmark = BCWQG = 429
	Total Dissolved Solids	mg/L	-	-	-	-	Level 1 Screening Value = 1000

[a] British Columbia Working (BCMOE 2017) or Accepted (BCMOE 2019) Water Quality Guidelines for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness), guidelines were screened using concurrent values.

[b] When appropriate, site-specific Elk Valley Water Quality Plan Benchmarks (EVWQP; Teck 2014) or interim screening values were applied in addition to or instead of BC water quality guidelines. Interim screening values are displayed for nickel (Golder 2017; Coal Mountain Operations Aquatic Health Assessment Report).

[c] Temperature and pH dependent; range of minimum and maximum values.

[d] Dependent on concurrent chloride, range of values reported (BCMOE 2019)

[e] Dissolved oxygen guidelines represent a minimum value, and so exceedances were quantified below this guideline.

[f] Unrestricted change permitted within this pH range.

[g] For hardness-based guidelines, concurrent hardness values were used for calculating guidelines. If hardness values exceeding the maximum applicable hardness, then guidelines were determined using the maximum applicable hardness. If hardness values is lower than the minimum hardness, then guidelines were determined using the minimum hardness.

[h] Chromium(VI) is the dominant oxidation state in oxygenated environments, and so its guideline was applied.

[i] The most conservative guideline (0.00000125 mg/L) was applied.

Table B.2: British Columbia Water Quality Guidelines, Site-Specific Elk Valley Water Quality Plan (EVWQP) Benchmarks, and Interim Screening Values for Constituents Assessed, FRO LAEMP, 2021

		Variable	Units	British Columbia Water Quality Guidelines [a]				Site-Specific Benchmark [b]
				Long-term Average	Short-term Maximum	Year	Status	
Metals and Metalloids	Total	Antimony (III)	mg/L	0.009	-	2015	Working	-
		Arsenic	mg/L	-	0.005	2002	Approved	-
		Barium	mg/L	1	-	2015	Working	-
		Beryllium	mg/L	0.00013	-	2015	Working	-
		Boron	mg/L	1.2	-	2003	Approved	-
		Chromium [h]	mg/L	For Cr(VI), WQG = 0.001 For Cr(III), WQG = 0.0089	-	2015	Working	-
		Cobalt	mg/L	0.004	0.11	2004	Approved	-
		Iron	mg/L	-	1	2008	Approved	-
		Lead [g]	mg/L	For hardness ≤ 8 mg/L, none proposed For hardness 8 to 360 mg/L, WQG = 0.001×{3.31+ exp[1.273 × ln(hardness) - 4.704]} No more than 20% of samples in a 30-d period should be >1.5X the guideline. Maximum applicable hardness = 360 mg/L	For hardness ≤ 8 mg/L, WQG ≤ 0.003 For hardness 8 to 360 mg/L, WQG = 0.001×{exp[1.273 × ln(hardness) - 1.460]} Maximum applicable hardness = 360 mg/L	1987	Approved	-
		Manganese [g]	mg/L	For hardness 37 to 450 mg/L, WQG ≤ 0.004 × hardness + 0.605 Maximum applicable hardness = 450 mg/L	For hardness 25 to 259 mg/L, WQG ≤ 0.01102 × hardness + 0.54 Maximum applicable hardness = 259 mg/L	2001	Approved	-
		Mercury [i]	mg/L	MeHg ≤ 0.5% of THg, WQG = 0.00002 Else, WQG = [0.0001/(MeHg/THg)] OR When MeHg = 0.5% of THg, WQG= 0.00002 When MeHg = 1.0% of THg, WQG = 0.00001 When MeHg = 8.0% of THg, WQG= 0.00000125	-	2001	Approved	-
		Molybdenum	mg/L	1	2	1986	Approved	-
		Nickel [g]	mg/L	-	-	-	-	Level 1 Interim Screening Value = 0.0053 Level 2 Interim Screening Value = 0.015 Level 3 Interim Screening Value = 0.022
		Selenium	µg/L	2	-	2014	Approved	Level 1 EVWQP Benchmark = 19 Level 2 EVWQP Benchmark = 74
		Silver [f]	mg/L	For hardness ≤ 100 mg/L, WQG = 0.00005 For hardness > 100 mg/L, WQG = 0.0015	For hardness ≤ 100 mg/L, WQG = 0.0001 For hardness > 100 mg/L, WQG = 0.003	1996	Approved	-
		Thallium	mg/L	0.0008	-	1997	Working	-
		Uranium	mg/L	0.0085	-	2011	Working	-
		Zinc [g]	mg/L	For hardness ≤ 90 mg/L, WQG = 0.0075	For hardness ≤ 90 mg/L, WQG = 0.033	1999	Approved	-
	Dissolved	Aluminum	mg/L	When pH ≥ 6.5, WQG = 0.05 When pH < 6.5, WQG = exp[1.6 - 3.327(median pH)+ 0.402(median pH)^2]	When pH ≥ 6.5, WQG = 0.1 When pH < 6.5, WQG = exp[1.209 - 2.426(pH)+ 0.286 (pH)^2]	2001	Approved	-
		Cadmium [g]	µg/L	For hardness = 3.4 to 285 mg/L, WQG = {exp[0.736×ln(hardness) - 4.943]} Maximum applicable hardness = 285 mg/L	For hardness = 7 to 455 mg/L, WQG = {exp[1.03×ln(hardness)-5.274]} Maximum applicable hardness = 455 mg/L	2015	Approved	Level 1 EVWQP Benchmark = $10^{0.83(\log(hardness))-2.53}$ Maximum applicable hardness = 285 mg/L
		Copper	mg/L	Biotic Ligand Model	Biotic Ligand Model	2019	Approved	-
		Iron	mg/L	-	WQG = 0.35 mg/L	2008	Approved	-

[a] British Columbia Working (BCMOE 2017) or Accepted (BCMOE 2019) Water Quality Guidelines for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness), guidelines were screened using concurrent values.

[b] When appropriate, site-specific Elk Valley Water Quality Plan Benchmarks (EVWQP; Teck 2014) or interim screening values were applied in addition to or instead of BC water quality guidelines. Interim screening values are displayed for nickel (Golder 2017; Coal Mountain Operations Aquatic Health Assessment Report).

[c] Temperature and pH dependent; range of minimum and maximum values.

[d] Dependent on concurrent chloride, range of values reported (BCMOE 2019)

[e] Dissolved oxygen guidelines represent a minimum value, and so exceedances were quantified below this guideline.

[f] Unrestricted change permitted within this pH range.

[g] For hardness-based guidelines, concurrent hardness values were used for calculating guidelines. If hardness values exceeding the maximum applicable hardness, then guidelines were determined using the maximum applicable hardness. If hardness values is lower than the minimum hardness, then guidelines were determined using the minimum hardness.

[h] Chromium(VI) is the dominant oxidation state in oxygenated environments, and so its guideline was applied.

[i] The most conservative guideline (0.00000125 mg/L) was applied.

Table B.3. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 to 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Antimony	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	1	0.682	-	-	-	-	-	ns	-	-	ns	-	-	-	-	-	-	A	-	-	A	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	2	0.123	-	-	ns	-	-	ns	-	-	ns	-	-	-	A	-	-	A	-	-	A	-	-	-
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	21	**41**	-	-	-	-	-	-	B	-	AB	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	29	**45**	**64**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	15	13	1.4	**-25**	-10	-15	-2.4	12	**34**	BC	AB	AB	BC	D	BCD	CD	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.021	b	8.7	6.3	8.6	-	-	-	-6.7	6.6	**35**	B	AB	AB	AB	-	-	-	B	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**18**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	1.4	0.17	-10	**-29**	**-26**	**-23**	-	8.2	19	ABC	AB	ABC	BCD	D	D	CD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-18	-10	2.0	4.1	11	19	-	-	-	ABC	C	BC	AB	AB	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.174	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.005	b	21	-8.8	-14	-	-	-32	22	-13	14	AB	A	AB	AB	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	16	**30**	3.9	13	20	**29**	-	-	-	B	AB	A	B	AB	AB	A	No	No
		FR_FR5	8	0.452	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	A	A	A	A	A	A	A	-	A	A	No	No
Total Barium	Reference	FR_HC3 (RG_HENUP)	8	0.877	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**17**	**21**	**20**	**17**	**18**	10	4.5	9.3	5.8	D	ABC	A	A	ABC	AB	ABCD	CD	ABCD	BCD	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.078	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.002	-	-	-	-	-	-	b	-	-5.3	**-13**	-	-	-	-	-	-	A	-	AB	B	No	No
		FR_FRNTP (RG_FOUSH)	3	0.010	-	-	-	-	-	-	b	-6.6	**-9.0**	**-9.3**	-	-	-	-	-	-	A	AB	B	B	No	No
		FR_FR2 (RG_FOUKI)	9	0.001	b	**18**	13	15	7.2	13	5.9	-0.71	0.68	5.1	B	A	AB	AB	AB	AB	AB	B	B	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.001	b	14	9.0	**20**	-	-	-	-0.36	1.4	4.5	B	AB	AB	A	-	-	-	B	B	AB	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.343	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	**17**	10	15	6.9	**16**	9.8	-	-3.5	0.31	BCD	A	ABC	AB	ABCD	A	ABCD	-	D	CD	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.004	-	-	-	b	-7.7	-0.37	-32	-28	-0.53	2.5	-	-	-	AB	AB	AB	B	AB	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-8.2	-5.8	**-12**	**-16**	**-13**	**-18**	-	-	-	A	ABC	AB	BC	BC	BC	C	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	6.8	-3.6	-8.1	-	-	**-19**	**-24**	**-30**	**-26**	AB	A	AB	B	-	-	C	CD	D	CD	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-5.2	-5.4	**-11**	**-18**	**-19**	**-18**	-	-	-	A	AB	AB	BC	CD	D	CD	No	No
		FR_FR5	8	<0.001	b	11	13	0.58	-0.92	-0.15	-10	-	-7.5	**-14**	AB	A	A	AB	AB	AB	BC	-	BC	C	No	No
Total Boron	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_MULTIPLATE (RG_MP1)	1	0.147	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	1	0.075	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	2.7	-3.2	-0.65	**-22**	-12	**-15**	**-18**	-10	5.3	ABC	AB	ABCD	ABC	E	CDE	DE	E	BCDE	A	No	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	4.9	1.4	1.7	-	-	-	**-25**	-14	9.0	AB	A	AB	AB	-	-	-	C	BC	A	No	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**18**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	2.3	0.63	-1.6	**-23**	**-18**	-15	-	-8.2	3.7	AB	AB	AB	ABC	D	CD	BCD	-	ABCD	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	**-24**	**-16**	**-15**	**-20**	-9.2	6.8	-	-	-	AB	D	CD	CD	D	BC	A	No	↑
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	**-25**	**-17**	-6.9	**-14**	-4.3	5.2	-	-	-	A	D	CD	ABC	BCD	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	-0.30	5.7	-1.5	-	-	**-21**	-6.1	**-16**	-7.1	A	A	A	A	-	-	C	ABC	BC	AB	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	**-18**	**-17**	**-12**	**-9.0**	**-12**	-3.2	-	-	-	A	D	D	CD	BC	CD	AB	No	↑
		FR_FR5	7	<0.001	b	-7.3	-5.7	-11	**-29**	-	**-26**	-	**-23**	-18	A	AB	AB	ABC	D	-	CD	-	BCD	BCD	No	No
Dissolved Cadmium	Reference	FR_HC3 (RG_HENUP)	3	0.793	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	A	-	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	0.257	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.022	b	22	11	-3.7	-5.0	14	28	17	22	16	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.003	-	-	-	-	-	-	b	-	12	**49**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	16	**45**	**62**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	0.305	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.119	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.025	-	-	-	-	-	-	-	-	b	**17**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	-19	5.8	-30	**-55**	-40	-20	-	65	70	ABC	CD	ABC	CD	D	CD	BCD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-8.1	-16	-22	-20	**147**	**175**	-	-	-	B	B	B	B	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-11	9.2	28	6.9	**45**	**33**	-	-	-	CD	D	BCD	ABC	BCD	A	AB	No	No
		GH_PC2 (RG_FODPO)	6	0.002	b	8.6	-0.13	-21	-	-	-3.9	-	1.0	15	AB	A	AB	B	-	-	AB	-	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	8.0	19	**33**	6.9	**31**	**48**	-	-	-	D	CD	BCD	AB	D	ABC	A	No	No
		FR_FR5	8	0.023	b	-13	-11	-18	-27	-25	-11	-	2.7	-2.8	A	A	A	A	A	A	A	-	A	A	No	No

Table B.3. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 to 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Dissolved Cobalt	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_MULTIPLATE (RG_MP1)	1	<0.001	-	-	-	-	-	-	-	-	b	**88**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	1	0.040	-	-	-	-	-	-	-	-	b	45	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	-13	-18	-28	-37	-27	-9.3	-7.1	25	**103**	BC	BC	BC	C	C	C	BC	BC	B	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	-27	-31	-44	-	-	-	-22	-8.3	**101**	B	B	B	B	-	-	-	B	B	A	↑	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**92**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	6	<0.001	b	-9.7	-23	-36	-	-	-39	-	10	**81**	BC	BC	BC	C	-	-	C	-	B	A	↑	↑
		FR_FRCP1 (RG_FOBCP)	4	<0.001	-	-	-	b	-	-	25	31	**80**	**196**	-	-	-	C	-	-	C	BC	B	A	↑	↑
		FR_FRRD (RG_FRUPO)	5	<0.001	-	-	-	b	-13	-	29	**292**	**91**	21	-	-	-	C	C	-	BC	A	B	BC	No	No
		GH_PC2 (RG_FODPO)	1	0.034	-	-	-	-	-	-	-	-	b	-17	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FRABCH (RG_FO22)	3	<0.001	-	-	-	-	-	-	b	**100**	**35**	4.7	-	-	-	-	-	-	C	A	B	C	No	↓
		FR_FR5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Lithium	Reference	FR_HC3 (RG_HENUP)	5	0.017	b	3.5	-	36	37	30	-	-	**86**	-	B	B	-	AB	AB	AB	-	-	A	-	-	-
		FR_UFR1 (RG_URF1)	9	0.061	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	B	AB	AB	AB	AB	AB	AB	AB	A	AB	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.002	b	38	26	35	13	**69**	26	42	**82**	51	C	ABC	ABC	ABC	BC	AB	ABC	ABC	A	ABC	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	3.6	**42**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	3.2	16	**58**	-	-	-	-	-	-	B	B	B	A	↑	↑
		FR_FR2 (RG_FOUKI)	9	<0.001	b	**31**	**33**	**60**	**59**	**74**	**55**	**51**	**63**	**140**	D	C	C	BC	BC	B	BC	BC	BC	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	20	16	**37**	-	-	-	**36**	**54**	**125**	D	CD	CD	BC	-	-	-	BC	B	A	↑	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**38**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	23	23	**36**	**43**	**66**	**40**	-	**77**	**118**	E	DE	DE	CD	BCD	ABC	BCD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-5.9	6.7	19	0.77	13	**50**	-	-	-	BC	C	BC	B	BC	BC	A	↑	↑
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	2.9	**18**	**16**	11	**26**	**63**	-	-	-	D	CD	BC	BC	BCD	B	A	↑	↑
		GH_PC2 (RG_FODPO)	7	<0.001	b	19	**30**	**43**	-	-	**51**	**90**	**69**	**129**	D	CD	C	BC	-	-	BC	AB	B	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	12	**16**	**19**	**17**	**23**	**58**	-	-	-	C	BC	B	B	B	B	A	↑	↑
		FR_FR5	8	<0.001	b	13	15	**36**	**62**	**64**	**55**	-	**69**	**111**	E	E	DE	CD	BC	B	BC	-	B	A	↑	↑
Total Manganese	Reference	FR_HC3 (RG_HENUP)	8	0.422	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**500**	**732**	77	58	73	53	144	**210**	123	D	AB	A	CD	CD	CD	CD	BCD	ABC	BCD	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	**107**	4.2	-44	-26	-31	-25	-43	-28	**-61**	B	A	AB	BC	BC	BC	BC	BC	BC	C	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.023	-	-	-	-	-	-	b	-	**119**	44	-	-	-	-	-	-	B	-	A	AB	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	73	**116**	**248**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	32	-29	-24	-22	8.6	-14	-26	-17	-6.8	AB	A	B	B	B	AB	AB	B	B	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.247	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.002	-	-	-	-	-	-	-	-	b	**29**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	0.002	b	17	-27	-26	-23	-32	-19	-	-27	12	AB	A	AB	AB	AB	B	AB	-	AB	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.002	-	-	-	b	1.8	41	-37	-42	37	89	-	-	-	AB	AB	AB	B	B	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.047	-	-	-	b	63	30	-28	-11	3.6	0.021	-	-	-	AB	A	AB	B	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	49	7.7	8.7	-	-	-38	153	-13	102	ABC	AB	ABC	ABC	-	-	C	A	BC	A	No	↑
		FR_FRABCH (RG_FO22)	6	0.107	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FR5	8	0.100	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	AB	A	AB	AB	AB	AB	B	-	AB	AB	No	No
Total Molybdenum	Reference	FR_HC3 (RG_HENUP)	8	0.101	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**6.9**	5.2	6.1	**6.7**	6.1	5.3	0.66	2.7	**7.7**	C	AB	ABC	ABC	AB	ABC	ABC	BC	ABC	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.001	b	**23**	16	**19**	6.9	**20**	9.3	9.1	15	13	B	A	AB	A	AB	A	AB	AB	AB	AB	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	12	**29**	-	-	-	-	-	-	B	-	AB	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	20	**40**	**52**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	11	6.9	0.15	-12	-9.9	-2.6	2.4	21	**33**	BCD	ABC	BCD	BCD	D	CD	CD	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.002	b	1.4	0.27	3.1	-	-	-	2.2	19	**35**	B	B	B	B	-	-	-	AB	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.118	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	1.6	-2.7	-11	-21	-11	-15	-	**62**	**77**	BC	B	BC	BC	C	BC	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-12	-7.1	5.0	10	**61**	**75**	-	-	-	BC	C	BC	BC	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	0.51	9.1	-8.5	3.9	19	17	-	-	-	AB	AB	AB	B	AB	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.004	b	-2.9	-14	-12	-	-	-2.2	**85**	4.5	31	B	B	B	B	-	-	B	A	AB	AB	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	8.0	3.7	5.0	8.4	**27**	**45**	-	-	-	C	C	C	C	C	B	A	↑	↑
		FR_FR5	8	<0.001	b	0.35	-7.6	-11	-0.67	-6.9	-14	-	10	12	ABC	ABC	ABC	C	ABC	BC	C	-	AB	A	No	No

Table B.3. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 to 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Nickel	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	2	0.219	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	**62**	27	-3.5	-1.8	11	19	-0.74	8.8	-18	BC	A	AB	BC	BC	ABC	ABC	BC	BC	C	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	**59**	**101**	-	-	-	-	-	-	B	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	38	**115**	**143**	-	-	-	-	-	-	B	B	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	8.0	**-39**	**-37**	-21	-12	-12	13	**54**	**101**	CD	C	E	E	DE	CD	CD	BC	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	-2.4	**-41**	**-43**	-	-	-	15	**57**	**97**	C	C	D	D	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.006	-	-	-	-	-	-	-	-	b	**13**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	-3.6	**-33**	**-45**	**-40**	-27	-27	-	**52**	**56**	B	B	C	C	C	BC	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.013	-	-	-	b	-8.3	14	**66**	20	22	39	-	-	-	B	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	0.087	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	AB	A	B	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	4.3	-47	-43	-	-	-53	8.2	-35	34	AB	AB	B	B	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	**78**	**75**	36	32	**63**	**120**	-	-	-	C	AB	AB	BC	BC	AB	A	No	No
		FR_FR5	8	0.061	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	AB	AB	AB	B	A	AB	AB	-	AB	AB	No	No
Nitrate-N	Reference	FR_HC3 (RG_HENUP)	8	<0.001	b	20	-	**64**	**63**	**50**	**60**	**61**	**40**	**43**	C	BC	-	A	A	AB	A	A	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	3.2	**169**	**203**	**227**	**230**	**144**	**176**	**134**	**132**	B	B	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	59	15	19	-17	32	-24	-21	-6.1	-35	ABCD	A	ABC	ABC	BCD	AB	CD	CD	BCD	D	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	-7.7	**34**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	2.7	7.6	**34**	-	-	-	-	-	-	B	B	B	A	↑	↑
		FR_FR2 (RG_FOUKI)	9	<0.001	b	26	14	**34**	**55**	**58**	**40**	**45**	**68**	**122**	E	CDE	DE	BCD	BC	BC	BCD	BCD	B	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	19	3.7	6.6	-	-	-	28	**53**	**99**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**24**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	17	5.4	3.4	21	32	19	-	**54**	**68**	C	BC	C	C	BC	ABC	BC	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	0.56	7.6	17	0.0048	17	**35**	-	-	-	B	B	B	AB	B	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-4.2	3.0	-0.020	-2.9	12	**36**	-	-	-	B	B	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	0.014	b	21	24	7.5	-	-	-12	7.7	5.9	27	AB	AB	A	AB	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	2.5	0.29	-5.5	-9.9	-1.0	**20**	-	-	-	B	B	B	B	B	B	A	↑	↑
		FR_FR5	8	<0.001	b	**25**	**32**	13	15	17	3.3	-	14	**36**	D	ABC	AB	BCD	ABCD	ABCD	CD	-	ABCD	A	↑	No
Nitrite-N	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	2	0.438	-	-	-	-	-	ns	-	-	ns	ns	-	-	-	-	-	A	-	-	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	91	-14	-29	-42	3.1	11	-46	-50	-38	ABC	A	BC	BC	BC	ABC	AB	BC	C	BC	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	**122**	**211**	-	-	-	-	-	-	B	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	112	**242**	**373**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	3.4	-44	**-53**	**-73**	**-75**	**-69**	**-54**	3.4	59	AB	AB	BC	CD	D	D	CD	CD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.023	b	5.1	-32	-32	-	-	-	-31	-2.9	27	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.012	-	-	-	-	-	-	-	-	b	**55**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	2.2	-44	**-52**	**-72**	**-68**	**-67**	-	-8.0	18	AB	A	BC	CD	D	CD	CD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-29	-12	**-40**	8.6	**106**	**128**	-	-	-	B	BC	BC	C	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.140	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.002	b	20	-10	-43	-	-	-51	9.3	-25	7.3	AB	A	AB	B	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	0.026	-	-	-	b	38	66	40	33	32	**116**	-	-	-	B	AB	AB	AB	AB	AB	A	No	No
		FR_FR5	8	<0.001	b	7.3	-14	**-49**	**-42**	-26	-27	-	-37	**-41**	A	A	AB	B	B	AB	AB	-	AB	B	No	No
Orthophosphate	Reference	FR_HC3 (RG_HENUP)	5	0.191	ns	-	-	-	-	ns	ns	ns	ns	ns	A	-	-	-	-	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	67	**115**	27	**69**	**114**	58	**82**	**133**	**79**	C	ABC	A	BC	AB	A	ABC	AB	A	AB	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	7	0.056	ns	ns	ns	-	-	ns	ns	ns	ns	ns	A	A	A	-	-	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.390	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.643	-	-	-	-	-	-	ns	ns	ns	ns	-	-	-	-	-	-	A	A	A	A	No	No
		FR_FR2 (RG_FOUKI)	7	0.007	-	-	b	-40	-21	32	23	-19	16	9.6	-	-	AB	B	AB	A	AB	AB	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	3	<0.001	-	-	b	-	-	-	-	-32	**65**	-14	-	-	B	-	-	-	-	B	A	B	No	↓
		FR_SCOUTDS (RG_SCOUTDS)	1	0.153	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	5	0.013	b	-	21	-17	-	-	62	-	34	41	AB	-	AB	B	-	-	A	-	AB	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.074	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.039	-	-	-	b	-27	20	34	-5.1	28	14	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	0.033	b	3.3	33	8.3	-	-	42	6.0	**68**	18	B	AB	AB	AB	-	-	AB	AB	A	AB	No	No
		FR_FRABCH (RG_FO22)	5	0.008	-	-	-	-	b	**106**	**94**	60	**115**	73	-	-	-	-	B	A	A	AB	A	AB	No	No
		FR_FR5	3	0.163	-	-	ns	-	-	-	ns	-	ns	ns	-	-	A	-	-	-	A	-	A	A	No	No

Table B.3. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 to 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Phosphorus	Reference	FR_HC3 (RG_HENUP)	5	0.735	-	ns	-	-	ns	ns	ns	ns	ns	-	-	A	-	-	A	A	A	A	A	-	-	-
		FR_UFR1 (RG_URF1)	9	0.101	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	8	0.122	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.805	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.011	-	-	-	-	-	-	b	-49	66	-13	-	-	-	-	-	-	AB	B	A	AB	No	No
		FR_FR2 (RG_FOUKI)	8	0.028	-	b	-46	**-67**	-41	-45	**-64**	-54	-40	-56	-	A	AB	B	AB	AB	B	AB	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	5	0.092	-	ns	ns	ns	-	-	-	ns	ns	ns	-	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.180	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	7	0.347	-	ns	ns	ns	ns	ns	ns	-	ns	ns	-	A	A	A	A	A	A	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.105	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.058	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	AB	A	AB	B	AB	AB	No	No
		GH_PC2 (RG_FODPO)	6	0.558	-	ns	ns	ns	-	-	ns	ns	ns	ns	-	A	A	A	-	-	A	A	A	A	No	No
		FR_FRABCH (RG_FO22)	6	0.734	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FR5	7	0.737	-	ns	ns	ns	ns	ns	ns	-	ns	ns	-	A	A	A	A	A	A	-	A	A	No	No
Total Selenium	Reference	FR_HC3 (RG_HENUP)	8	<0.001	b	4.5	-	**22**	**30**	**33**	**31**	**38**	**22**	**38**	C	BC	-	AB	A	A	A	A	AB	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	-3.3	-4.1	7.0	**16**	**19**	**20**	**24**	**20**	**26**	C	C	C	BC	AB	AB	AB	A	AB	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.012	b	54	22	13	-12	67	13	27	55	-2.0	AB	AB	AB	AB	B	A	AB	AB	AB	AB	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.039	-	-	-	-	-	-	b	-	-4.4	18	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-8.7	8.4	**18**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	21	1.4	-4.4	-3.2	**29**	**35**	21	**53**	**77**	DE	CD	DE	E	DE	BC	BC	CDE	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	16	-7.4	-16	-	-	-	13	**58**	**63**	BC	B	BC	C	-	-	-	BC	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.594	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	3.4	-3.9	-21	-22	11	-1.9	-	**78**	**55**	BC	B	BC	C	C	B	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.018	-	-	-	b	-18	10	55	12	1.2	-5.3	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-3.3	**25**	14	14	**38**	**55**	-	-	-	C	C	B	BC	BC	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	**16**	**16**	5.7	-	-	**25**	**31**	**25**	**39**	D	BC	BC	CD	-	-	AB	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-3.8	7.2	**20**	9.7	**18**	**36**	-	-	-	C	C	BC	AB	BC	B	A	No	↑
		FR_FR5	8	<0.001	b	18	**22**	10	8.9	**21**	**24**	-	**32**	**48**	C	BC	AB	BC	BC	B	AB	-	AB	A	No	No
Sulphate	Reference	FR_HC3 (RG_HENUP)	8	0.005	b	-4.1	-	23	23	**32**	21	24	16	24	B	B	-	AB	AB	A	AB	AB	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	0.097	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.069	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.007	-	-	-	-	-	-	b	-	-8.1	16	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-7.7	7.3	**20**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	14	0.78	4.0	2.2	19	23	14	**26**	**55**	C	BC	C	BC	BC	BC	BC	BC	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	7.2	-9.9	-6.7	-	-	-	9.3	**28**	**48**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.656	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	9.5	-2.4	-4.1	-6.4	20	9.2	-	**64**	**60**	B	B	B	B	B	B	B	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.077	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-3.5	16	7.6	11	15	**34**	-	-	-	BC	C	AB	BC	BC	ABC	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	9.2	8.0	10	-	-	**33**	**29**	**18**	**36**	E	DE	DE	CDE	-	-	AB	ABC	BCD	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	0.18	4.8	10	4.5	6.6	**23**	-	-	-	B	B	B	AB	B	B	A	No	↑
		FR_FR5	8	<0.001	b	10	15	12	14	**21**	**22**	-	21	**40**	C	BC	ABC	BC	BC	AB	AB	-	ABC	A	No	No
Total Dissolved Solids	Reference	FR_HC3 (RG_HENUP)	8	0.004	b	-0.45	-	7.8	5.7	11	**12**	9.4	9.8	2.1	B	AB	-	AB	AB	AB	A	AB	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	0.004	b	6.1	4.8	**13**	9.1	6.2	7.1	4.9	6.8	0.95	B	AB	AB	A	AB	AB	AB	AB	AB	B	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.083	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.029	-	-	-	-	-	-	b	-	-1.7	11	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-5.9	5.7	**14**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	7.9	3.6	6.2	6.8	17	**21**	12	**24**	**39**	D	BCD	CD	BCD	BCD	BCD	ABC	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	8.0	-3.7	-3.3	-	-	-	9.3	**25**	**33**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.800	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	9.1	0.63	-1.4	-2.2	21	9.5	-	**49**	**42**	CD	CD	CD	D	D	BC	CD	-	A	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.056	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-4.5	8.1	4.6	5.7	9.4	**25**	-	-	-	B	B	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	9.8	**10**	8.2	-	-	**21**	**22**	**13**	**20**	C	ABC	AB	BC	-	-	A	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-1.4	4.9	7.1	2.5	7.1	**17**	-	-	-	B	B	B	AB	B	AB	A	No	No
		FR_FR5	8	0.006	b	10	13	7.8	10	15	11	-	18	**23**	B	AB	AB	AB	AB	AB	AB	-	AB	A	No	No

Table B.3. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring?										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 to 2020) and the previous year (2020)?[c]											
					Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]																					
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Uranium	Reference	FR_HC3 (RG_HENUP)	8	0.003	b	2.3	-	5.2	**15**	12	12	**16**	8.9	11	B	AB	-	AB	A	AB	AB	A	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	4.7	3.3	5.2	7.0	6.5	**10**	**9.4**	**11**	**10**	B	AB	AB	AB	AB	AB	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.092	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.006	-	-	-	-	-	-	b	-	-0.59	**18**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	2.6	**14**	**25**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	11	-4.7	0.72	9.9	**25**	**30**	**25**	**34**	**59**	C	BC	C	C	BC	B	AB	B	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	0.65	-11	-14	-	-	-	17	**31**	**52**	CD	CD	D	D	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.370	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	3.9	-5.7	-12	-3.7	13	12	-	**64**	**60**	B	B	B	B	B	B	B	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.012	-	-	-	b	-6.0	11	**57**	23	5.5	13	-	-	-	B	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-1.6	**21**	**17**	**23**	**31**	**51**	-	-	-	C	C	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	4.8	4.5	4.2	-	-	**33**	**35**	**27**	**44**	C	C	C	C	-	-	AB	AB	B	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	3.1	**11**	**22**	**19**	**24**	**45**	-	-	-	E	DE	CD	BC	BC	B	A	↑	↑
		FR_FR5	8	<0.001	b	7.0	4.2	3.3	13	17	18	-	**32**	**45**	C	C	C	C	BC	BC	BC	-	AB	A	No	No
Total Zinc	Reference	FR_HC3 (RG_HENUP)	1	0.843	ns	ns	-	-	-	-	-	-	-	-	A	A	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	4	0.643	ns	-	-	-	-	ns	-	ns	ns	ns	A	-	-	-	-	A	-	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	3	0.258	ns	ns	-	-	-	-	-	ns	ns	-	A	A	-	-	-	-	-	A	A	-	-	-
		FR_MULTIPLATE (RG_MP1)	2	0.028	-	-	-	-	-	-	b	-	81	72	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.004	-	-	-	-	-	-	b	-0.00051	**76**	64	-	-	-	-	-	-	B	AB	A	AB	No	No
		FR_FR2 (RG_FOUKI)	8	<0.001	b	35	-	-42	-34	-2.2	-14	-25	19	16	ABC	A	-	C	BC	ABC	ABC	ABC	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.078	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.009	-	-	-	-	-	-	-	-	b	**19**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	29	-17	-38	-41	-26	-13	-	34	**73**	BC	AB	BC	C	C	C	BC	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	5	<0.001	-	-	-	b	-	56	67	49	**198**	**235**	-	-	-	B	-	B	B	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	2	0.504	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		GH_PC2 (RG_FODPO)	5	0.549	ns	ns	ns	-	-	-	ns	-	ns	ns	A	A	A	-	-	-	A	-	A	A	No	No
		FR_FRABCH (RG_FO22)	3	0.801	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	A	-	A	A	A	No	No
		FR_FR5	2	0.397	ns	ns	ns	-	-	-	-	-	-	-	A	A	A	-	-	-	-	-	-	-	-	-

P-value < 0.05 (annual variation).
> 20% Decrease in concentration.
> 33% Decrease in concentration.
> 43% Decrease in concentration.
> 50% Decrease in concentration.
> 25% Increase in concentration.
> 50% Increase in concentration.
> 75% Increase in concentration.
> 100% Increase in concentration.
***Bold** **Significant increase or decrease from base year.**

Notes: Temporal trends were only conducted for areas that have a complete routine water quality monitoring dataset. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and analyzed together with the biological monitoring area depicted in parenthesis. Only constituents considered mine-related under the Adaptive Management Plan (AMP) and that have early warning triggers, and orthophosphate and total phosphorus were analyzed for temporal trends.

[a] The presence of annual variation was determined by a significant Year term (α = 0.05) using an ANOVA with factors Year and Month.

[b] Magnitude of Difference (MOD) was calculated as the concentrations in each year minus the concentration in the first year divided by the concentration in the fist year × 100.

[c] Significance between each year determined using all pairwise comparisons with Tukey correction.

[d] "ns" = not significant year term so no post-hoc comparison tested; "-" insufficient data for comparison, where insufficient data is less than 6 months of recorded data.

Table B.4: Pearson Correlations of Annual Water Analytes and PCA Axis Scores, FRO LAEMP, 2018 to 2021

Variable	PCA1 (50%)		PCA2 (26%)	
	P-value	r_s	P-value	r_s
Temperature (C)	<0.001	0.718	0.303	-0.155
Total Dissolved Solids (mg/L)	<0.001	0.879	0.012	-0.367
Alkalinity (mg/L as CaCO3)	<0.001	0.798	0.011	-0.373
Nitrate (mg/L)	<0.001	0.884	0.020	-0.342
Nitrite (mg/L)	<0.001	0.858	0.644	-0.0699
Ammonia (mg/L)	0.055	0.285	0.193	0.195
Phosphorus (mg/L)	0.278	0.163	<0.001	0.879
Sulphate (mg/L)	<0.001	0.868	0.006	-0.401
Dissolved Aluminum (mg/L)	0.116	-0.235	0.002	0.446
Total Antimony (mg/L)	<0.001	0.947	0.539	-0.0929
Total Arsenic (mg/L)	0.019	0.344	<0.001	0.823
Total Barium (mg/L)	<0.001	0.743	0.466	-0.110
Dissolved Cadmium (mg/L)	<0.001	0.958	0.309	-0.153
Total Chromium (mg/L)	0.609	0.0774	<0.001	0.845
Total Cobalt (mg/L)	<0.001	0.742	0.007	0.395
Total Copper (mg/L)	0.017	0.350	<0.001	0.775
Total Iron (mg/L)	<0.001	0.485	<0.001	0.816
Total Lead (mg/L)	0.011	0.370	<0.001	0.865
Total Lithium (mg/L)	<0.001	0.955	0.114	-0.236
Total Manganese (mg/L)	<0.001	0.751	<0.001	0.519
Total Molybdenum (mg/L)	<0.001	0.881	0.209	-0.189
Total Nickel (mg/L)	<0.001	0.932	0.847	-0.0292
Total Selenium (mg/L)	<0.001	0.907	0.033	-0.314
Total Thallium (mg/L)	0.001	0.455	<0.001	0.740
Total Uranium (mg/L)	<0.001	0.870	0.008	-0.385
Total Zinc (mg/L)	<0.001	0.499	<0.001	0.698

$r_s \geq 0.6$ or ≤ -0.6.

Significant correlation (p-value < 0.05).

Notes: Annual water summary calculated as the average of seasonal means (Winter, Spring, Summer, and Fall). Stations without data for all four seasons in a given year were excluded.

Table B.5: Concentrations of Selenium Species Measured in Water Samples from Fording River, June to December, FRO LAEMP, 2021

Water Body		Biological Monitoring Area	Sample Date	Selenate (µg/L)	Selenite (µg/L)	Dimethylselenoxide (µg/L)	Methylseleninic Acid (µg/L)	Methaneselenonic Acid (µg/L)	Selenocyanate (µg/L)	Selenomethionine (µg/L)	Selenosulphate (µg/L)	Unknown Species (µg/L)	Sum of Dimethylselenoxide and Methylseleninic Acid (µg/L)	Sum of Species (µg/L)	Ratio of Selenate:Non-Selenate Selenium Speciesa
Henretta Creek	Reference	RG_HENUP	16-Jun-21	0.31	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.33	14.52
			16-Sep-21	1.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	1.18	-
Fording River		RG_FO26	14-Jun-21	0.42	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.44	22.32
			15-Sep-21	0.41	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.41	-
		RG_UFR1	15-Jun-21	0.39	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.43	9.80
			20-Sep-21	0.69	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.71	27.40
	Mine-Exposed	RG_FRSCH2	15-Sep-21	87.10	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	87.19	1,024.71
			14-Dec-21	86.20	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	86.27	1,267.65
		RG_FRGHSC	19-Sep-21	107.00	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	107.10	1,028.85
			13-Dec-21	99.60	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	99.70	1,048.42
		RG_FODHE	14-Jun-21	4.20	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	4.25	91.30
			13-Sep-21	13.60	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	13.68	181.33
			15-Dec-21	34.20	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	34.30	356.25
		RG_FOUCL	14-Jun-21	6.90	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	6.95	138.00
			13-Sep-21	16.80	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	16.88	210.00
			15-Dec-21	11.90	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	11.95	238.00
		RG_FOUNGD	15-Jun-21	8.52	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	8.58	139.67
			16-Sep-21	37.80	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	37.92	325.86
			15-Dec-21	57.20	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	57.38	323.16
		RG_FODNGD	16-Jun-21	10.00	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	10.07	151.52
			17-Sep-21	40.90	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	41.03	312.21
			15-Dec-21	70.30	0.39	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	70.69	181.65
		RG_MP1	14-Jun-21	15.10	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	15.21	136.04
			15-Sep-21	49.60	0.24	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	49.84	211.06
			15-Dec-21	63.80	0.28	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	64.08	227.86
		RG_FOUSH	15-Jun-21	12.30	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	12.42	106.96
			17-Sep-21	40.70	0.38	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	41.08	108.53
			15-Dec-21	67.10	0.32	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	67.42	210.34
		RG_FOUKI	17-Jun-21	15.70	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	15.83	123.62
			20-Sep-21	40.00	0.48	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	40.48	83.51
			14-Dec-21	62.60	0.29	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	62.89	216.61
		RG_FOBKS	16-Jun-21	14.00	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	14.13	108.53
			9-Sep-21	43.80	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	44.07	164.04
			14-Dec-21	62.60	0.28	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	62.88	223.57
		RG_SCOUTDS	16-Jun-21	18.70	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	18.82	150.81
			14-Sep-21	72.30	0.40	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	72.71	176.34
			9-Dec-21	74.90	0.42	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	75.32	180.05
		RG_FOBSC	17-Jun-21	52.20	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	52.31	466.07
			13-Sep-21	83.20	0.51	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	83.73	158.17
			9-Dec-21	77.90	0.41	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	78.31	191.40
		RG_FOBCP	17-Jun-21	38.70	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	38.81	348.65
			13-Sep-21	79.70	0.38	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	80.10	199.75
			14-Dec-21	101.00	0.37	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	101.37	273.71
		RG_FRCP1SW	17-Jun-21	38.20	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	38.31	335.09
			15-Sep-21	76.20	0.38	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	76.60	190.98
		RG_FRUPO	18-Jun-21	58.90	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	59.01	560.95
			19-Sep-21	112.00	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	112.13	896.00
			13-Dec-21	95.60	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	95.72	824.14
		RG_FODPO	17-Jun-21	50.90	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	51.01	454.46
			11-Sep-21	84.30	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	84.48	458.15
			14-Dec-21	88.30	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	88.38	1,063.86
		RG_FO22	18-Jun-21	49.50	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	49.61	462.62
			12-Sep-21	87.40	0.19	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	87.61	424.27
			13-Dec-21	105.00	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	105.17	621.30
		RG_FOUEW	18-Jun-21	42.90	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	43.00	429.00
			11-Sep-21	79.20	0.25	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	79.45	323.27
			13-Dec-21	95.10	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	95.28	525.41

Note: "-" indicates no data available.

Table B.6. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 - 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Antimony	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	1	0.682	-	-	-	-	-	ns	-	-	ns	-	-	-	-	-	-	A	-	-	A	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	2	0.123	-	-	ns	-	-	ns	-	-	ns	-	-	-	A	-	-	A	-	-	A	-	-	-
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	21	**41**	-	-	-	-	-	-	B	-	AB	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	29	**45**	**64**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	15	13	1.4	**-25**	-10	-15	-2.4	12	**34**	BC	AB	AB	BC	D	BCD	CD	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.021	b	8.7	6.3	8.6	-	-	-	-6.7	6.6	**35**	B	AB	AB	AB	-	-	-	B	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**18**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	1.4	0.17	-10	**-29**	**-26**	-23	-	8.2	19	ABC	AB	ABC	BCD	D	D	CD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-18	-10	2.0	4.1	11	19	-	-	-	ABC	C	BC	AB	AB	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.174	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.005	b	21	-8.8	-14	-	-	-32	22	-13	14	AB	A	AB	AB	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	16	**30**	3.9	13	20	**29**	-	-	-	B	AB	A	B	AB	AB	A	No	No
		FR_FR5	8	0.452	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	A	A	A	A	A	A	A	-	A	A	No	No
Total Barium	Reference	FR_HC3 (RG_HENUP)	8	0.877	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**17**	**21**	**20**	**17**	**18**	10	4.5	9.3	5.8	D	ABC	A	A	ABC	AB	ABCD	CD	ABCD	BCD	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.078	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.002	-	-	-	-	-	-	b	-	-5.3	**-13**	-	-	-	-	-	-	A	-	AB	B	No	No
		FR_FRNTP (RG_FOUSH)	3	0.010	-	-	-	-	-	-	b	-6.6	**-9.0**	**-9.3**	-	-	-	-	-	-	A	AB	B	B	No	No
		FR_FR2 (RG_FOUKI)	9	0.001	b	**18**	13	15	7.2	13	5.9	-0.71	0.68	5.1	B	A	AB	AB	AB	AB	AB	B	B	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.001	b	14	9.0	**20**	-	-	-	-0.36	1.4	4.5	B	AB	AB	A	-	-	-	B	B	AB	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.343	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	**17**	10	15	6.9	**16**	9.8	-	-3.5	0.31	BCD	A	ABC	AB	ABCD	A	ABCD	-	D	CD	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.004	-	-	-	b	-7.7	-0.37	-32	-28	-0.53	2.5	-	-	-	AB	AB	AB	B	AB	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-8.2	-5.8	**-12**	**-16**	**-13**	**-18**	-	-	-	A	ABC	AB	BC	BC	BC	C	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	6.8	-3.6	-8.1	-	-	**-19**	**-24**	**-30**	**-26**	AB	A	AB	B	-	-	C	CD	D	CD	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-5.2	-5.4	**-11**	**-18**	**-19**	**-18**	-	-	-	A	AB	AB	BC	CD	D	CD	No	No
		FR_FR5	8	<0.001	b	11	13	0.58	-0.92	-0.15	-10	-	-7.5	**-14**	AB	A	A	AB	AB	AB	BC	-	BC	C	No	No
Total Boron	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_MULTIPLATE (RG_MP1)	1	0.147	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	1	0.075	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	2.7	-3.2	-0.65	**-22**	-12	**-15**	**-18**	-10	5.3	ABC	AB	ABCD	ABC	E	CDE	DE	E	BCDE	A	No	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	4.9	1.4	1.7	-	-	-	**-25**	-14	9.0	AB	A	AB	AB	-	-	-	C	BC	A	No	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**18**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	2.3	0.63	-1.6	**-23**	**-18**	-15	-	-8.2	3.7	AB	AB	AB	ABC	D	CD	BCD	-	ABCD	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	**-24**	**-16**	**-15**	**-20**	-9.2	6.8	-	-	-	AB	D	CD	CD	D	BC	A	No	↑
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	**-25**	**-17**	-6.9	**-14**	-4.3	5.2	-	-	-	A	D	CD	ABC	BCD	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	-0.30	5.7	-1.5	-	-	**-21**	-6.1	**-16**	-7.1	A	A	A	A	-	-	C	ABC	BC	AB	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	**-18**	**-17**	**-12**	**-9.0**	**-12**	-3.2	-	-	-	A	D	D	CD	BC	CD	AB	No	↑
		FR_FR5	7	<0.001	b	-7.3	-5.7	-11	**-29**	-	**-26**	-	**-23**	**-18**	A	AB	AB	ABC	D	-	CD	-	BCD	BCD	No	No
Dissolved Cadmium	Reference	FR_HC3 (RG_HENUP)	3	0.793	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	A	-	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	0.257	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.022	b	22	11	-3.7	-5.0	14	28	17	22	16	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.003	-	-	-	-	-	-	b	-	12	**49**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	16	**45**	**62**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	0.305	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.119	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.025	-	-	-	-	-	-	-	-	b	**17**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	-19	5.8	-30	**-55**	-40	-20	-	65	70	ABC	CD	ABC	CD	D	CD	BCD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-8.1	-16	-22	-20	**147**	**175**	-	-	-	B	B	B	B	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-11	9.2	28	6.9	**45**	**33**	-	-	-	CD	D	BCD	ABC	BCD	A	AB	No	No
		GH_PC2 (RG_FODPO)	6	0.002	b	8.6	-0.13	-21	-	-	-3.9	-	1.0	15	AB	A	AB	B	-	-	AB	-	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	8.0	19	**33**	6.9	**31**	**48**	-	-	-	D	CD	BCD	AB	D	ABC	A	No	No
		FR_FR5	8	0.023	b	-13	-11	-18	-27	-25	-11	-	2.7	-2.8	A	A	A	A	A	A	A	-	A	A	No	No

Table B.6. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 - 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Dissolved Cobalt	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Mine-exposed	FR_FR1 (RG_FODHE)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_MULTIPLATE (RG_MP1)	1	<0.001	-	-	-	-	-	-	-	-	b	**88**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	1	0.040	-	-	-	-	-	-	-	-	b	45	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	-13	-18	-28	-37	-27	-9.3	-7.1	25	**103**	BC	BC	BC	C	C	C	BC	BC	B	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	-27	-31	-44	-	-	-	-22	-8.3	**101**	B	B	B	B	-	-	-	B	B	A	↑	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**92**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	6	<0.001	b	-9.7	-23	-36	-	-	-39	-	10	**81**	BC	BC	BC	C	-	-	C	-	B	A	↑	↑
		FR_FRCP1 (RG_FOBCP)	4	<0.001	-	-	-	b	-	-	25	31	**80**	**196**	-	-	-	C	-	-	C	BC	B	A	↑	↑
		FR_FRRD (RG_FRUPO)	5	<0.001	-	-	-	b	-13	-	29	**292**	**91**	21	-	-	-	C	C	-	BC	A	B	BC	No	No
		GH_PC2 (RG_FODPO)	1	0.034	-	-	-	-	-	-	-	-	b	-17	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FRABCH (RG_FO22)	3	<0.001	-	-	-	-	-	-	b	**100**	**35**	4.7	-	-	-	-	-	-	C	A	B	C	No	↓
		FR_FR5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Lithium	Reference	FR_HC3 (RG_HENUP)	5	0.017	b	3.5	-	36	37	30	-	-	**86**	-	B	B	-	AB	AB	AB	-	-	A	-	-	-
		FR_UFR1 (RG_URF1)	9	0.061	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	B	AB	AB	AB	AB	AB	AB	AB	A	AB	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.002	b	38	26	35	13	**69**	26	42	**82**	51	C	ABC	ABC	ABC	BC	AB	ABC	ABC	A	ABC	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	3.6	**42**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	3.2	16	**58**	-	-	-	-	-	-	B	B	B	A	↑	↑
		FR_FR2 (RG_FOUKI)	9	<0.001	b	**31**	**33**	**60**	**59**	**74**	**55**	**51**	**63**	**140**	D	C	C	BC	BC	B	BC	BC	BC	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	20	16	**37**	-	-	-	**36**	**54**	**125**	D	CD	CD	BC	-	-	-	BC	B	A	↑	↑
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**38**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	23	23	**36**	**43**	**66**	**40**	-	**77**	**118**	E	DE	DE	CD	BCD	ABC	BCD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-5.9	6.7	19	0.77	13	**50**	-	-	-	BC	C	BC	B	BC	BC	A	↑	↑
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	2.9	**18**	**16**	11	**26**	**63**	-	-	-	D	CD	BC	BC	BCD	B	A	↑	↑
		GH_PC2 (RG_FODPO)	7	<0.001	b	19	**30**	**43**	-	-	**51**	**90**	**69**	**129**	D	CD	C	BC	-	-	BC	AB	B	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	12	**16**	**19**	**17**	**23**	**58**	-	-	-	C	BC	B	B	B	B	A	↑	↑
		FR_FR5	8	<0.001	b	13	15	**36**	**62**	**64**	**55**	-	**69**	**111**	E	E	DE	CD	BC	B	BC	-	B	A	↑	↑
Total Manganese	Reference	FR_HC3 (RG_HENUP)	8	0.422	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**500**	**732**	77	58	73	53	144	**210**	123	D	AB	A	CD	CD	CD	CD	BCD	ABC	BCD	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	**107**	4.2	-44	-26	-31	-25	-43	-28	**-61**	B	A	AB	BC	BC	BC	BC	BC	BC	C	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.023	-	-	-	-	-	-	b	-	**119**	44	-	-	-	-	-	-	B	-	A	AB	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	73	**116**	**248**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	32	-29	-24	-22	8.6	-14	-26	-17	-6.8	AB	A	B	B	B	AB	AB	B	B	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.247	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.002	-	-	-	-	-	-	-	-	b	**29**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	0.002	b	17	-27	-26	-23	-32	-19	-	-27	12	AB	A	AB	AB	AB	B	AB	-	AB	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.002	-	-	-	b	1.8	41	-37	-42	37	89	-	-	-	AB	AB	AB	B	B	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.047	-	-	-	b	63	30	-28	-11	3.6	0.021	-	-	-	AB	A	AB	B	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	49	7.7	8.7	-	-	-38	153	-13	102	ABC	AB	ABC	ABC	-	-	C	A	BC	A	No	↑
		FR_FRABCH (RG_FO22)	6	0.107	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FR5	8	0.100	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	AB	A	AB	AB	AB	AB	B	-	AB	AB	No	No
Total Molybdenum	Reference	FR_HC3 (RG_HENUP)	8	0.101	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	A	A	-	A	A	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	**6.9**	5.2	6.1	**6.7**	6.1	5.3	0.66	2.7	**7.7**	C	AB	ABC	ABC	AB	ABC	ABC	BC	ABC	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.001	b	**23**	16	**19**	6.9	**20**	9.3	9.1	15	13	B	A	AB	A	AB	A	AB	AB	AB	AB	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	12	**29**	-	-	-	-	-	-	B	-	AB	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	20	**40**	**52**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	11	6.9	0.15	-12	-9.9	-2.6	2.4	21	**33**	BCD	ABC	BCD	BCD	D	CD	CD	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.002	b	1.4	0.27	3.1	-	-	-	2.2	19	**35**	B	B	B	B	-	-	-	AB	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.118	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	1.6	-2.7	-11	-21	-11	-15	-	**62**	**77**	BC	B	BC	BC	C	BC	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-12	-7.1	5.0	10	**61**	**75**	-	-	-	BC	C	BC	BC	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	0.51	9.1	-8.5	3.9	19	17	-	-	-	AB	AB	AB	B	AB	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.004	b	-2.9	-14	-12	-	-	-2.2	**85**	4.5	31	B	B	B	B	-	-	B	A	AB	AB	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	8.0	3.7	5.0	8.4	**27**	**45**	-	-	-	C	C	C	C	C	B	A	↑	↑
		FR_FR5	8	<0.001	b	0.35	-7.6	-11	-0.67	-6.9	-14	-	10	12	ABC	ABC	ABC	C	ABC	BC	C	-	AB	A	No	No

Table B.6. Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 - 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Nickel	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	2	0.219	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	**62**	27	-3.5	-1.8	11	19	-0.74	8.8	-18	BC	A	AB	BC	BC	ABC	ABC	BC	BC	C	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	**59**	**101**	-	-	-	-	-	-	B	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	38	**115**	**143**	-	-	-	-	-	-	B	B	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	8.0	**-39**	**-37**	-21	-12	-12	13	**54**	**101**	CD	C	E	E	DE	CD	CD	BC	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	-2.4	**-41**	**-43**	-	-	-	15	**57**	**97**	C	C	D	D	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.006	-	-	-	-	-	-	-	-	b	**13**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	-3.6	**-33**	**-45**	**-40**	-27	-27	-	**52**	**56**	B	B	C	C	C	BC	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.013	-	-	-	b	-8.3	14	**66**	20	22	39	-	-	-	B	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	0.087	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	AB	A	B	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	4.3	-47	-43	-	-	-53	8.2	-35	34	AB	AB	B	B	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	**78**	**75**	36	32	**63**	**120**	-	-	-	C	AB	AB	BC	BC	AB	A	No	No
		FR_FR5	8	0.061	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	AB	AB	AB	B	A	AB	AB	-	AB	AB	No	No
Nitrate-N	Reference	FR_HC3 (RG_HENUP)	8	<0.001	b	20	-	**64**	**63**	**50**	**60**	**61**	**40**	**43**	C	BC	-	A	A	AB	A	A	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	3.2	**169**	**203**	**227**	**230**	**144**	**176**	**134**	**132**	B	B	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	59	15	19	-17	32	-24	-21	-6.1	-35	ABCD	A	ABC	ABC	BCD	AB	CD	CD	BCD	D	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	-7.7	**34**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	2.7	7.6	**34**	-	-	-	-	-	-	B	B	B	A	↑	↑
		FR_FR2 (RG_FOUKI)	9	<0.001	b	26	14	**34**	**55**	**58**	**40**	**45**	**68**	**122**	E	CDE	DE	BCD	BC	BC	BCD	BCD	B	A	↑	↑
		FR_FR3 (RG_FOBKS)	6	<0.001	b	19	3.7	6.6	-	-	-	28	**53**	**99**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	<0.001	-	-	-	-	-	-	-	-	b	**24**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	17	5.4	3.4	21	32	19	-	**54**	**68**	C	BC	C	C	BC	ABC	BC	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	0.56	7.6	17	0.0048	17	**35**	-	-	-	B	B	B	AB	B	AB	A	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-4.2	3.0	-0.020	-2.9	12	**36**	-	-	-	B	B	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	0.014	b	21	24	7.5	-	-	-12	7.7	5.9	27	AB	AB	A	AB	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	2.5	0.29	-5.5	-9.9	-1.0	**20**	-	-	-	B	B	B	B	B	B	A	↑	↑
		FR_FR5	8	<0.001	b	**25**	**32**	13	15	17	3.3	-	14	**36**	D	ABC	AB	BCD	ABCD	ABCD	CD	-	ABCD	A	No	No
Nitrite-N	Reference	FR_HC3 (RG_HENUP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	2	0.438	-	-	-	-	-	ns	-	-	ns	ns	-	-	-	-	-	A	-	-	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	<0.001	b	91	-14	-29	-42	3.1	11	-46	-50	-38	ABC	A	BC	BC	BC	ABC	AB	BC	C	BC	No	No
		FR_MULTIPLATE (RG_MP1)	2	<0.001	-	-	-	-	-	-	b	-	**122**	**211**	-	-	-	-	-	-	B	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	112	**242**	**373**	-	-	-	-	-	-	B	AB	A	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	3.4	-44	**-53**	**-73**	**-75**	**-69**	**-54**	3.4	59	AB	AB	BC	CD	D	D	CD	CD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	0.023	b	5.1	-32	-32	-	-	-	-31	-2.9	27	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.012	-	-	-	-	-	-	-	-	b	**55**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	2.2	-44	**-52**	**-72**	**-68**	**-67**	-	-8.0	18	AB	A	BC	CD	D	CD	CD	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	<0.001	-	-	-	b	-29	-12	**-40**	8.6	**106**	**128**	-	-	-	B	BC	BC	C	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.140	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		GH_PC2 (RG_FODPO)	7	0.002	b	20	-10	-43	-	-	-51	9.3	-25	7.3	AB	A	AB	B	-	-	B	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	0.026	-	-	-	b	38	66	40	33	32	**116**	-	-	-	B	AB	AB	AB	AB	AB	A	No	No
		FR_FR5	8	<0.001	b	7.3	-14	**-49**	**-42**	-26	-27	-	-37	**-41**	A	A	AB	B	B	AB	AB	-	AB	B	No	No
Orthophosphate	Reference	FR_HC3 (RG_HENUP)	5	0.191	ns	-	-	-	-	ns	ns	ns	ns	ns	A	-	-	-	-	A	A	A	A	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	67	**115**	27	**69**	**114**	58	**82**	**133**	**79**	C	ABC	A	BC	AB	A	ABC	AB	A	AB	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	7	0.056	ns	ns	ns	-	-	ns	ns	ns	ns	ns	A	A	A	-	-	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.390	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.643	-	-	-	-	-	-	ns	ns	ns	ns	-	-	-	-	-	-	A	A	A	A	No	No
		FR_FR2 (RG_FOUKI)	7	0.007	-	-	b	-40	-21	32	23	-19	16	9.6	-	-	AB	B	AB	A	AB	AB	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	3	<0.001	-	-	b	-	-	-	-	-32	**65**	-14	-	-	B	-	-	-	-	B	A	B	No	↓
		FR_SCOUTDS (RG_SCOUTDS)	1	0.153	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	5	0.013	b	-	21	-17	-	-	62	-	34	41	AB	-	AB	B	-	-	A	-	AB	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.074	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.039	-	-	-	b	-27	20	34	-5.1	28	14	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		GH_PC2 (RG_FODPO)	7	0.033	b	3.3	33	8.3	-	-	42	6.0	**68**	18	B	AB	AB	AB	-	-	AB	AB	A	AB	No	No
		FR_FRABCH (RG_FO22)	5	0.008	-	-	-	-	b	**106**	**94**	60	**115**	73	-	-	-	-	B	A	A	AB	A	AB	No	No
		FR_FR5	3	0.163	-	-	ns	-	-	-	ns	-	ns	ns	-	-	A	-	-	-	A	-	A	A	No	No

Table B.6. **Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021**

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 - 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Phosphorus	Reference	FR_HC3 (RG_HENUP)	5	0.735	-	ns	-	-	ns	ns	ns	ns	ns	-	-	A	-	-	A	A	A	A	A	-	-	-
		FR_UFR1 (RG_URF1)	9	0.101	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	8	0.122	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.805	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.011	-	-	-	-	-	-	b	-49	66	-13	-	-	-	-	-	-	AB	B	A	AB	No	No
		FR_FR2 (RG_FOUKI)	8	0.028	-	b	-46	**-67**	-41	-45	**-64**	-54	-40	-56	-	A	AB	B	AB	AB	B	AB	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	5	0.092	-	ns	ns	ns	-	-	-	ns	ns	ns	-	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.180	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	7	0.347	-	ns	ns	ns	ns	ns	ns	-	ns	ns	-	A	A	A	A	A	A	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.105	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FRRD (RG_FRUPO)	6	0.058	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	AB	A	AB	B	AB	AB	No	No
		GH_PC2 (RG_FODPO)	6	0.558	-	ns	ns	ns	-	-	ns	ns	ns	ns	-	A	A	A	-	-	A	A	A	A	No	No
		FR_FRABCH (RG_FO22)	6	0.734	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	A	A	A	A	A	A	A	No	No
		FR_FR5	7	0.737	-	ns	ns	ns	ns	ns	ns	-	ns	ns	-	A	A	A	A	A	A	-	A	A	No	No
Total Selenium	Reference	FR_HC3 (RG_HENUP)	8	<0.001	b	4.5	-	**22**	**30**	**33**	**31**	**38**	**22**	**38**	C	BC	-	AB	A	A	A	A	AB	A	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	-3.3	-4.1	7.0	**16**	**19**	**20**	**24**	**20**	**26**	C	C	C	BC	AB	AB	AB	A	AB	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.012	b	54	22	13	-12	67	13	27	55	-2.0	AB	AB	AB	AB	B	A	AB	AB	AB	AB	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.039	-	-	-	-	-	-	b	-	-4.4	18	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-8.7	8.4	**18**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	21	1.4	-4.4	-3.2	**29**	**35**	21	**53**	**77**	DE	CD	DE	E	DE	BC	BC	CDE	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	16	-7.4	-16	-	-	-	13	**58**	**63**	BC	B	BC	C	-	-	-	BC	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.594	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	3.4	-3.9	-21	-22	11	-1.9	-	**78**	**55**	BC	B	BC	C	C	B	BC	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.018	-	-	-	b	-18	10	55	12	1.2	-5.3	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-3.3	**25**	14	14	**38**	**55**	-	-	-	C	C	B	BC	BC	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	**16**	**16**	5.7	-	-	**25**	**31**	**25**	**39**	D	BC	BC	CD	-	-	AB	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-3.8	7.2	**20**	9.7	**18**	**36**	-	-	-	C	C	BC	AB	BC	B	A	No	↑
		FR_FR5	8	<0.001	b	18	**22**	10	8.9	**21**	**24**	-	**32**	**48**	C	BC	AB	BC	BC	B	AB	-	AB	A	No	No
Sulphate	Reference	FR_HC3 (RG_HENUP)	8	0.005	b	-4.1	-	23	23	**32**	21	24	16	24	B	B	-	AB	AB	A	AB	AB	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	0.097	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.069	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.007	-	-	-	-	-	-	b	-	-8.1	16	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-7.7	7.3	**20**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	14	0.78	4.0	2.2	19	23	14	**26**	**55**	C	BC	C	BC	BC	BC	BC	BC	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	7.2	-9.9	-6.7	-	-	-	9.3	**28**	**48**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.656	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	9.5	-2.4	-4.1	-6.4	20	9.2	-	**64**	**60**	B	B	B	B	B	B	B	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.077	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-3.5	16	7.6	11	15	**34**	-	-	-	BC	C	AB	BC	BC	ABC	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	9.2	8.0	10	-	-	**33**	**29**	**18**	**36**	E	DE	DE	CDE	-	-	AB	ABC	BCD	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	0.18	4.8	10	4.5	6.6	**23**	-	-	-	B	B	B	AB	B	B	A	No	↑
		FR_FR5	8	<0.001	b	10	15	12	14	**21**	**22**	-	21	**40**	C	BC	ABC	BC	BC	AB	AB	-	ABC	A	No	No
Total Dissolved Solids	Reference	FR_HC3 (RG_HENUP)	8	0.004	b	-0.45	-	7.8	5.7	11	**12**	9.4	9.8	2.1	B	AB	-	AB	AB	AB	A	AB	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	0.004	b	6.1	4.8	**13**	9.1	6.2	7.1	4.9	6.8	0.95	B	AB	AB	A	AB	AB	AB	AB	AB	B	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.083	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.029	-	-	-	-	-	-	b	-	-1.7	11	-	-	-	-	-	-	AB	-	B	A	No	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	-5.9	5.7	**14**	-	-	-	-	-	-	B	B	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	7.9	3.6	6.2	6.8	17	**21**	12	**24**	**39**	D	BCD	CD	BCD	BCD	BCD	ABC	BCD	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	8.0	-3.7	-3.3	-	-	-	9.3	**25**	**33**	C	BC	C	C	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.800	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	9.1	0.63	-1.4	-2.2	21	9.5	-	**49**	**42**	CD	CD	CD	D	D	BC	CD	-	A	AB	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.056	-	-	-	ns	ns	ns	ns	ns	ns	ns	-	-	-	AB	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-4.5	8.1	4.6	5.7	9.4	**25**	-	-	-	B	B	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	9.8	**10**	8.2	-	-	**21**	**22**	**13**	**20**	C	ABC	AB	BC	-	-	A	AB	AB	A	No	No
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	-1.4	4.9	7.1	2.5	7.1	**17**	-	-	-	B	B	B	AB	B	AB	A	No	No
		FR_FR5	8	0.006	b	10	13	7.8	10	15	11	-	18	**23**	B	AB	AB	AB	AB	AB	AB	-	AB	A	No	No

Table B.6. **Temporal Changes in Water Chemistry Constituents at Stations, FRO LAEMP, 2012 to 2021**

Constituents	Status	Station	Annual Variation [a]		Q1. Is there a positive or negative change in concentrations since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b) [c]										Q2. Is the 2021 annual mean greater or less than all annual historical means (2012 - 2020) and the previous year (2020)?[c]											
			DF	P-Value	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2021 vs. 2012-2020	2021 vs. 2020
Total Uranium	Reference	FR_HC3 (RG_HENUP)	8	0.003	b	2.3	-	5.2	**15**	12	12	**16**	8.9	11	B	AB	-	AB	A	AB	AB	A	AB	AB	No	No
		FR_UFR1 (RG_URF1)	9	<0.001	b	4.7	3.3	5.2	7.0	6.5	**10**	**9.4**	**11**	**10**	B	AB	AB	AB	AB	AB	A	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	9	0.092	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	A	A	A	A	A	A	A	A	A	A	No	No
		FR_MULTIPLATE (RG_MP1)	2	0.006	-	-	-	-	-	-	b	-	-0.59	**18**	-	-	-	-	-	-	B	-	B	A	↑	↑
		FR_FRNTP (RG_FOUSH)	3	<0.001	-	-	-	-	-	-	b	2.6	**14**	**25**	-	-	-	-	-	-	C	BC	AB	A	No	No
		FR_FR2 (RG_FOUKI)	9	<0.001	b	11	-4.7	0.72	9.9	**25**	**30**	**25**	**34**	**59**	C	BC	C	C	BC	B	AB	B	AB	A	No	No
		FR_FR3 (RG_FOBKS)	6	<0.001	b	0.65	-11	-14	-	-	-	17	**31**	**52**	CD	CD	D	D	-	-	-	BC	AB	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.370	-	-	-	-	-	-	-	-	ns	ns	-	-	-	-	-	-	-	-	A	A	No	No
		FR_FR4 (RG_FOBSC)	8	<0.001	b	3.9	-5.7	-12	-3.7	13	12	-	**64**	**60**	B	B	B	B	B	B	B	-	A	A	No	No
		FR_FRCP1 (RG_FOBCP)	6	0.012	-	-	-	b	-6.0	11	**57**	23	5.5	13	-	-	-	B	B	AB	A	AB	AB	AB	No	No
		FR_FRRD (RG_FRUPO)	6	<0.001	-	-	-	b	-1.6	**21**	**17**	**23**	**31**	**51**	-	-	-	C	C	B	B	B	AB	A	No	No
		GH_PC2 (RG_FODPO)	7	<0.001	b	4.8	4.5	4.2	-	-	**33**	**35**	**27**	**44**	C	C	C	C	-	-	AB	AB	B	A	No	↑
		FR_FRABCH (RG_FO22)	6	<0.001	-	-	-	b	3.1	**11**	**22**	**19**	**24**	**45**	-	-	-	E	DE	CD	BC	BC	B	A	↑	↑
		FR_FR5	8	<0.001	b	7.0	4.2	3.3	13	17	18	-	**32**	**45**	C	C	C	C	BC	BC	BC	-	AB	A	No	No
Total Zinc	Reference	FR_HC3 (RG_HENUP)	1	0.843	ns	ns	-	-	-	-	-	-	-	-	A	A	-	-	-	-	-	-	-	-	-	-
		FR_UFR1 (RG_URF1)	4	0.643	ns	-	-	-	-	ns	-	ns	ns	ns	A	-	-	-	-	A	-	A	A	A	No	No
	Mine-exposed	FR_FR1 (RG_FODHE)	3	0.258	ns	ns	-	-	-	-	-	ns	ns	-	A	A	-	-	-	-	-	A	A	-	-	-
		FR_MULTIPLATE (RG_MP1)	2	0.028	-	-	-	-	-	-	b	-	81	72	-	-	-	-	-	-	A	-	A	A	No	No
		FR_FRNTP (RG_FOUSH)	3	0.004	-	-	-	-	-	-	b	-0.00051	**76**	64	-	-	-	-	-	-	B	AB	A	AB	No	No
		FR_FR2 (RG_FOUKI)	8	<0.001	b	35	-	-42	-34	-2.2	-14	-25	19	16	ABC	A	-	C	BC	ABC	ABC	ABC	AB	AB	No	No
		FR_FR3 (RG_FOBKS)	6	0.078	ns	ns	ns	ns	-	-	-	ns	ns	ns	A	A	A	A	-	-	-	A	A	A	No	No
		FR_SCOUTDS (RG_SCOUTDS)	1	0.009	-	-	-	-	-	-	-	-	b	**19**	-	-	-	-	-	-	-	-	B	A	↑	↑
		FR_FR4 (RG_FOBSC)	8	<0.001	b	29	-17	-38	-41	-26	-13	-	34	**73**	BC	AB	BC	C	C	C	BC	-	AB	A	No	No
		FR_FRCP1 (RG_FOBCP)	5	<0.001	-	-	-	b	-	56	67	49	**198**	**235**	-	-	-	B	-	B	B	B	A	A	No	No
		FR_FRRD (RG_FRUPO)	2	0.504	-	-	-	-	-	-	ns	-	ns	ns	-	-	-	-	-	-	A	-	A	A	No	No
		GH_PC2 (RG_FODPO)	5	0.549	ns	ns	ns	-	-	-	ns	-	ns	ns	A	A	A	-	-	-	A	-	A	A	No	No
		FR_FRABCH (RG_FO22)	3	0.801	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	A	-	A	A	A	No	No
		FR_FR5	2	0.397	ns	ns	ns	-	-	-	-	-	-	-	A	A	A	-	-	-	-	-	-	-	-	-

P-value < 0.05 (annual variation).
\> 20% Decrease in concentration.
\> 33% Decrease in concentration.
\> 43% Decrease in concentration.
\> 50% Decrease in concentration.
\> 25% Increase in concentration.
\> 50% Increase in concentration.
\> 75% Increase in concentration.
\> 100% Increase in concentration.
***Bold** Significant increase or decrease from base year.

Notes: Temporal trends were only conducted for areas that have a complete routine water quality monitoring dataset. When biological monitoring areas and routine water quality stations were in close proximity to each other and with no additional inputs between them, data collected at the biological monitoring area were combined with routine data and analyzed together with the biological monitoring area depicted in parenthesis. Only constituents considered mine-related under the Adaptive Management Plan (AMP) and that have early warning triggers, and orthophosphate and total phosphorus were analyzed for temporal trends.

[a] The presence of annual variation was determined by a significant Year term (α = 0.05) using an ANOVA with factors Year and Month.

[b] Magnitude of Difference (MOD) was calculated as the concentrations in each year minus the concentration in the first year divided by the concentration in the fist year × 100.

[c] Significance between each year determined using all pairwise comparisons with Tukey correction.

[d] "ns" = not significant year term so no post-hoc comparison tested; "-" insufficient data for comparison, where insufficient data is less than 6 months of recorded data.

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<2	239	NA	4.4	NA	<1
6-Jan-21	FR_FRNTP (RG_FOUSH)	<2	218	NA	<1	NA	<1
6-Jan-21	FR_MULTIPLATE (RG_MP1)	12.5	182	NA	<1	NA	<1
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<2	141	NA	<1	NA	<1
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	<10	242	NA	4.2	NA	<1
12-Jan-21	FR_FR2 (RG_FOUKI)	<2	225	NA	<1	NA	<1
12-Jan-21	FR_FR3 (RG_FOBKS)	<2	218	NA	<1	NA	<1
12-Jan-21	FR_FR5	<2	226	NA	2.8	NA	<1
12-Jan-21	FR_FRNTP (RG_FOUSH)	<2	214	NA	<1	NA	<1
12-Jan-21	FR_HC3 (RG_HENUP)	<2	107	NA	<1	NA	<1
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<2	201	NA	2	NA	<1
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<2	272	NA	3.2	NA	<1
19-Jan-21	FR_FR2 (RG_FOUKI)	<2	196	NA	<1	NA	<1
19-Jan-21	FR_FRABCH (RG_FO22)	<2	244	NA	<1	NA	<1
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	3.4	280	NA	<1	NA	<1
21-Jan-21	GH_PC2 (RG_FODPO)	11.3	258	NA	<1	NA	<1
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<2	248	NA	<1	NA	<1
27-Jan-21	FR_FRNTP (RG_FOUSH)	<2	241	NA	<1	NA	<1
27-Jan-21	FR_MULTIPLATE (RG_MP1)	<2	201	NA	2.4	NA	<1
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	2.5	235	NA	<1	NA	<1
2-Feb-21	FR_FRNTP (RG_FOUSH)	<2	228	NA	<1	NA	<1
2-Feb-21	FR_MULTIPLATE (RG_MP1)	<2	205	NA	<1	NA	<1
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<2	109	NA	<1	NA	<1
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	2.5	240	NA	<1	NA	<1
8-Feb-21	FR_FR5	2.1	242	NA	<1	NA	<1
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	2.4	291	NA	<1	NA	<1
9-Feb-21	FR_FR2 (RG_FOUKI)	3.3	245	NA	<1	NA	<1
9-Feb-21	FR_FRNTP (RG_FOUSH)	4	237	NA	<1	NA	<1
9-Feb-21	FR_MULTIPLATE (RG_MP1)	3.4	202	NA	<1	NA	<1
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	<2	236	NA	<1	NA	<1
16-Feb-21	FR_FRNTP (RG_FOUSH)	2.2	227	NA	<1	NA	<1
16-Feb-21	FR_MULTIPLATE (RG_MP1)	2.4	199	NA	<1	NA	<1
16-Feb-21	GH_PC2 (RG_FODPO)	5.4	266	NA	<1	NA	<1
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	8.6	307	NA	<1	NA	<1
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	<1	240	NA	<1	NA	<1
23-Feb-21	FR_FR4 (RG_FOBSC)	<1	269	NA	<1	NA	<1
23-Feb-21	FR_FRABCH (RG_FO22)	3.6	251	NA	<1	NA	<1
23-Feb-21	FR_FRCP1 (RG_FOBCP)	2.6	334	NA	<1	NA	<1
23-Feb-21	FR_FRRD (RG_FRUPO)	4.7	311	NA	<1	NA	<1
23-Feb-21	FR_MULTIPLATE (RG_MP1)	1.3	202	NA	<1	NA	<1
23-Feb-21	FR_UFR1 (RG_URF1)	<2	140	NA	<1	NA	<1
24-Feb-21	FR_FRNTP (RG_FOUSH)	<2	229	NA	<1	NA	<1
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<2	215	NA	<1	NA	<1
2-Mar-21	FR_FR4 (RG_FOBSC)	<2	240	NA	20.2	NA	<1
2-Mar-21	FR_FRABCH (RG_FO22)	2.3	222	NA	<1	NA	<1
2-Mar-21	FR_FRCP1 (RG_FOBCP)	<2	264	NA	<1	NA	<1
2-Mar-21	FR_FRNTP (RG_FOUSH)	<2	204	NA	<1	NA	<1
2-Mar-21	FR_FRRD (RG_FRUPO)	<2	301	NA	<1	NA	<1
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<2	195	NA	<1	NA	<1
2-Mar-21	FR_UFR1 (RG_URF1)	<2	136	NA	3.4	NA	<1
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	2.8	195	NA	<1	NA	<1
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	2.4	24.2	NA	<1	NA	<1
5-Mar-21	FR_FR5	<2	228	NA	<1	NA	<1
5-Mar-21	FR_HC3 (RG_HENUP)	<2	110	NA	<1	NA	<1
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<2	242	NA	9.8	NA	<1
8-Mar-21	FR_FRNTP (RG_FOUSH)	2.5	230	NA	<1	NA	<1
9-Mar-21	FR_FR2 (RG_FOUKI)	1.1	227	NA	<1	NA	<1
9-Mar-21	FR_FR4 (RG_FOBSC)	<1	249	NA	<1	NA	<1
9-Mar-21	FR_FRABCH (RG_FO22)	<2	267	NA	<1	NA	<1
9-Mar-21	FR_FRCP1 (RG_FOBCP)	<2	281	NA	<1	NA	<1
9-Mar-21	FR_FRRD (RG_FRUPO)	3.1	323	NA	<1	NA	<1
9-Mar-21	FR_MULTIPLATE (RG_MP1)	<1	203	NA	<1	NA	<1
9-Mar-21	FR_UFR1 (RG_URF1)	<2	127	NA	<1	NA	<1
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<2	125	NA	<1	NA	<1
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	4.1	252	NA	12.2	NA	<1
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	<1	214	NA	<1	NA	<1
16-Mar-21	FR_FR4 (RG_FOBSC)	<1	215	NA	<1	NA	<1
16-Mar-21	FR_FRABCH (RG_FO22)	6.2	243	NA	8	NA	<1
16-Mar-21	FR_FRCP1 (RG_FOBCP)	<2	212	NA	17.2	NA	<1
16-Mar-21	FR_FRNTP (RG_FOUSH)	<2	188	NA	15.8	NA	<1
16-Mar-21	FR_FRRD (RG_FRUPO)	<1	292	NA	<1	NA	<1
16-Mar-21	FR_MULTIPLATE (RG_MP1)	<1	185	NA	<1	NA	<1
16-Mar-21	FR_UFR1 (RG_URF1)	<2	104	NA	<1	NA	<1
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<2	200	NA	<1	NA	<1
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	<1	205	NA	<1	NA	<1
23-Mar-21	FR_FR4 (RG_FOBSC)	<1	217	NA	<1	NA	<1
23-Mar-21	FR_FRABCH (RG_FO22)	<2	300	NA	<1	NA	<1
23-Mar-21	FR_FRCP1 (RG_FOBCP)	<2	252	NA	4	NA	<1
23-Mar-21	FR_FRNTP (RG_FOUSH)	<2	241	NA	<1	NA	<1
23-Mar-21	FR_FRRD (RG_FRUPO)	<1	253	NA	<1	NA	<1
23-Mar-21	FR_MULTIPLATE (RG_MP1)	<1	183	NA	<1	NA	<1
23-Mar-21	FR_UFR1 (RG_URF1)	2.2	119	NA	<1	NA	<1
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<2	216	NA	<1	NA	<1
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	<2	214	NA	<1	NA	<1
30-Mar-21	FR_FR4 (RG_FOBSC)	<2	222	NA	3.8	NA	<1
30-Mar-21	FR_FRABCH (RG_FO22)	2.9	258	NA	<1	NA	<1
30-Mar-21	FR_FRCP1 (RG_FOBCP)	<2	233	NA	<1	NA	<1
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	6	265	NA	<1	NA	<1
30-Mar-21	FR_MULTIPLATE (RG_MP1)	3.3	199	NA	<1	NA	<1
30-Mar-21	FR_UFR1 (RG_URF1)	<2	141	NA	<1	NA	<1
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	2.7	207	NA	<1	NA	<1
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<2	226	NA	<1	NA	<1
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<2	211	NA	<1	NA	<1
6-Apr-21	FR_FR1 (RG_FODHE)	<2	141	NA	<1	NA	<1
6-Apr-21	FR_FR2 (RG_FOUKI)	<2	216	NA	<1	NA	<1
6-Apr-21	FR_FRNTP (RG_FOUSH)	<2	207	NA	<1	NA	<1
6-Apr-21	FR_HC3 (RG_HENUP)	<2	109	NA	<1	NA	<1
6-Apr-21	FR_MULTIPLATE (RG_MP1)	<2	192	NA	<1	NA	<1
6-Apr-21	FR_UFR1 (RG_URF1)	<2	124	NA	<1	NA	<1
7-Apr-21	FR_FR3 (RG_FOBKS)	<2	202	NA	6.2	NA	<1
7-Apr-21	FR_FR5	<2	234	NA	<1	NA	<1
7-Apr-21	FR_FRABCH (RG_FO22)	<2	244	NA	<1	NA	<1
7-Apr-21	FR_FRCP1 (RG_FOBCP)	<2	209	NA	5.8	NA	<1
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<2	208	NA	6.2	NA	<1
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<2	230	NA	<1	NA	<1
9-Apr-21	FR_FR4 (RG_FOBSC)	<2	205	NA	11.8	NA	<1
12-Apr-21	FR_FR1 (RG_FODHE)	<2	144	NA	4.6	NA	<1
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	<2	209	NA	7	NA	<1
13-Apr-21	FR_FR4 (RG_FOBSC)	<2	222	NA	12	NA	<1
13-Apr-21	FR_FRABCH (RG_FO22)	<2	237	NA	<1	NA	<1
13-Apr-21	FR_FRCP1 (RG_FOBCP)	<2	217	NA	15.2	NA	<1
13-Apr-21	FR_FRRD (RG_FRUPO)	<2	254	NA	8.2	NA	<1
13-Apr-21	FR_MULTIPLATE (RG_MP1)	<2	191	NA	7.2	NA	<1
13-Apr-21	FR_UFR1 (RG_URF1)	<2	123	NA	2.2	NA	<1
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	<2	192	NA	<1	NA	<1
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<2	209	NA	18.2	NA	<1
15-Apr-21	FR_FR4 (RG_FOBSC)	<2	221	NA	13.8	NA	<1
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<2	130	NA	7.8	NA	<1
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	<2	198	NA	8.8	NA	<1
20-Apr-21	FR_FRNTP (RG_FOUSH)	<2	190	NA	<1	NA	<1
20-Apr-21	FR_MULTIPLATE (RG_MP1)	<2	178	NA	<1	NA	<1
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	<2	189	NA	18.2	NA	<1
21-Apr-21	FR_FRABCH (RG_FO22)	<2	213	NA	16.6	NA	<1
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<2	182	NA	17.2	NA	<1
22-Apr-21	FR_FR2 (RG_FOUKI)	<2	199	NA	<1	NA	<1
26-Apr-21	FR_FR1 (RG_FODHE)	<2	136	NA	<1	NA	<1

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	<2	201	NA	<1	NA	<1
27-Apr-21	FR_FRCP1 (RG_FOBCP)	<2	200	NA	3.8	NA	<1
27-Apr-21	FR_FRNTP (RG_FOUSH)	<2	188	NA	<1	NA	<1
27-Apr-21	FR_MULTIPLATE (RG_MP1)	<2	179	NA	<1	NA	<1
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	<2	232	NA	6.6	NA	<1
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<2	193	NA	13.2	NA	<1
30-Apr-21	FR_FR4 (RG_FOBSC)	<2	201	NA	4	NA	<1
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	215	NA	<1	NA	<1
3-May-21	FR_HC3 (RG_HENUP)	<10	138	NA	<1	NA	<1
3-May-21	FR_UFR1 (RG_URF1)	<10	145	NA	<1	NA	<1
4-May-21	FR_FR1 (RG_FODHE)	<2	133	NA	<1	NA	<1
4-May-21	FR_FR2 (RG_FOUKI)	<2	169	NA	5.6	NA	<1
4-May-21	FR_FR3 (RG_FOBKS)	<2	167	NA	6	NA	<1
4-May-21	FR_FRNTP (RG_FOUSH)	<2	158	NA	4.6	NA	<1
4-May-21	FR_MULTIPLATE (RG_MP1)	<2	149	NA	3.8	NA	<1
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	165	NA	6.2	NA	<1
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	<2	190	NA	2.6	NA	<1
5-May-21	FR_FRABCH (RG_FO22)	<2	206	NA	4.4	NA	<1
5-May-21	FR_FRCP1 (RG_FOBCP)	<2	175	NA	<1	NA	<1
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	<2	202	NA	2.8	NA	<1
7-May-21	FR_FR4 (RG_FOBSC)	<2	162	NA	2	NA	<1
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<2	138	NA	<1	NA	<1
11-May-21	FR_FR2 (RG_FOUKI)	<2	165	NA	8.8	NA	<1
11-May-21	FR_FRCP1 (RG_FOBCP)	<2	177	NA	3.2	NA	<1
11-May-21	FR_FRNTP (RG_FOUSH)	<2	158	NA	6.8	NA	<1
11-May-21	FR_MULTIPLATE (RG_MP1)	<2	164	NA	<1	NA	<1
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	<2	196	NA	16.4	NA	<1
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	180	NA	<1	NA	<1
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	130	NA	<1	NA	<1
18-May-21	FR_FR2 (RG_FOUKI)	<2	121	NA	<1	NA	<1
18-May-21	FR_FR4 (RG_FOBSC)	<2	128	NA	<1	NA	<1
18-May-21	FR_FRABCH (RG_FO22)	<2	159	NA	<1	NA	<1
18-May-21	FR_FRCP1 (RG_FOBCP)	<2	144	NA	<1	NA	<1
18-May-21	FR_FRRD (RG_FRUPO)	<2	156	NA	3.6	NA	<1
18-May-21	FR_MULTIPLATE (RG_MP1)	<2	117	NA	<1	NA	<1
18-May-21	FR_UFR1 (RG_URF1)	<2	117	NA	<1	NA	<1
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	<2	154	NA	<1	NA	<1
20-May-21	FR_FRNTP (RG_FOUSH)	<2	131	NA	<1	NA	<1
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	<2	142	NA	<1	NA	<1
25-May-21	FR_FR4 (RG_FOBSC)	<2	158	NA	<1	NA	<1
25-May-21	FR_FRABCH (RG_FO22)	<2	200	NA	<1	NA	<1
25-May-21	FR_FRCP1 (RG_FOBCP)	<2	185	NA	<1	NA	<1
25-May-21	FR_FRRD (RG_FRUPO)	3.5	187	NA	<1	NA	<1
25-May-21	FR_MULTIPLATE (RG_MP1)	<2	138	NA	<1	NA	<1
25-May-21	FR_UFR1 (RG_URF1)	<2	123	NA	<1	NA	<1
26-May-21	FR_FR1 (RG_FODHE)	<2	124	NA	<1	NA	<1
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	147	NA	<1	NA	<1
27-May-21	FR_FR4 (RG_FOBSC)	<2	155	NA	<1	NA	<1
27-May-21	FR_FRNTP (RG_FOUSH)	<2	127	NA	2.4	NA	<1
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<2	114	NA	<1	NA	<1
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	<2	139	NA	<1	NA	<1
1-Jun-21	FR_FR2 (RG_FOUKI)	<2	126	NA	<1	NA	<1
1-Jun-21	FR_FR4 (RG_FOBSC)	<2	137	NA	<1	NA	<1
1-Jun-21	FR_FRABCH (RG_FO22)	<2	163	NA	<1	NA	<1
1-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	152	NA	<1	NA	<1
1-Jun-21	FR_FRNTP (RG_FOUSH)	<2	122	NA	<1	NA	<1
1-Jun-21	FR_FRRD (RG_FRUPO)	2.2	172	NA	<1	NA	<1
1-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	125	NA	<1	NA	<1
1-Jun-21	FR_UFR1 (RG_URF1)	<2	106	NA	<1	NA	<1
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	<2	135	NA	<1	NA	<1
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	128	NA	<1	NA	<1
7-Jun-21	FR_FR1 (RG_FODHE)	<2	114	NA	<1	NA	<1
7-Jun-21	FR_HC3 (RG_HENUP)	<2	103	NA	<1	NA	<1
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	141	NA	<1	NA	<1
7-Jun-21	GH_PC2 (RG_FODPO)	<2	188	NA	<1	NA	<1
8-Jun-21	FR_FR2 (RG_FOUKI)	<2	146	NA	<1	NA	<1
8-Jun-21	FR_FR4 (RG_FOBSC)	<2	166	NA	<1	NA	<1

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	<2	191	NA	1.4	NA	<1
8-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	185	NA	<1	NA	<1
8-Jun-21	FR_FRRD (RG_FRUPO)	<2	204	NA	3.2	NA	<1
8-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	132	NA	<1	NA	<1
8-Jun-21	FR_UFR1 (RG_URF1)	<2	114	NA	<1	NA	<1
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	<2	148	NA	<1	NA	<1
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	145	NA	3.6	NA	<1
10-Jun-21	FR_FR4 (RG_FOBSC)	<2	194	NA	8.6	NA	<1
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	<2	172	NA	6.4	NA	<1
14-Jun-21	FR_FOUCL (RG_FOUCL)	<2	106	NA	4.2	NA	<1
14-Jun-21	FR_FR1 (RG_FODHE)	<2	112	NA	2.9	NA	<1
14-Jun-21	FR_FR3 (RG_FOBKS)	<2	137	NA	<1	NA	<1
14-Jun-21	FR_FR5	<2	170	NA	4.4	NA	<1
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	118	NA	4.6	NA	<1
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	141	NA	<1	NA	<1
14-Jun-21	RG_FO26	<2	111	NA	2.8	NA	<1
15-Jun-21	FR_FR2 (RG_FOUKI)	<2	122	NA	4.4	NA	<1
15-Jun-21	FR_FR4 (RG_FOBSC)	<2	131	NA	5.8	NA	<1
15-Jun-21	FR_FRABCH (RG_FO22)	<2	158	NA	8.8	NA	<1
15-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	150	NA	8.2	NA	<1
15-Jun-21	FR_FRNTP (RG_FOUSH)	<2	121	NA	3.5	NA	<1
15-Jun-21	FR_FRRD (RG_FRUPO)	<2	175	NA	7.8	NA	<1
15-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	114	NA	2.6	NA	<1
15-Jun-21	FR_UFR1 (RG_URF1)	<2	110	NA	3.6	NA	<1
15-Jun-21	RG_FOUNGD	<2	111	NA	4.4	NA	<1
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	<2	127	NA	5.8	NA	<1
16-Jun-21	FR_FR4 (RG_FOBSC)	<2	145	NA	9.2	NA	<1
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<2	116	NA	2.4	NA	<1
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<2	81.2	NA	<1	NA	<1
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	128	NA	6.3	NA	<1
17-Jun-21	FR_FR2 (RG_FOUKI)	<2	130	NA	5.4	NA	<1
17-Jun-21	FR_FR4 (RG_FOBSC)	<2	180	NA	11.4	NA	<1
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	161	NA	8.4	NA	<1
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	<2	159	NA	8.6	NA	<1
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	138	NA	6	NA	<1
17-Jun-21	GH_PC2 (RG_FODPO)	<2	175	NA	11.4	NA	<1
18-Jun-21	FR_FRABCH (RG_FO22)	<2	184	NA	<1	NA	<1
18-Jun-21	FR_FRRD (RG_FRUPO)	<2	197	NA	<1	NA	<1
18-Jun-21	RG_FOUEW	<2	177	NA	<1	NA	<1
21-Jun-21	FR_FR1 (RG_FODHE)	<2	107	NA	2.8	NA	<1
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	144	NA	3.2	NA	<1
21-Jun-21	FR_UFR1 (RG_URF1)	<2	115	NA	3.7	NA	<1
22-Jun-21	FR_FR2 (RG_FOUKI)	<2	138	NA	<1	NA	<1
22-Jun-21	FR_FRABCH (RG_FO22)	<2	184	NA	<1	NA	<1
22-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	170	NA	<1	NA	<1
22-Jun-21	FR_FRNTP (RG_FOUSH)	<2	133	NA	<1	NA	<1
22-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	123	NA	<1	NA	<1
23-Jun-21	FR_FR4 (RG_FOBSC)	<2	164	NA	<1	NA	<1
28-Jun-21	FR_FR1 (RG_FODHE)	<2	107	NA	<1	NA	<1
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<2	145	NA	<1	NA	<1
29-Jun-21	FR_FR2 (RG_FOUKI)	<2	131	NA	5.8	NA	<1
29-Jun-21	FR_FR4 (RG_FOBSC)	<2	143	NA	7	NA	<1
29-Jun-21	FR_FRABCH (RG_FO22)	<2	190	NA	<1	NA	<1
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<2	176	NA	<1	NA	<1
29-Jun-21	FR_FRNTP (RG_FOUSH)	<2	134	NA	<1	NA	<1
29-Jun-21	FR_FRRD (RG_FRUPO)	<2	192	NA	7.4	NA	<1
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<2	126	NA	<1	NA	<1
29-Jun-21	FR_UFR1 (RG_URF1)	<2	120	NA	5	NA	<1
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	<2	152	NA	5.2	NA	<1
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<2	111	NA	<1	NA	<1
2-Jul-21	FR_UFR1 (RG_URF1)	<2	132	NA	<1	NA	<1
4-Jul-21	FR_FR2 (RG_FOUKI)	<2	160	NA	<1	NA	<1
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<2	147	NA	<1	NA	<1
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<2	165	NA	<1	NA	<1
5-Jul-21	FR_HC3 (RG_HENUP)	<2	93.1	NA	<1	NA	<1
6-Jul-21	FR_FR1 (RG_FODHE)	<2	106	NA	2.4	NA	<1
6-Jul-21	FR_FR4 (RG_FOBSC)	<2	157	NA	<1	NA	<1
6-Jul-21	FR_FRABCH (RG_FO22)	3	182	NA	10	NA	<1
6-Jul-21	FR_FRCP1 (RG_FOBCP)	<2	165	NA	9.8	NA	<1
6-Jul-21	FR_FRRD (RG_FRUPO)	2.1	203	NA	<1	NA	<1
6-Jul-21	FR_MULTIPLATE (RG_MP1)	<2	132	NA	<1	NA	<1
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<2	141	NA	8.4	NA	<1
6-Jul-21	FR_UFR1 (RG_URF1)	<2	128	NA	3	NA	<1
7-Jul-21	FR_FR2 (RG_FOUKI)	<2	146	NA	4.6	NA	<1

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	<2	144	NA	<1	NA	<1
7-Jul-21	GH_PC2 (RG_FODPO)	2.2	199	NA	<1	NA	<1
8-Jul-21	FR_FR3 (RG_FOBKS)	<2	159	NA	3	NA	<1
8-Jul-21	FR_FR5	<2	192	NA	<1	NA	<1
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<2	116	NA	<1	NA	<1
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<2	169	NA	<1	NA	<1
13-Jul-21	FR_FR2 (RG_FOUKI)	<2	152	NA	6.4	NA	<1
13-Jul-21	FR_FR4 (RG_FOBSC)	<2	162	NA	7.6	NA	<1
13-Jul-21	FR_FRABCH (RG_FO22)	<2	208	NA	<1	NA	<1
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<2	187	NA	7	NA	<1
13-Jul-21	FR_FRNTP (RG_FOUSH)	<2	143	NA	5	NA	<1
13-Jul-21	FR_FRRD (RG_FRUPO)	3	226	NA	<1	NA	<1
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<2	140	NA	<1	NA	<1
13-Jul-21	FR_UFR1 (RG_URF1)	<2	130	NA	2.4	NA	<1
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	<2	164	NA	<1	NA	<1
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	<2	142	NA	5.8	NA	<1
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	<2	162	NA	7	NA	<1
20-Jul-21	FR_FR4 (RG_FOBSC)	<2	175	NA	8.4	NA	<1
20-Jul-21	FR_FRRD (RG_FRUPO)	<2	237	NA	3.6	NA	<1
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<2	144	NA	3.2	NA	<1
20-Jul-21	FR_UFR1 (RG_URF1)	<2	128	NA	3.6	NA	<1
22-Jul-21	FR_FRABCH (RG_FO22)	2.2	224	NA	3.4	NA	<1
26-Jul-21	FR_FRABCH (RG_FO22)	<2	236	NA	<1	NA	<1
27-Jul-21	FR_FR2 (RG_FOUKI)	<2	194	NA	<1	NA	<1
27-Jul-21	FR_FRNTP (RG_FOUSH)	<2	188	NA	<1	NA	<1
27-Jul-21	FR_MULTIPLATE (RG_MP1)	<2	174	NA	<1	NA	<1
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	224	NA	<1	NA	<1
4-Aug-21	FR_FR2 (RG_FOUKI)	<2	169	NA	<1	NA	<1
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<2	172	NA	<1	NA	<1
4-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	154	NA	3.6	NA	<1
5-Aug-21	FR_FRABCH (RG_FO22)	<2	224	NA	<1	NA	<1
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	215	NA	18	NA	<1
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	<2	184	NA	<1	NA	<1
10-Aug-21	FR_FR1 (RG_FODHE)	<2	141	NA	1.8	NA	<1
10-Aug-21	FR_FR2 (RG_FOUKI)	<2	188	NA	<1	NA	<1
10-Aug-21	FR_FR4 (RG_FOBSC)	<2	208	NA	17.8	NA	<1
10-Aug-21	FR_FRABCH (RG_FO22)	<2	237	NA	<1	NA	<1
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<2	205	NA	14.4	NA	<1
10-Aug-21	FR_FRRD (RG_FRUPO)	<2	269	NA	<1	NA	<1
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	163	NA	6	NA	<1
10-Aug-21	FR_UFR1 (RG_URF1)	<2	147	NA	3.8	NA	<1
11-Aug-21	FR_FR3 (RG_FOBKS)	<2	187	NA	<1	NA	<1
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	203	NA	15.4	NA	<1
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	<2	197	NA	<1	NA	<1
12-Aug-21	FR_FR4 (RG_FOBSC)	<2	227	NA	4.6	NA	<1
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	222	NA	<1	NA	<1
13-Aug-21	FR_FR3 (RG_FOBKS)	<2	215	NA	<1	NA	<1
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	225	NA	<1	NA	<1
14-Aug-21	FR_FR3 (RG_FOBKS)	<2	202	NA	<1	NA	<1
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	217	NA	2.6	NA	<1
15-Aug-21	FR_FR3 (RG_FOBKS)	<2	201	NA	<1	NA	<1
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	227	NA	9.8	NA	<1
16-Aug-21	FR_FR3 (RG_FOBKS)	<2	195	NA	<1	NA	<1
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	217	NA	7.2	NA	<1
17-Aug-21	FR_FR2 (RG_FOUKI)	<2	191	NA	10	NA	<1
17-Aug-21	FR_FR4 (RG_FOBSC)	<2	212	NA	16	NA	<1
17-Aug-21	FR_FR5	<2	214	NA	12	NA	<1
17-Aug-21	FR_FRABCH (RG_FO22)	<2	240	NA	<1	NA	<1
17-Aug-21	FR_FRCP1 (RG_FOBCP)	<2	222	NA	<1	NA	<1
17-Aug-21	FR_FRRD (RG_FRUPO)	<2	276	NA	13.2	NA	<1
17-Aug-21	FR_HC3 (RG_HENUP)	<2	103	NA	<1	NA	<1
17-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	162	NA	9.4	NA	<1
17-Aug-21	FR_UFR1 (RG_URF1)	<2	146	NA	<1	NA	<1
18-Aug-21	GH_PC2 (RG_FODPO)	<2	228	NA	<1	NA	<1
19-Aug-21	FR_FR2 (RG_FOUKI)	<2	180	NA	<1	NA	<1
19-Aug-21	FR_FRNTP (RG_FOUSH)	<2	168	NA	<1	NA	<1
19-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	157	NA	<1	NA	<1
24-Aug-21	FR_FR2 (RG_FOUKI)	<2	179	NA	10.6	NA	<1
24-Aug-21	FR_FR4 (RG_FOBSC)	<2	195	NA	13.8	NA	<1
24-Aug-21	FR_FRABCH (RG_FO22)	<2	239	NA	<1	NA	<1
24-Aug-21	FR_FRCP1 (RG_FOBCP)	<2	192	NA	9.2	NA	<1
24-Aug-21	FR_FRRD (RG_FRUPO)	<2	265	NA	<1	NA	<1
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	153	NA	5.2	NA	<1
24-Aug-21	FR_UFR1 (RG_URF1)	<2	145	NA	<1	NA	<1
25-Aug-21	FR_FR2 (RG_FOUKI)	<2	190	NA	<1	NA	<1
25-Aug-21	FR_FRNTP (RG_FOUSH)	<2	177	NA	12	NA	<1

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	152	NA	7	NA	<1
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	2.4	210	NA	<1	NA	<1
31-Aug-21	FR_FR4 (RG_FOBSC)	<2	223	NA	12	NA	<1
31-Aug-21	FR_FRABCH (RG_FO22)	<2	244	NA	3.6	NA	<1
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<2	224	NA	8.4	NA	<1
31-Aug-21	FR_FRRD (RG_FRUPO)	5.2	278	NA	<1	NA	<1
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<2	165	NA	5.8	NA	<1
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<2	221	NA	15.6	NA	<1
31-Aug-21	FR_UFR1 (RG_URF1)	<2	142	NA	7	NA	<1
1-Sep-21	FR_FRNTP (RG_FOUSH)	5.2	209	NA	<1	NA	<1
3-Sep-21	FR_FR4 (RG_FOBSC)	<2	218	NA	<1	NA	<1
7-Sep-21	FR_FR2 (RG_FOUKI)	5.1	203	NA	<1	NA	<1
7-Sep-21	FR_FR4 (RG_FOBSC)	3	222	NA	17.2	NA	<1
7-Sep-21	FR_FRABCH (RG_FO22)	3.5	244	NA	<1	NA	<1
7-Sep-21	FR_FRCP1 (RG_FOBCP)	<2	226	NA	11.8	NA	<1
7-Sep-21	FR_FRRD (RG_FRUPO)	7.5	280	NA	<1	NA	<1
7-Sep-21	FR_MULTIPLATE (RG_MP1)	3.1	177	NA	<1	NA	<1
7-Sep-21	FR_UFR1 (RG_URF1)	<2	177	NA	3.2	NA	<1
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	4	192	NA	5	NA	<1
9-Sep-21	FR_FR3 (RG_FOBKS)	<2	184	NA	6.6	NA	<1
9-Sep-21	FR_FRNTP (RG_FOUSH)	<2	192	NA	8.8	NA	<1
9-Sep-21	FR_MULTIPLATE (RG_MP1)	<2	168	NA	6.2	NA	<1
11-Sep-21	GH_PC2 (RG_FODPO)	<2	241	NA	<1	NA	<1
11-Sep-21	RG_FOUEW	<2	244	NA	<1	NA	<1
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<2	247	NA	<1	NA	<1
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	2.6	139	NA	5.6	NA	<1
13-Sep-21	FR_FR1 (RG_FODHE)	<2	134	NA	7.8	NA	<1
13-Sep-21	FR_FR4 (RG_FOBSC)	<2	231	NA	17.6	NA	<1
13-Sep-21	FR_FR5	<2	212	NA	13.6	NA	<1
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<2	227	NA	18.6	NA	<1
13-Sep-21	FR_FRRD (RG_FRUPO)	2.1	286	NA	<1	NA	<1
13-Sep-21	FR_HC3 (RG_HENUP)	<2	108	NA	<1	NA	<1
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<2	233	NA	17.8	NA	<1
13-Sep-21	GH_PC2 (RG_FODPO)	<2	232	NA	6.4	NA	<1
14-Sep-21	FR_FR2 (RG_FOUKI)	5.3	214	NA	<1	NA	<1
14-Sep-21	FR_FR3 (RG_FOBKS)	<2	208	NA	<1	NA	<1
14-Sep-21	FR_FRNTP (RG_FOUSH)	3.3	210	NA	5.8	NA	<1
14-Sep-21	FR_MULTIPLATE (RG_MP1)	<2	164	NA	8.6	NA	<1
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<2	241	NA	20.8	NA	<1
15-Sep-21	FR_FR1 (RG_FODHE)	<2	135	NA	6.4	NA	<1
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<2	219	NA	25.4	NA	<1
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<2	166	NA	10.2	NA	<1
15-Sep-21	RG_FO26	<2	136	NA	9	NA	<1
16-Sep-21	FR_FRABCH (RG_FO22)	<2	253	NA	<1	NA	<1
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	<2	162	NA	10.2	NA	<1
16-Sep-21	FR_FRNTP (RG_FOUSH)	<2	180	NA	7.8	NA	<1
16-Sep-21	FR_HC3 (RG_HENUP)	<2	103	NA	5.4	NA	<1
16-Sep-21	RG_FOUNGD	<2	162	NA	8.8	NA	<1
17-Sep-21	FR_FR4 (RG_FOBSC)	<2	238	NA	17.6	NA	<1
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	4.2	278	NA	6.4	NA	<1
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	2.4	200	NA	<1	NA	<1
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<2	137	NA	10.2	NA	<1
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	2.2	242	NA	<1	NA	<1
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<2	234	NA	<1	NA	<1
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	<2	199	NA	<1	NA	<1
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	3.5	220	NA	<1	NA	<1
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<2	242	NA	24.8	NA	<1
28-Sep-21	FR_FR2 (RG_FOUKI)	2.5	220	NA	<1	NA	<1
28-Sep-21	FR_FRABCH (RG_FO22)	<2	266	NA	<1	NA	<1
28-Sep-21	FR_FRNTP (RG_FOUSH)	2.3	221	NA	<1	NA	<1
28-Sep-21	FR_MULTIPLATE (RG_MP1)	<2	180	NA	<1	NA	<1

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	<2	180	NA	<1	NA	<1
4-Oct-21	FR_FR1 (RG_FODHE)	<2	141	NA	6	NA	<1
4-Oct-21	FR_HC3 (RG_HENUP)	<2	107	NA	<1	NA	<1
5-Oct-21	FR_FR2 (RG_FOUKI)	<2	214	NA	4	NA	<1
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<2	174	NA	7.6	NA	<1
6-Oct-21	FR_FR3 (RG_FOBKS)	2.1	248	NA	<1	NA	<1
6-Oct-21	FR_FR5	6.7	220	NA	<1	NA	<1
6-Oct-21	FR_FRABCH (RG_FO22)	3.7	277	NA	<1	NA	<1
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	7.1	265	NA	<1	NA	<1
7-Oct-21	FR_FR4 (RG_FOBSC)	<2	234	NA	17.8	NA	<1
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	<2	206	NA	<1	NA	<1
9-Oct-21	FR_FRNTP (RG_FOUSH)	<2	212	NA	<1	NA	<1
10-Oct-21	FR_FR2 (RG_FOUKI)	<2	200	NA	<1	NA	<1
10-Oct-21	FR_FRNTP (RG_FOUSH)	<2	196	NA	<1	NA	<1
11-Oct-21	FR_FR2 (RG_FOUKI)	<2	207	NA	<1	NA	<1
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	<2	197	NA	<1	NA	<1
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<2	249	NA	6	NA	<1
12-Oct-21	FR_FR2 (RG_FOUKI)	<2	188	NA	5.2	NA	<1
12-Oct-21	FR_FR4 (RG_FOBSC)	<2	226	NA	13	NA	<1
12-Oct-21	FR_FRABCH (RG_FO22)	2.4	252	NA	<1	NA	<1
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<2	228	NA	16	NA	<1
12-Oct-21	FR_FRRD (RG_FRUPO)	4.6	301	NA	<1	NA	<1
12-Oct-21	FR_MULTIPLATE (RG_MP1)	<2	192	NA	<1	NA	<1
13-Oct-21	FR_FR2 (RG_FOUKI)	<2	212	NA	<1	NA	<1
13-Oct-21	FR_FRNTP (RG_FOUSH)	<2	198	NA	<1	NA	<1
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	<2	231	NA	<1	NA	<1
19-Oct-21	FR_FR4 (RG_FOBSC)	<2	253	NA	16.8	NA	<1
19-Oct-21	FR_FRABCH (RG_FO22)	3.6	262	NA	<1	NA	<1
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<2	241	NA	16.8	NA	<1
19-Oct-21	FR_FRNTP (RG_FOUSH)	<2	216	NA	<1	NA	<1
19-Oct-21	FR_FRRD (RG_FRUPO)	2.2	288.25	NA	13.25	NA	<1
19-Oct-21	FR_MULTIPLATE (RG_MP1)	<2	204	NA	4.8	NA	<1
19-Oct-21	FR_UFR1 (RG_URF1)	<2	155.5	NA	3.6	NA	<1
20-Oct-21	FR_FR2 (RG_FOUKI)	2.7	219	NA	<1	NA	<1
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<2	250	NA	16.4	NA	<1
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	<2	211	NA	5.2	NA	<1
26-Oct-21	FR_FR4 (RG_FOBSC)	<2	244	NA	12.6	NA	<1
26-Oct-21	FR_FRABCH (RG_FO22)	<2	273	NA	<1	NA	<1
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<2	245	NA	10.8	NA	<1
26-Oct-21	FR_FRNTP (RG_FOUSH)	<2	223	NA	<1	NA	<1
26-Oct-21	FR_FRRD (RG_FRUPO)	2.6	300	NA	5	NA	<1
26-Oct-21	FR_MULTIPLATE (RG_MP1)	<2	182	NA	7.8	NA	<1
26-Oct-21	FR_UFR1 (RG_URF1)	<2	148	NA	6.4	NA	<1
27-Oct-21	FR_FOUCL (RG_FOUCL)	<2	177	NA	<1	NA	<1
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	2.2	197	NA	<1	NA	<1
28-Oct-21	FR_FRABCH (RG_FO22)	<2	246	NA	7.8	NA	<1
28-Oct-21	FR_FRRD (RG_FRUPO)	<2	277	NA	7.6	NA	<1
29-Oct-21	FR_FR4 (RG_FOBSC)	<2	224	NA	14.4	NA	<1
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<2	221	NA	17	NA	<1
2-Nov-21	FR_FR2 (RG_FOUKI)	<2	205	NA	<1	NA	<1
2-Nov-21	FR_FR4 (RG_FOBSC)	<2	234	NA	<1	NA	<1
2-Nov-21	FR_FRABCH (RG_FO22)	<2	261	NA	<1	NA	<1
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<2	269	NA	<1	NA	<1
2-Nov-21	FR_FRRD (RG_FRUPO)	4	271	NA	<1	NA	<1
2-Nov-21	FR_MULTIPLATE (RG_MP1)	<2	170	NA	<1	NA	<1
2-Nov-21	FR_UFR1 (RG_URF1)	<2	144	NA	<1	NA	<1
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	<2	240	NA	<1	NA	<1
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<2	256	NA	25.8	NA	<1
8-Nov-21	FR_FR3 (RG_FOBKS)	<2	194	NA	<1	NA	<1
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<2	210	NA	11	NA	<1
8-Nov-21	GH_PC2 (RG_FODPO)	<2	212	NA	<1	NA	<1
9-Nov-21	FR_FR2 (RG_FOUKI)	<2	198	NA	<1	NA	<1
9-Nov-21	FR_FR4 (RG_FOBSC)	<2	216	NA	14.3	NA	<1
9-Nov-21	FR_FRABCH (RG_FO22)	<2	233	NA	<1	NA	<1
9-Nov-21	FR_FRCP1 (RG_FOBCP)	<2	218	NA	<1	NA	<1
9-Nov-21	FR_FRRD (RG_FRUPO)	7.6	262	NA	<1	NA	<1
9-Nov-21	FR_MULTIPLATE (RG_MP1)	<2	169	NA	<1	NA	<1
9-Nov-21	FR_UFR1 (RG_URF1)	<2	124	NA	<1	NA	<1
10-Nov-21	FR_FR4 (RG_FOBSC)	<2	244	NA	<1	NA	<1
10-Nov-21	FR_HC3 (RG_HENUP)	4.3	94	NA	<1	NA	<1
12-Nov-21	FR_FR2 (RG_FOUKI)	<2	220	NA	<1	NA	<1
12-Nov-21	FR_FR4 (RG_FOBSC)	<2	141	NA	<1	NA	<1
12-Nov-21	FR_FRNTP (RG_FOUSH)	<2	217	NA	<1	NA	<1
15-Nov-21	FR_FR5	<2	237	NA	<1	NA	<1
15-Nov-21	FR_FRABCH (RG_FO22)	2.9	254	NA	<1	NA	<1
16-Nov-21	FR_FR1 (RG_FODHE)	<2	143	NA	<1	NA	<1
17-Nov-21	FR_FR2 (RG_FOUKI)	<2	192	NA	6	NA	<1
17-Nov-21	FR_FRNTP (RG_FOUSH)	3.2	202	NA	<1	NA	<1
17-Nov-21	FR_MULTIPLATE (RG_MP1)	3.2	184	NA	<1	NA	<1
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<2	270	NA	<1	NA	<1

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Acidity (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as CaCO3)_mg/L	Alkalinity, Bicarbonate (as HCO3)_mg/L	Alkalinity, Carbonate (as CaCO3)_mg/L	Alkalinity, Carbonate (as CO3)_mg/L	Alkalinity, Hydroxide (as CaCO3)_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	<2	243	NA	<1	NA	<1
24-Nov-21	FR_FRNTP (RG_FOUSH)	<2	229	NA	6	NA	<1
24-Nov-21	FR_MULTIPLATE (RG_MP1)	<2	190	NA	6.2	NA	<1
29-Nov-21	FR_FR2 (RG_FOUKI)	<2	208	NA	<1	NA	<1
29-Nov-21	FR_FRNTP (RG_FOUSH)	<2	192	NA	<1	NA	<1
29-Nov-21	FR_MULTIPLATE (RG_MP1)	<2	190	NA	<1	NA	<1
1-Dec-21	FR_FRABCH (RG_FO22)	<2	274	NA	<1	NA	<1
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<2	247	NA	<1	NA	<1
7-Dec-21	FR_FR2 (RG_FOUKI)	<2	211	NA	<1	NA	<1
7-Dec-21	FR_FRNTP (RG_FOUSH)	<2	221	NA	<1	NA	<1
7-Dec-21	FR_MULTIPLATE (RG_MP1)	2.2	202	NA	<1	NA	<1
8-Dec-21	FR_FR3 (RG_FOBKS)	<2	230	NA	<1	NA	<1
8-Dec-21	FR_FRABCH (RG_FO22)	3.1	281	NA	<1	NA	<1
8-Dec-21	FR_FRRD (RG_FRUPO)	5.1	312	NA	<1	NA	<1
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<2	250	NA	<1	NA	<1
9-Dec-21	FR_FR1 (RG_FODHE)	<2	159	NA	<1	NA	<1
9-Dec-21	FR_FR4 (RG_FOBSC)	<2	228	NA	<1	NA	<1
9-Dec-21	FR_HC3 (RG_HENUP)	<2	109	NA	<1	NA	<1
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	<2	245	NA	<1	NA	<1
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	2.1	265	323	<1	<1	<1
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	<2	269	NA	<1	NA	<1
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<2	209	NA	<1	NA	<1
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<2	133	NA	<1	NA	<1
17-Dec-21	FR_FOUCL (RG_FOUCL)	2.3	159	NA	<1	NA	<1
17-Dec-21	FR_FR1 (RG_FODHE)	<2	170	NA	<1	NA	<1
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	<2	208	NA	<1	NA	<1
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<2	221	NA	<1	NA	<1
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<2	263	NA	<1	NA	<1
17-Dec-21	FR_UFR1 (RG_URF1)	<2	131	NA	5	NA	<1
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	2.4	195	NA	<1	NA	<1
20-Dec-21	FR_FRABCH (RG_FO22)	2.1	264	NA	<1	NA	<1
21-Dec-21	GH_PC2 (RG_FODPO)	3	263	NA	<1	NA	<1
22-Dec-21	FR_FR5	<2	270	NA	<1	NA	<1
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	2.2	254	NA	<1	NA	<1
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<2	254	NA	<1	NA	<1
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality monitoring stations are outlined in brackets

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	NA	244	<0.001	0.0083	0.0773	NA
6-Jan-21	FR_FRNTP (RG_FOUSH)	NA	218	<0.001	0.014	0.164	NA
6-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	182	<0.001	0.0307	0.101	NA
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	NA	141	0.0038	0.0042	0.0241	NA
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	246.5	<0.003	0.0078	0.0872	NA
12-Jan-21	FR_FR2 (RG_FOUKI)	NA	225	<0.001	0.0128	0.0986	NA
12-Jan-21	FR_FR3 (RG_FOBKS)	NA	218	<0.001	0.0107	0.137	NA
12-Jan-21	FR_FR5	NA	229	<0.001	0.0033	0.0191	NA
12-Jan-21	FR_FRNTP (RG_FOUSH)	NA	214	<0.001	0.0122	0.172	NA
12-Jan-21	FR_HC3 (RG_HENUP)	NA	107	0.0017	<0.003	0.0341	NA
12-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	203	<0.001	0.0117	0.132	NA
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	NA	275	<0.001	<0.003	0.0684	NA
19-Jan-21	FR_FR2 (RG_FOUKI)	NA	196	<0.001	0.0066	0.0979	NA
19-Jan-21	FR_FRABCH (RG_FO22)	NA	244	<0.001	0.0376	0.0283	NA
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	NA	280	0.0015	0.013	0.166	NA
21-Jan-21	GH_PC2 (RG_FODPO)	NA	258	0.0011	<0.003	0.087	NA
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	333	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	NA	248	<0.001	0.0084	0.151	NA
27-Jan-21	FR_FRNTP (RG_FOUSH)	NA	241	<0.001	0.0178	0.239	NA
27-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	204	<0.001	0.01	0.177	NA
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	NA	235	<0.001	0.0171	0.0466	NA
2-Feb-21	FR_FRNTP (RG_FOUSH)	NA	228	<0.001	0.0118	0.0884	NA
2-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	205	<0.001	0.0093	0.0838	NA
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	NA	109	0.0017	<0.003	0.0164	NA
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	NA	240	<0.001	0.0044	0.0151	NA
8-Feb-21	FR_FR5	NA	242	<0.001	0.0039	0.005	NA
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	343.5	<0.001	0.0044	0.0137	NA
9-Feb-21	FR_FR2 (RG_FOUKI)	NA	245	<0.001	0.0069	0.0507	NA
9-Feb-21	FR_FRNTP (RG_FOUSH)	NA	237	<0.001	0.011	0.076	NA
9-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	202	0.0011	0.0107	0.116	NA
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	NA	236	<0.001	0.0041	0.0129	NA
16-Feb-21	FR_FRNTP (RG_FOUSH)	NA	227	<0.001	0.0065	0.0253	NA
16-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	199	<0.001	0.0055	0.0158	NA
16-Feb-21	GH_PC2 (RG_FODPO)	NA	266	0.0031	0.026	0.0534	NA
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	NA	307	<0.001	0.0108	0.0053	NA
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	263	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	NA	240	<0.003	0.006	0.0273	NA
23-Feb-21	FR_FR4 (RG_FOBSC)	NA	269	<0.003	0.0052	0.026	NA
23-Feb-21	FR_FRABCH (RG_FO22)	NA	251	0.0014	0.0048	<0.005	NA
23-Feb-21	FR_FRCP1 (RG_FOBCP)	NA	334	0.0012	0.135	0.0144	NA
23-Feb-21	FR_FRRD (RG_FRUPO)	NA	311	<0.003	0.0233	0.0292	NA
23-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	202	<0.003	0.0068	0.0391	NA
23-Feb-21	FR_UFR1 (RG_URF1)	NA	140	0.0041	0.0046	0.0603	NA
24-Feb-21	FR_FRNTP (RG_FOUSH)	NA	229	<0.001	0.0452	0.11	NA
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	NA	215	<0.001	0.0056	0.0248	NA
2-Mar-21	FR_FR4 (RG_FOBSC)	NA	260	<0.001	0.0133	0.0256	NA
2-Mar-21	FR_FRABCH (RG_FO22)	NA	222	<0.001	0.0066	0.0069	NA
2-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	264	<0.001	0.0246	0.0253	NA
2-Mar-21	FR_FRNTP (RG_FOUSH)	NA	204	<0.001	0.0082	0.0553	NA
2-Mar-21	FR_FRRD (RG_FRUPO)	NA	301	<0.001	<0.003	0.0254	NA
2-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	195	0.0048	<0.003	0.0727	NA
2-Mar-21	FR_UFR1 (RG_URF1)	NA	140	<0.001	0.004	<0.005	NA
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	NA	195	<0.001	0.0541	0.0246	NA
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	NA	24.2	0.0063	0.615	0.254	NA
5-Mar-21	FR_FR5	NA	228	0.003	0.0036	0.0088	NA
5-Mar-21	FR_HC3 (RG_HENUP)	NA	110	<0.001	<0.003	0.0256	NA
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	239.5	0.0012	0.0337	0.0314	NA
8-Mar-21	FR_FRNTP (RG_FOUSH)	NA	230	0.0011	0.0205	0.0783	NA
9-Mar-21	FR_FR2 (RG_FOUKI)	NA	227	<0.003	0.0372	0.0405	NA
9-Mar-21	FR_FR4 (RG_FOBSC)	NA	249	<0.003	0.0453	0.0369	NA
9-Mar-21	FR_FRABCH (RG_FO22)	NA	267	<0.001	<0.003	<0.005	NA
9-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	281	0.0023	0.0229	0.0373	NA
9-Mar-21	FR_FRRD (RG_FRUPO)	NA	323	<0.003	<0.003	0.0077	NA
9-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	203	<0.003	0.0194	0.0779	NA
9-Mar-21	FR_UFR1 (RG_URF1)	NA	127	0.0072	0.281	0.0051	NA
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	NA	125	0.0045	0.18	0.0051	NA
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	NA	265	<0.001	0.0111	<0.005	NA
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	NA	214	0.0039	0.246	0.0431	NA
16-Mar-21	FR_FR4 (RG_FOBSC)	NA	215	<0.003	0.313	0.0343	NA
16-Mar-21	FR_FRABCH (RG_FO22)	NA	251	<0.001	0.0117	0.0106	NA
16-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	230	0.0027	0.0983	0.0327	NA
16-Mar-21	FR_FRNTP (RG_FOUSH)	NA	204	0.0046	0.216	0.0766	NA
16-Mar-21	FR_FRRD (RG_FRUPO)	NA	292	<0.003	0.0363	0.0072	NA
16-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	185	0.0046	0.27	0.0825	NA
16-Mar-21	FR_UFR1 (RG_URF1)	NA	104	0.0222	0.499	<0.005	NA
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	200	0.0063	0.163	0.0551	NA
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	169	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	183	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	NA	205	0.005	0.0598	0.0497	NA
23-Mar-21	FR_FR4 (RG_FOBSC)	NA	217	0.0042	0.0768	0.0407	NA
23-Mar-21	FR_FRABCH (RG_FO22)	NA	246	0.0014	0.0186	0.0092	NA
23-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	214	0.0044	0.119	0.0458	NA
23-Mar-21	FR_FRNTP (RG_FOUSH)	NA	197	0.0064	0.119	0.0606	NA
23-Mar-21	FR_FRRD (RG_FRUPO)	NA	253	<0.003	0.0707	0.0198	NA
23-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	183	0.0084	0.135	0.0658	NA
23-Mar-21	FR_UFR1 (RG_URF1)	NA	97.4	0.0189	0.262	0.0144	NA
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	216	0.0038	0.0726	0.0329	NA
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	NA	214	0.0029	0.0468	0.0561	NA
30-Mar-21	FR_FR4 (RG_FOBSC)	NA	226	0.0026	0.0487	0.0429	NA
30-Mar-21	FR_FRABCH (RG_FO22)	NA	258	0.0014	0.0168	<0.005	NA
30-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	233	0.0029	0.0296	0.0477	NA
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	NA	265	0.0013	0.058	0.0244	NA
30-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	199	0.0025	0.0335	0.0979	NA
30-Mar-21	FR_UFR1 (RG_URF1)	NA	115	0.008	0.197	0.034	NA
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	NA	207	0.0024	0.0262	0.0716	NA
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	226	0.0041	0.0772	0.0328	NA
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	206	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	217.5	0.0066	0.101	0.0238	NA
6-Apr-21	FR_FR1 (RG_FODHE)	NA	141	0.0029	0.0164	0.0217	NA
6-Apr-21	FR_FR2 (RG_FOUKI)	NA	216	0.0038	0.0548	0.0208	NA
6-Apr-21	FR_FRNTP (RG_FOUSH)	NA	207	0.0045	0.0588	0.0572	NA
6-Apr-21	FR_HC3 (RG_HENUP)	NA	109	0.0012	<0.003	<0.005	NA
6-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	192	0.0049	0.0718	0.129	NA
6-Apr-21	FR_UFR1 (RG_URF1)	NA	124	0.0055	0.104	<0.005	NA
7-Apr-21	FR_FR3 (RG_FOBKS)	NA	208	0.0035	0.0487	0.151	NA
7-Apr-21	FR_FR5	NA	234	<0.001	0.0129	<0.005	NA
7-Apr-21	FR_FRABCH (RG_FO22)	NA	244	0.0013	0.0247	<0.005	NA
7-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	215	0.0026	0.0584	0.0116	NA
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	214	0.0076	0.0479	0.0064	NA
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	NA	230	0.0013	0.0139	0.0326	NA
9-Apr-21	FR_FR4 (RG_FOBSC)	NA	217	0.0026	0.0428	<0.005	NA
12-Apr-21	FR_FR1 (RG_FODHE)	NA	149	0.0017	0.0088	<0.005	NA
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	NA	216	<0.001	0.0282	0.0146	NA
13-Apr-21	FR_FR4 (RG_FOBSC)	NA	234	0.0011	0.0579	0.0103	NA
13-Apr-21	FR_FRABCH (RG_FO22)	NA	237	0.0012	0.0631	0.0053	NA
13-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	232	0.0021	0.029	<0.005	NA
13-Apr-21	FR_FRRD (RG_FRUPO)	NA	262	<0.001	0.0074	0.0079	NA
13-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	198	0.0016	0.0255	0.0298	NA
13-Apr-21	FR_UFR1 (RG_URF1)	NA	125	0.0044	0.0668	0.0056	NA
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	NA	192	0.0014	0.0218	0.0445	NA
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	227	0.0011	0.0227	0.0077	NA
15-Apr-21	FR_FR4 (RG_FOBSC)	NA	235	0.0015	0.0168	0.007	NA
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	182	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	196	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	NA	137	0.0025	0.0283	<0.005	NA
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	206	0.0022	0.0432	0.0067	NA
20-Apr-21	FR_FRNTP (RG_FOUSH)	NA	190	0.0025	0.0479	0.0269	NA
20-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	178	0.0034	0.0464	0.0152	NA
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	NA	207	0.0023	0.0544	0.0063	NA
21-Apr-21	FR_FRABCH (RG_FO22)	NA	230	0.0014	0.11	<0.005	NA
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	199	0.0023	0.0483	0.0095	NA
22-Apr-21	FR_FR2 (RG_FOUKI)	NA	199	0.0023	0.0736	0.0158	NA
26-Apr-21	FR_FR1 (RG_FODHE)	NA	136	0.0021	0.0131	0.0088	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	NA	201	0.0016	0.0146	0.0084	NA
27-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	203	0.0017	0.0661	<0.005	NA
27-Apr-21	FR_FRNTP (RG_FOUSH)	NA	188	0.0019	0.0189	0.102	NA
27-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	179	0.0022	0.0162	0.0125	NA
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	NA	238	<0.001	0.0193	<0.005	NA
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	206	0.0015	0.0529	0.0066	NA
30-Apr-21	FR_FR4 (RG_FOBSC)	NA	205	0.0019	0.0291	<0.005	NA
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	178	0.0034	0.0549	<0.005	NA
3-May-21	FR_HC3 (RG_HENUP)	NA	113	0.0014	0.0093	<0.005	NA
3-May-21	FR_UFR1 (RG_URF1)	NA	119	0.0344	0.0513	<0.005	NA
4-May-21	FR_FR1 (RG_FODHE)	NA	133	0.0027	0.0193	0.0099	NA
4-May-21	FR_FR2 (RG_FOUKI)	NA	175	0.003	0.0686	0.0123	NA
4-May-21	FR_FR3 (RG_FOBKS)	NA	173	0.0024	0.0443	0.0075	NA
4-May-21	FR_FRNTP (RG_FOUSH)	NA	162	0.0017	0.048	0.0188	NA
4-May-21	FR_MULTIPLATE (RG_MP1)	NA	153	0.0024	0.0427	0.0184	NA
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	171	0.0034	0.0635	<0.005	NA
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	NA	193	<0.001	0.04	<0.005	NA
5-May-21	FR_FRABCH (RG_FO22)	NA	210	0.0016	0.0203	0.0124	NA
5-May-21	FR_FRCP1 (RG_FOBCP)	NA	176	0.0013	0.0726	0.028	NA
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	NA	205	0.0018	0.0618	<0.005	NA
7-May-21	FR_FR4 (RG_FOBSC)	NA	164	0.0024	0.0484	0.0151	NA
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	NA	138	0.0019	0.0125	<0.005	NA
11-May-21	FR_FR2 (RG_FOUKI)	NA	174	0.0018	0.03	0.0163	NA
11-May-21	FR_FRCP1 (RG_FOBCP)	NA	182	0.0016	0.031	<0.005	NA
11-May-21	FR_FRNTP (RG_FOUSH)	NA	164	0.0018	0.0242	0.0457	NA
11-May-21	FR_MULTIPLATE (RG_MP1)	NA	164	0.0016	0.0253	0.011	NA
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	NA	213	0.0018	0.0235	0.0141	NA
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	180	0.0028	0.0197	0.0089	NA
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	130	0.0033	0.34	0.0104	NA
18-May-21	FR_FR2 (RG_FOUKI)	NA	121	0.0032	0.444	0.0163	NA
18-May-21	FR_FR4 (RG_FOBSC)	NA	128	0.0043	0.745	0.0238	NA
18-May-21	FR_FRABCH (RG_FO22)	NA	159	0.0036	0.598	0.0184	NA
18-May-21	FR_FRCP1 (RG_FOBCP)	NA	144	0.0034	0.346	0.0269	NA
18-May-21	FR_FRRD (RG_FRUPO)	NA	160	0.0027	0.691	0.0087	NA
18-May-21	FR_MULTIPLATE (RG_MP1)	NA	117	0.0035	0.244	0.02	NA
18-May-21	FR_UFR1 (RG_URF1)	NA	117	0.0047	0.181	0.0115	NA
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	NA	154	0.0029	0.0678	0.102	NA
20-May-21	FR_FRNTP (RG_FOUSH)	NA	131	0.0038	0.238	0.0282	NA
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	NA	142	0.0024	0.0995	0.0147	NA
25-May-21	FR_FR4 (RG_FOBSC)	NA	158	0.0029	0.282	0.0099	NA
25-May-21	FR_FRABCH (RG_FO22)	NA	200	0.0012	0.0587	<0.005	NA
25-May-21	FR_FRCP1 (RG_FOBCP)	NA	185	0.0019	0.0541	0.0097	NA
25-May-21	FR_FRRD (RG_FRUPO)	NA	187	0.0013	0.0522	<0.005	NA
25-May-21	FR_MULTIPLATE (RG_MP1)	NA	138	0.0035	0.0722	0.0242	NA
25-May-21	FR_UFR1 (RG_URF1)	NA	123	0.004	0.0655	0.0053	NA
26-May-21	FR_FR1 (RG_FODHE)	NA	124	0.0032	0.026	0.0166	NA
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	147	0.0032	0.0736	0.0145	NA
27-May-21	FR_FR4 (RG_FOBSC)	NA	155	0.0026	0.0525	<0.005	NA
27-May-21	FR_FRNTP (RG_FOUSH)	NA	130	0.0038	0.0533	0.0107	NA
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	NA	114	0.0037	0.0339	0.0055	NA
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	139	0.0022	0.0698	0.0051	NA
1-Jun-21	FR_FR2 (RG_FOUKI)	NA	126	0.0038	0.0586	0.0387	NA
1-Jun-21	FR_FR4 (RG_FOBSC)	NA	137	0.0029	0.19	0.0062	NA
1-Jun-21	FR_FRABCH (RG_FO22)	NA	163	0.0024	0.262	<0.005	NA
1-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	152	0.0027	0.214	0.0179	NA
1-Jun-21	FR_FRNTP (RG_FOUSH)	NA	122	0.0034	0.101	0.0084	NA
1-Jun-21	FR_FRRD (RG_FRUPO)	NA	172	0.0021	0.206	0.0059	NA
1-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	125	0.0033	0.0558	0.0051	NA
1-Jun-21	FR_UFR1 (RG_URF1)	NA	106	0.0026	0.186	<0.005	NA
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	121	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	NA	135	0.0044	0.479	<0.005	NA
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	128	0.0097	0.211	0.0063	NA
7-Jun-21	FR_FR1 (RG_FODHE)	NA	114	0.0031	0.0458	0.0071	NA
7-Jun-21	FR_HC3 (RG_HENUP)	NA	103	0.0025	0.0146	0.0453	NA
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	141	0.0032	0.117	0.0089	NA
7-Jun-21	GH_PC2 (RG_FODPO)	NA	188	0.0016	0.163	0.0052	NA
8-Jun-21	FR_FR2 (RG_FOUKI)	NA	146	0.0049	0.138	0.012	NA
8-Jun-21	FR_FR4 (RG_FOBSC)	NA	166	0.0027	0.249	0.0081	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
8-Jun-21	FR_FRABCH (RG_FO22)	NA	192	0.004	0.116	0.006	NA
8-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	185	0.0014	0.0379	<0.005	NA
8-Jun-21	FR_FRRD (RG_FRUPO)	NA	207	0.0019	0.305	0.0115	NA
8-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	132	0.0031	0.12	0.0098	NA
8-Jun-21	FR_UFR1 (RG_URF1)	NA	114	0.003	0.032	0.005	NA
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	NA	148	0.0026	0.0285	0.0613	NA
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	149	0.0021	0.0322	0.0339	NA
10-Jun-21	FR_FR4 (RG_FOBSC)	NA	202	0.0018	0.0134	0.0328	NA
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	NA	178	0.0018	0.0182	<0.005	NA
14-Jun-21	FR_FOUCL (RG_FOUCL)	NA	110	0.0031	0.0148	0.0059	NA
14-Jun-21	FR_FR1 (RG_FODHE)	NA	114.5	0.00265	0.01745	0.01055	NA
14-Jun-21	FR_FR3 (RG_FOBKS)	NA	137	0.0024	0.0352	0.0302	NA
14-Jun-21	FR_FR5	NA	175	0.0016	0.0647	0.0441	NA
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	123	0.0025	0.0281	0.0092	NA
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	141	0.0023	0.0392	0.0188	NA
14-Jun-21	RG_FO26	NA	113	0.0029	0.0234	<0.005	NA
15-Jun-21	FR_FR2 (RG_FOUKI)	NA	126	0.0022	0.0458	0.0247	NA
15-Jun-21	FR_FR4 (RG_FOBSC)	NA	137	0.002	0.0366	0.02	NA
15-Jun-21	FR_FRABCH (RG_FO22)	NA	167	0.0019	0.0839	0.0064	NA
15-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	158	0.0022	0.0585	0.0115	NA
15-Jun-21	FR_FRNTP (RG_FOUSH)	NA	124	0.00275	0.0544	0.0331	NA
15-Jun-21	FR_FRRD (RG_FRUPO)	NA	183	0.0017	0.0482	0.0164	NA
15-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	116	0.0023	0.0648	0.0158	NA
15-Jun-21	FR_UFR1 (RG_URF1)	NA	113.5	0.0023	0.0529	0.0055	NA
15-Jun-21	RG_FOUNGD	NA	115	0.0022	0.0329	<0.005	NA
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	NA	131.75	0.0046	0.0234	0.0179	NA
16-Jun-21	FR_FR4 (RG_FOBSC)	NA	155	0.0017	0.0279	0.0112	NA
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	NA	119	0.0022	0.0347	0.0053	NA
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	NA	81.2	0.0032	0.0242	<0.005	NA
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	134.2	0.00285	0.02895	0.01505	NA
17-Jun-21	FR_FR2 (RG_FOUKI)	NA	136	0.0024	0.0347	0.0215	NA
17-Jun-21	FR_FR4 (RG_FOBSC)	NA	191	0.0019	0.0096	0.0093	NA
17-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	169	0.002	0.0122	0.0136	NA
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	NA	168	0.0059	0.0238	0.0108	NA
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	144	0.0019	0.0801	0.0167	NA
17-Jun-21	GH_PC2 (RG_FODPO)	NA	186	0.0026	0.0716	0.0097	NA
18-Jun-21	FR_FRABCH (RG_FO22)	NA	184	0.0024	0.0511	<0.005	NA
18-Jun-21	FR_FRRD (RG_FRUPO)	NA	197	0.0023	0.0074	<0.005	NA
18-Jun-21	RG_FOUEW	NA	177	0.0016	0.0235	0.0129	NA
21-Jun-21	FR_FR1 (RG_FODHE)	NA	109	0.00275	0.01165	0.0078	NA
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	147	0.0019	0.0174	0.0398	NA
21-Jun-21	FR_UFR1 (RG_URF1)	NA	118	0.0019	0.0211	0.0051	NA
22-Jun-21	FR_FR2 (RG_FOUKI)	NA	138	0.0024	0.0177	0.0184	NA
22-Jun-21	FR_FRABCH (RG_FO22)	NA	184	0.0021	0.0225	0.0081	NA
22-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	170	0.0021	0.0191	0.0064	NA
22-Jun-21	FR_FRNTP (RG_FOUSH)	NA	133	0.0024	0.0297	0.0163	NA
22-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	123	0.0032	0.0146	0.0213	NA
23-Jun-21	FR_FR4 (RG_FOBSC)	NA	164	0.0018	0.0226	0.0053	NA
28-Jun-21	FR_FR1 (RG_FODHE)	NA	107	0.0017	0.0114	<0.005	NA
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	140	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	143.5	0.001	0.0148	0.029	NA
29-Jun-21	FR_FR2 (RG_FOUKI)	NA	137	0.002	0.0079	0.02	NA
29-Jun-21	FR_FR4 (RG_FOBSC)	NA	150	0.0023	0.0175	0.0146	NA
29-Jun-21	FR_FRABCH (RG_FO22)	NA	190	0.0013	0.0166	0.0052	NA
29-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	176	0.0016	0.0202	0.0205	NA
29-Jun-21	FR_FRNTP (RG_FOUSH)	NA	134	0.0018	0.0174	0.0102	NA
29-Jun-21	FR_FRRD (RG_FRUPO)	NA	199	0.001	0.0112	<0.005	NA
29-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	126	0.0018	0.01	0.0096	NA
29-Jun-21	FR_UFR1 (RG_URF1)	NA	125	0.0022	0.0061	<0.005	NA
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	NA	157	0.0016	0.0092	0.0077	NA
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	NA	111	0.0015	0.0088	0.0055	NA
2-Jul-21	FR_UFR1 (RG_URF1)	NA	132	0.0024	0.0119	0.0054	NA
4-Jul-21	FR_FR2 (RG_FOUKI)	NA	160	0.0016	0.0107	0.0158	NA
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	NA	147	<0.001	0.0063	0.187	NA
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	165	0.0012	0.0125	<0.005	NA
5-Jul-21	FR_HC3 (RG_HENUP)	NA	93.1	0.0029	0.0059	0.0235	NA
6-Jul-21	FR_FR1 (RG_FODHE)	NA	109	0.0018	0.0143	0.0308	NA
6-Jul-21	FR_FR4 (RG_FOBSC)	NA	157	0.0014	0.05	0.0272	NA
6-Jul-21	FR_FRABCH (RG_FO22)	NA	192	0.0019	0.0249	0.0399	NA
6-Jul-21	FR_FRCP1 (RG_FOBCP)	NA	175	0.0016	0.0339	0.0691	NA
6-Jul-21	FR_FRRD (RG_FRUPO)	NA	203	<0.001	0.0415	<0.005	NA
6-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	132	0.0016	0.0198	0.0075	NA
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	149	0.0013	0.0444	0.0498	NA
6-Jul-21	FR_UFR1 (RG_URF1)	NA	131	<0.001	0.144	0.0441	NA
7-Jul-21	FR_FR2 (RG_FOUKI)	NA	151	0.0015	0.0261	0.0186	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	NA	144	0.0019	0.0166	0.0488	NA
7-Jul-21	GH_PC2 (RG_FODPO)	NA	199	0.0016	0.0392	<0.005	NA
8-Jul-21	FR_FR3 (RG_FOBKS)	NA	162	0.0011	0.0171	0.0187	NA
8-Jul-21	FR_FR5	NA	192	<0.001	0.0176	<0.005	NA
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	NA	116	0.0019	0.005	<0.005	NA
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	169	<0.001	0.0157	0.0078	NA
13-Jul-21	FR_FR2 (RG_FOUKI)	NA	159	0.0018	0.0269	0.0073	NA
13-Jul-21	FR_FR4 (RG_FOBSC)	NA	169	0.0012	0.0074	0.0064	NA
13-Jul-21	FR_FRABCH (RG_FO22)	NA	208	0.0018	0.004	0.0287	NA
13-Jul-21	FR_FRCP1 (RG_FOBCP)	NA	194	<0.001	0.0068	0.0584	NA
13-Jul-21	FR_FRNTP (RG_FOUSH)	NA	148	0.0013	0.0057	0.0122	NA
13-Jul-21	FR_FRRD (RG_FRUPO)	NA	226	<0.001	0.0059	<0.005	NA
13-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	140	0.0014	0.0093	0.007	NA
13-Jul-21	FR_UFR1 (RG_URF1)	NA	132	0.0018	0.0045	0.0343	NA
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	NA	164	0.0012	0.0096	0.0054	NA
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	NA	148	0.0011	0.0117	0.011	NA
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	NA	168	0.0011	0.006	0.0158	NA
20-Jul-21	FR_FR4 (RG_FOBSC)	NA	184	0.0044	0.0232	0.0314	NA
20-Jul-21	FR_FRRD (RG_FRUPO)	NA	241	<0.001	0.0067	0.005	NA
20-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	147	0.0021	0.0059	0.0164	NA
20-Jul-21	FR_UFR1 (RG_URF1)	NA	132	0.0012	0.0352	0.044	NA
22-Jul-21	FR_FRABCH (RG_FO22)	NA	228	<0.001	0.0064	0.0213	NA
26-Jul-21	FR_FRABCH (RG_FO22)	NA	236	0.0012	0.0045	0.0112	NA
27-Jul-21	FR_FR2 (RG_FOUKI)	NA	194	0.0013	0.0294	0.0119	NA
27-Jul-21	FR_FRNTP (RG_FOUSH)	NA	188	<0.001	0.0101	0.0363	NA
27-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	174	0.0013	0.0085	0.0195	NA
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	189.5	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	195	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	224	0.0011	0.0037	0.0156	NA
4-Aug-21	FR_FR2 (RG_FOUKI)	NA	169	0.001	0.0053	0.016	NA
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	NA	172	0.0015	0.0041	0.0324	NA
4-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	158	0.0012	0.0042	0.0338	NA
5-Aug-21	FR_FRABCH (RG_FO22)	NA	224	0.0015	0.0074	0.0208	NA
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	233	0.0012	0.008	0.0257	NA
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	NA	184	<0.001	0.0043	0.007	NA
10-Aug-21	FR_FR1 (RG_FODHE)	NA	143	0.0014	0.0034	0.0105	NA
10-Aug-21	FR_FR2 (RG_FOUKI)	NA	188	0.0011	0.0096	0.0126	NA
10-Aug-21	FR_FR4 (RG_FOBSC)	NA	226	0.001	0.0036	0.0076	NA
10-Aug-21	FR_FRABCH (RG_FO22)	NA	237	<0.001	0.004	0.0522	NA
10-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	219	<0.001	0.0057	0.0075	NA
10-Aug-21	FR_FRRD (RG_FRUPO)	NA	270	<0.001	0.0039	0.0055	NA
10-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	169	0.0012	0.0068	0.009	NA
10-Aug-21	FR_UFR1 (RG_URF1)	NA	151	0.0014	0.0035	0.0272	NA
11-Aug-21	FR_FR3 (RG_FOBKS)	NA	187	<0.001	0.0054	0.0086	NA
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	218	<0.001	0.0044	0.0085	NA
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	NA	197	<0.001	0.0067	0.0096	NA
12-Aug-21	FR_FR4 (RG_FOBSC)	NA	232	<0.001	0.0151	0.0922	NA
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	222	<0.001	0.0048	0.0102	NA
13-Aug-21	FR_FR3 (RG_FOBKS)	NA	215	<0.001	0.0037	0.0058	NA
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	225	0.0013	0.0062	<0.005	NA
14-Aug-21	FR_FR3 (RG_FOBKS)	NA	202	0.0011	0.0035	<0.005	NA
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	220	0.0012	0.0031	<0.005	NA
15-Aug-21	FR_FR3 (RG_FOBKS)	NA	202.3333333	0.0015	0.0045	0.0052	NA
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	216	0.0011	0.0036	0.0068	NA
16-Aug-21	FR_FR3 (RG_FOBKS)	NA	195	0.0021	0.0032	0.0085	NA
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	224	0.0019	0.0044	0.0051	NA
17-Aug-21	FR_FR2 (RG_FOUKI)	NA	201	0.002	0.53	0.0245	NA
17-Aug-21	FR_FR4 (RG_FOBSC)	NA	228	0.0039	1.1	0.0313	NA
17-Aug-21	FR_FR5	NA	226	0.0012	0.0176	0.0459	NA
17-Aug-21	FR_FRABCH (RG_FO22)	NA	240	0.001	0.0574	0.0448	NA
17-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	222	0.0028	0.298	0.0345	NA
17-Aug-21	FR_FRRD (RG_FRUPO)	NA	289	<0.001	0.018	0.0147	NA
17-Aug-21	FR_HC3 (RG_HENUP)	NA	103	0.0025	0.0922	0.0118	NA
17-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	171	0.0016	0.423	0.011	NA
17-Aug-21	FR_UFR1 (RG_URF1)	NA	146	0.0018	0.119	<0.005	NA
18-Aug-21	GH_PC2 (RG_FODPO)	NA	228	<0.001	0.033	0.026	NA
19-Aug-21	FR_FR2 (RG_FOUKI)	NA	180	0.0015	0.0084	0.0083	NA
19-Aug-21	FR_FRNTP (RG_FOUSH)	NA	168	0.0012	0.0166	0.0081	NA
19-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	157	0.0021	0.0095	0.0079	NA
24-Aug-21	FR_FR2 (RG_FOUKI)	NA	190	<0.001	0.0074	0.0137	NA
24-Aug-21	FR_FR4 (RG_FOBSC)	NA	208	0.001	0.0102	0.0107	NA
24-Aug-21	FR_FRABCH (RG_FO22)	NA	239	<0.001	0.0746	0.0093	NA
24-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	201	0.002	0.0076	0.0151	NA
24-Aug-21	FR_FRRD (RG_FRUPO)	NA	265	<0.001	0.0046	0.0065	NA
24-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	158	0.001	0.0068	0.0084	NA
24-Aug-21	FR_UFR1 (RG_URF1)	NA	145	0.0011	0.0042	0.0056	NA
25-Aug-21	FR_FR2 (RG_FOUKI)	NA	190	0.0014	0.0113	0.0135	NA
25-Aug-21	FR_FRNTP (RG_FOUSH)	NA	189	0.0013	0.0058	0.0193	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	159	<0.001	0.0292	0.0068	NA
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	NA	210	<0.001	0.0091	0.0209	NA
31-Aug-21	FR_FR4 (RG_FOBSC)	NA	235	<0.001	0.0037	0.0248	NA
31-Aug-21	FR_FRABCH (RG_FO22)	NA	248	<0.001	0.0039	<0.005	NA
31-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	232	<0.001	0.0034	0.0084	NA
31-Aug-21	FR_FRRD (RG_FRUPO)	NA	278	<0.001	0.0041	<0.005	NA
31-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	171	<0.001	0.0046	0.0122	NA
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	236	<0.001	0.0035	0.0208	NA
31-Aug-21	FR_UFR1 (RG_URF1)	NA	148	<0.001	<0.003	<0.005	NA
1-Sep-21	FR_FRNTP (RG_FOUSH)	NA	209	<0.001	0.0031	0.044	NA
3-Sep-21	FR_FR4 (RG_FOBSC)	NA	218	<0.001	0.004	0.0188	NA
7-Sep-21	FR_FR2 (RG_FOUKI)	NA	203	<0.001	0.0039	0.0141	NA
7-Sep-21	FR_FR4 (RG_FOBSC)	NA	239	<0.001	0.0039	0.0109	NA
7-Sep-21	FR_FRABCH (RG_FO22)	NA	244	<0.001	0.0042	0.0246	NA
7-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	238	<0.001	0.0084	0.0234	NA
7-Sep-21	FR_FRRD (RG_FRUPO)	NA	280	<0.001	0.0061	<0.005	NA
7-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	177	<0.001	0.005	<0.005	NA
7-Sep-21	FR_UFR1 (RG_URF1)	NA	151	0.0028	0.0076	0.011	NA
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	NA	198	<0.001	0.0054	0.0522	NA
9-Sep-21	FR_FR3 (RG_FOBKS)	NA	191	0.0014	0.0064	0.0141	NA
9-Sep-21	FR_FRNTP (RG_FOUSH)	NA	201	<0.001	0.0069	0.0714	NA
9-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	174	<0.001	0.0278	0.107	NA
11-Sep-21	GH_PC2 (RG_FODPO)	NA	241	<0.001	0.0042	0.0086	NA
11-Sep-21	RG_FOUEW	NA	244	0.0024	0.033	0.0178	NA
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	227	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	NA	247	<0.001	0.0059	0.0522	NA
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	266	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	NA	144	<0.001	<0.003	0.0075	NA
13-Sep-21	FR_FR1 (RG_FODHE)	NA	142	<0.001	<0.003	0.0071	NA
13-Sep-21	FR_FR4 (RG_FOBSC)	NA	248	<0.001	0.005	0.0914	NA
13-Sep-21	FR_FR5	NA	226	<0.001	0.0038	0.0154	NA
13-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	246	<0.001	<0.003	0.0237	NA
13-Sep-21	FR_FRRD (RG_FRUPO)	NA	286	<0.001	0.0058	<0.005	NA
13-Sep-21	FR_HC3 (RG_HENUP)	NA	108	0.0018	0.0041	0.0255	NA
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	251	<0.001	0.0043	0.0486	NA
13-Sep-21	GH_PC2 (RG_FODPO)	NA	239	<0.001	0.0044	0.0095	NA
14-Sep-21	FR_FR2 (RG_FOUKI)	NA	214	<0.001	0.0035	0.0462	NA
14-Sep-21	FR_FR3 (RG_FOBKS)	NA	208	<0.001	0.0033	0.102	NA
14-Sep-21	FR_FRNTP (RG_FOUSH)	NA	216	<0.001	0.005	0.0658	NA
14-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	173	<0.001	0.0077	0.0426	NA
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	262	<0.001	<0.003	0.0398	NA
15-Sep-21	FR_FR1 (RG_FODHE)	NA	142	0.0011	0.006	0.0163	NA
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	244	0.0012	0.0034	0.0162	NA
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	176	<0.001	0.0052	0.0258	NA
15-Sep-21	RG_FO26	NA	145	<0.001	0.003	0.0112	NA
16-Sep-21	FR_FRABCH (RG_FO22)	NA	253	<0.001	<0.003	0.0119	NA
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	172	<0.001	0.0088	0.0071	NA
16-Sep-21	FR_FRNTP (RG_FOUSH)	NA	187	<0.001	0.0034	0.018	NA
16-Sep-21	FR_HC3 (RG_HENUP)	NA	108	0.0015	<0.003	0.0163	NA
16-Sep-21	RG_FOUNGD	NA	171	0.0012	<0.003	0.0132	NA
17-Sep-21	FR_FR4 (RG_FOBSC)	NA	256	<0.001	0.0088	0.04	NA
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	NA	285	<0.001	0.0116	<0.005	NA
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	NA	200	0.0014	0.0034	0.0588	NA
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	NA	147	<0.001	0.0063	<0.005	NA
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	NA	242	0.0014	0.0034	0.0645	NA
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	NA	234	<0.001	0.0036	0.0968	NA
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	199	<0.001	0.0053	0.0323	NA
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	NA	220	<0.001	<0.003	0.0067	NA
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	223	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	260.5	<0.001	0.0062	0.0334	NA
28-Sep-21	FR_FR2 (RG_FOUKI)	NA	220	0.0011	0.0131	0.0534	NA
28-Sep-21	FR_FRABCH (RG_FO22)	NA	266	<0.001	0.0034	0.0111	NA
28-Sep-21	FR_FRNTP (RG_FOUSH)	NA	221	<0.001	0.0141	0.115	NA
28-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	180	0.001	0.0224	0.0344	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	NA	180	<0.001	0.0047	0.0464	NA
4-Oct-21	FR_FR1 (RG_FODHE)	NA	147	0.0019	0.004	<0.005	NA
4-Oct-21	FR_HC3 (RG_HENUP)	NA	107	0.0023	0.005	0.0066	NA
5-Oct-21	FR_FR2 (RG_FOUKI)	NA	218	<0.001	0.0091	0.144	NA
5-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	182	<0.001	0.0037	0.0161	NA
6-Oct-21	FR_FR3 (RG_FOBKS)	NA	242	0.0013	0.0091	0.146	NA
6-Oct-21	FR_FR5	NA	220	<0.001	0.0098	0.0209	NA
6-Oct-21	FR_FRABCH (RG_FO22)	NA	277	<0.001	<0.003	0.0261	NA
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	264	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	NA	265	<0.001	0.003	0.0513	NA
7-Oct-21	FR_FR4 (RG_FOBSC)	NA	252	0.0012	0.005	0.0184	NA
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	NA	206	0.0028	0.0074	<0.005	NA
9-Oct-21	FR_FRNTP (RG_FOUSH)	NA	212	0.0029	0.004	0.0107	NA
10-Oct-21	FR_FR2 (RG_FOUKI)	NA	200	<0.001	0.0047	<0.005	NA
10-Oct-21	FR_FRNTP (RG_FOUSH)	NA	196	<0.001	0.0099	0.0191	NA
11-Oct-21	FR_FR2 (RG_FOUKI)	NA	207	0.0033	<0.003	0.0171	NA
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	183	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	NA	197	<0.001	0.0104	0.0133	NA
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	250.5	0.002	0.0038	0.0112	NA
12-Oct-21	FR_FR2 (RG_FOUKI)	NA	193	<0.001	0.0043	<0.005	NA
12-Oct-21	FR_FR4 (RG_FOBSC)	NA	239	<0.001	0.0054	<0.005	NA
12-Oct-21	FR_FRABCH (RG_FO22)	NA	252	0.0011	0.0102	0.0073	NA
12-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	244	<0.001	0.0046	<0.005	NA
12-Oct-21	FR_FRRD (RG_FRUPO)	NA	301	<0.001	0.0061	0.274	NA
12-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	192	<0.001	0.0335	0.557	NA
13-Oct-21	FR_FR2 (RG_FOUKI)	NA	212	0.0013	0.0048	0.0568	NA
13-Oct-21	FR_FRNTP (RG_FOUSH)	NA	198	0.0016	0.0042	0.088	NA
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	NA	231	0.0013	0.007	0.0737	NA
19-Oct-21	FR_FR4 (RG_FOBSC)	NA	269	0.001	0.0339	0.0733	NA
19-Oct-21	FR_FRABCH (RG_FO22)	NA	262	<0.001	0.0288	<0.005	NA
19-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	258	<0.001	0.0039	0.104	NA
19-Oct-21	FR_FRNTP (RG_FOUSH)	NA	216	0.001	0.0038	0.145	NA
19-Oct-21	FR_FRRD (RG_FRUPO)	NA	301.25	<0.001	0.0041	0.01275	NA
19-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	209	0.0013	0.0051	0.0056	NA
19-Oct-21	FR_UFR1 (RG_URF1)	NA	158.5	0.00125	0.00515	0.01465	NA
20-Oct-21	FR_FR2 (RG_FOUKI)	NA	219	0.0012	0.0035	0.0921375	NA
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	267	<0.001	0.0095	0.135	NA
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	0.895	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	220	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	258	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	NA	216	<0.001	<0.003	0.0494	NA
26-Oct-21	FR_FR4 (RG_FOBSC)	NA	257	<0.001	0.0634	0.0403	NA
26-Oct-21	FR_FRABCH (RG_FO22)	NA	273	0.004	0.0153	<0.005	NA
26-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	256	<0.001	0.0031	0.0494	NA
26-Oct-21	FR_FRNTP (RG_FOUSH)	NA	223	0.0011	0.0078	0.107	NA
26-Oct-21	FR_FRRD (RG_FRUPO)	NA	305	<0.001	0.003	0.0075	NA
26-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	190	0.0012	0.0112	0.0053	NA
26-Oct-21	FR_UFR1 (RG_URF1)	NA	155	<0.001	<0.003	<0.005	NA
27-Oct-21	FR_FOUCL (RG_FOUCL)	NA	177	<0.001	<0.003	<0.005	NA
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	NA	197	0.0012	0.0054	0.0275	NA
28-Oct-21	FR_FRABCH (RG_FO22)	NA	254	<0.003	<0.003	<0.005	NA
28-Oct-21	FR_FRRD (RG_FRUPO)	NA	285	<0.003	<0.003	<0.005	NA
29-Oct-21	FR_FR4 (RG_FOBSC)	NA	238	<0.003	0.0042	0.0995	NA
29-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	238	<0.003	0.0038	0.0891	NA
2-Nov-21	FR_FR2 (RG_FOUKI)	NA	250	0.0015	0.0049	0.178	NA
2-Nov-21	FR_FR4 (RG_FOBSC)	NA	285	0.0026	0.0054	0.157	NA
2-Nov-21	FR_FRABCH (RG_FO22)	NA	261	<0.001	<0.003	0.011	NA
2-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	269	<0.001	0.0047	0.172	NA
2-Nov-21	FR_FRRD (RG_FRUPO)	NA	331	0.0021	<0.003	0.0093	NA
2-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	208	0.0013	0.0094	0.14	NA
2-Nov-21	FR_UFR1 (RG_URF1)	NA	144	<0.001	0.0074	<0.005	NA
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	228	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	NA	240	<0.001	0.0039	0.229	NA
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	252	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	282	0.0012	0.0157	0.147	NA
8-Nov-21	FR_FR3 (RG_FOBKS)	NA	236	<0.001	0.0044	0.221	NA
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	263	<0.001	0.0555	0.2	NA
8-Nov-21	GH_PC2 (RG_FODPO)	NA	259	<0.001	0.0791	0.0483	NA
9-Nov-21	FR_FR2 (RG_FOUKI)	NA	241	<0.001	0.0052	0.112	NA
9-Nov-21	FR_FR4 (RG_FOBSC)	NA	272	0.0015	0.0037	0.103	NA
9-Nov-21	FR_FRABCH (RG_FO22)	NA	285	<0.001	0.0099	0.0262	NA
9-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	266	<0.001	0.0107	0.105	NA
9-Nov-21	FR_FRRD (RG_FRUPO)	NA	320	<0.001	0.0052	0.067	NA
9-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	206	<0.001	0.0054	0.17	NA
9-Nov-21	FR_UFR1 (RG_URF1)	NA	151	0.0016	0.011	<0.005	NA
10-Nov-21	FR_FR4 (RG_FOBSC)	NA	298	<0.001	0.0036	0.209	NA
10-Nov-21	FR_HC3 (RG_HENUP)	NA	115	0.001	0.0339	<0.005	NA
12-Nov-21	FR_FR2 (RG_FOUKI)	NA	220	<0.001	<0.003	0.0914	NA
12-Nov-21	FR_FR4 (RG_FOBSC)	NA	141	<0.001	0.0065	0.0149	NA
12-Nov-21	FR_FRNTP (RG_FOUSH)	NA	217	<0.001	<0.003	1.38	NA
15-Nov-21	FR_FR5	NA	237	0.0013	0.0116	0.0149	NA
15-Nov-21	FR_FRABCH (RG_FO22)	NA	254	0.0014	0.0089	0.0238	NA
16-Nov-21	FR_FR1 (RG_FODHE)	NA	143	0.0035	0.0235	0.0058	NA
17-Nov-21	FR_FR2 (RG_FOUKI)	NA	198	0.0016	0.0304	0.288	NA
17-Nov-21	FR_FRNTP (RG_FOUSH)	NA	202	0.003	0.0376	0.367	NA
17-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	184	0.0019	0.0702	0.104	NA
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	201	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	216	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	NA	270	<0.001	0.0037	0.0557	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Alkalinity, Hydroxide (as OH)_mg/L	Alkalinity, Total (as CaCO3)_mg/L	Aluminum (Al)-Dissolved_mg/L	Aluminum (Al)-Total_mg/L	Ammonia, Total (as N)_mg/L	Anion Sum_meq/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	NA	243	0.0018	0.0117	0.352	NA
24-Nov-21	FR_FRNTP (RG_FOUSH)	NA	235	0.0062	0.0069	0.425	NA
24-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	196	0.0014	0.007	0.0499	NA
29-Nov-21	FR_FR2 (RG_FOUKI)	NA	208	0.0025	0.0813	0.0194	NA
29-Nov-21	FR_FRNTP (RG_FOUSH)	NA	192	0.0016	0.0182	0.0386	NA
29-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	190	0.0014	0.014	0.0254	NA
1-Dec-21	FR_FRABCH (RG_FO22)	NA	274	0.0013	0.0098	0.015	NA
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	247	0.0021	0.156	0.0166	NA
7-Dec-21	FR_FR2 (RG_FOUKI)	NA	211	<0.001	0.0192	0.0351	NA
7-Dec-21	FR_FRNTP (RG_FOUSH)	NA	221	0.0014	0.0128	0.0586	NA
7-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	202	0.0032	0.0133	0.0994	NA
8-Dec-21	FR_FR3 (RG_FOBKS)	NA	230	0.0015	0.023	0.0728	NA
8-Dec-21	FR_FRABCH (RG_FO22)	NA	281	0.0042	0.0052	0.012	NA
8-Dec-21	FR_FRRD (RG_FRUPO)	NA	312	<0.001	0.007	<0.005	NA
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	250	0.0016	0.0161	0.067	NA
9-Dec-21	FR_FR1 (RG_FODHE)	NA	159	0.0015	0.0159	0.0084	NA
9-Dec-21	FR_FR4 (RG_FOBSC)	NA	228	0.0022	0.0171	0.0845	NA
9-Dec-21	FR_HC3 (RG_HENUP)	NA	109	0.0018	<0.003	0.0073	NA
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	NA	245	0.0014	0.0103	0.0424	NA
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	<1	265	0.0016	<0.003	<0.005	13.7
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	NA	269	<0.001	<0.003	<0.005	NA
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	NA	209	<0.001	0.0053	0.0412	NA
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	NA	133	0.0166	0.0541	0.005	NA
17-Dec-21	FR_FOUCL (RG_FOUCL)	NA	159	0.0028	<0.003	0.0052	NA
17-Dec-21	FR_FR1 (RG_FODHE)	NA	170	<0.001	0.0042	0.0122	NA
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	NA	208	<0.001	0.0033	0.01	NA
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	221	<0.001	0.0075	0.0163	NA
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	263	0.0016	0.0078	0.0909	NA
17-Dec-21	FR_UFR1 (RG_URF1)	NA	136	0.0057	0.0404	0.007	NA
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	NA	195	<0.001	<0.003	<0.005	NA
20-Dec-21	FR_FRABCH (RG_FO22)	NA	264	0.0013	0.0266	0.0132	NA
21-Dec-21	GH_PC2 (RG_FODPO)	NA	263	<0.001	0.0043	<0.005	NA
22-Dec-21	FR_FR5	NA	270	0.0011	0.007	<0.005	NA
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	201	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	249.71	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	NA	254	0.001	0.0089	0.0162	NA
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	257.5	<0.001	0.008	0.0493	NA
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	0.00032	0.00038	<0.0001	0.00012	0.0811	0.0862
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.00037	0.00037	<0.0001	0.00014	0.0915	0.0918
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00033	0.00033	<0.0001	0.00011	0.0978	0.0958
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00012	0.0686	0.0692
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	0.0004	0.00041	0.00011	0.00011	0.0908	0.0871
12-Jan-21	FR_FR2 (RG_FOUKI)	0.00034	0.00034	<0.0001	0.0001	0.0887	0.0882
12-Jan-21	FR_FR3 (RG_FOBKS)	0.00038	0.0004	0.0001	0.00015	0.082	0.0875
12-Jan-21	FR_FR5	<0.0001	<0.0001	<0.0001	<0.0001	0.109	0.106
12-Jan-21	FR_FRNTP (RG_FOUSH)	0.0004	0.00041	0.00011	0.00012	0.0927	0.0918
12-Jan-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0138	0.014
12-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00037	0.00036	0.00014	0.00011	0.0949	0.108
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.124	0.121
19-Jan-21	FR_FR2 (RG_FOUKI)	0.00032	0.00032	<0.0001	<0.0001	0.0885	0.0926
19-Jan-21	FR_FRABCH (RG_FO22)	<0.0001	0.0001	<0.0001	0.00011	0.112	0.112
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.0006	0.00054	0.00011	0.00016	0.0833	0.0809
21-Jan-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.0926	0.0872
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	0.00048	0.00049	0.00011	0.00018	0.117	0.118
27-Jan-21	FR_FRNTP (RG_FOUSH)	0.00057	0.00062	0.00013	0.00019	0.125	0.124
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00051	0.00057	0.00011	0.00013	0.112	0.109
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	0.00041	0.0004	<0.0001	<0.0001	0.0873	0.0925
2-Feb-21	FR_FRNTP (RG_FOUSH)	0.00046	0.00048	<0.0001	0.00013	0.0928	0.0979
2-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00044	0.00043	<0.0001	0.00012	0.103	0.0975
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.016	0.0149
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	0.0003	0.0003	<0.0001	0.00011	0.0957	0.097
8-Feb-21	FR_FR5	<0.0001	<0.0001	<0.0001	<0.0001	0.131	0.128
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	0.00037	0.00036	<0.0001	0.00014	0.08	0.0886
9-Feb-21	FR_FR2 (RG_FOUKI)	0.00033	0.00039	<0.0001	0.00013	0.1	0.0949
9-Feb-21	FR_FRNTP (RG_FOUSH)	0.00044	0.00046	0.00011	0.00012	0.103	0.108
9-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00036	0.00043	<0.0001	0.00015	0.118	0.0974
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	0.00027	0.00028	<0.0001	<0.0001	0.101	0.0885
16-Feb-21	FR_FRNTP (RG_FOUSH)	0.00029	0.00031	<0.0001	<0.0001	0.105	0.0898
16-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00026	0.00027	<0.0001	<0.0001	0.113	0.0964
16-Feb-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.0975	0.0886
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	0.00012	0.118	0.115
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.00031	0.00031	0.00013	0.00014	0.099	0.0986
23-Feb-21	FR_FR4 (RG_FOBSC)	0.00035	0.00037	0.0001	0.00015	0.0847	0.0851
23-Feb-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0001	<0.0001	<0.0001	0.111	0.108
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.0005	0.00054	0.00018	0.0003	0.102	0.105
23-Feb-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	0.00011	0.119	0.117
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00034	0.00034	0.00011	0.00012	0.106	0.11
23-Feb-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	<0.0001	0.0729	0.0724
24-Feb-21	FR_FRNTP (RG_FOUSH)	0.00044	0.00045	0.00014	0.00021	0.105	0.108
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	0.00035	0.00031	<0.0001	0.00011	0.101	0.108
2-Mar-21	FR_FR4 (RG_FOBSC)	0.00036	0.00038	<0.0001	0.00015	0.088	0.0918
2-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0001	<0.0001	<0.0001	0.113	0.114
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00038	0.0004	0.0001	0.00018	0.0853	0.097
2-Mar-21	FR_FRNTP (RG_FOUSH)	0.00036	0.00038	0.00011	0.00012	0.108	0.11
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	0.0001	0.102	0.116
2-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00041	0.00038	0.0001	0.00011	0.117	0.117
2-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.0001	0.0737	0.0752
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.0003	0.0003	<0.0001	0.00017	0.0957	0.0932
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.0001	0.00021	<0.0001	0.00027	0.0395	0.0543
5-Mar-21	FR_FR5	<0.0001	<0.0001	<0.0001	<0.0001	0.124	0.116
5-Mar-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0166	0.016
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0004	0.00041	0.00012	0.00012	0.0954	0.0907
8-Mar-21	FR_FRNTP (RG_FOUSH)	0.00042	0.00042	0.0001	0.00013	0.104	0.118
9-Mar-21	FR_FR2 (RG_FOUKI)	0.00031	0.00033	<0.0001	0.00015	0.0963	0.109
9-Mar-21	FR_FR4 (RG_FOBSC)	0.00034	0.00038	0.00011	0.00017	0.0906	0.102
9-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0001	<0.0001	<0.0001	0.109	0.124
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00042	0.00042	0.00011	0.00016	0.0906	0.0979
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.106	0.109
9-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00037	0.00037	0.00011	0.00011	0.105	0.114
9-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00013	0.00019	0.0644	0.0713
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00012	0.00016	0.0652	0.066
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.096	0.0972
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.00033	0.00036	0.00012	0.00021	0.0856	0.0952
16-Mar-21	FR_FR4 (RG_FOBSC)	0.00035	0.00038	<0.0001	0.00019	0.0794	0.0869
16-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	0.0001	<0.0001	0.00011	0.0975	0.106
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00034	0.00038	0.00015	0.00024	0.0786	0.0805
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.00036	0.0004	0.00015	0.00023	0.0825	0.0923
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	0.00012	<0.0001	0.00013	0.0992	0.109
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00037	0.00037	0.00011	0.00021	0.0916	0.101
16-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00017	0.00024	0.0468	0.052
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00039	0.00045	0.00016	0.00026	0.0757	0.0804
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.00038	0.00037	0.00013	0.00016	0.084	0.0834
23-Mar-21	FR_FR4 (RG_FOBSC)	0.00042	0.0004	0.00015	0.0002	0.0781	0.0798
23-Mar-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	<0.0001	0.00011	0.102	0.111
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00039	0.00041	0.00014	0.00017	0.0815	0.0906
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.00041	0.00045	0.00014	0.00018	0.0821	0.0842
23-Mar-21	FR_FRRD (RG_FRUPO)	0.00021	0.00022	0.0001	0.00016	0.0881	0.0911
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00036	0.00036	0.00015	0.00015	0.0877	0.0847
23-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00015	0.00021	0.0463	0.0502
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00038	0.00041	0.00014	0.00018	0.0797	0.0808
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.00042	0.0004	0.00016	0.00022	0.0902	0.0964
30-Mar-21	FR_FR4 (RG_FOBSC)	0.00043	0.00043	0.00015	0.00023	0.0898	0.0946
30-Mar-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	0.00011	0.00017	0.098	0.102
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00044	0.00046	0.00016	0.00025	0.088	0.0897
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	0.00027	0.00027	0.00012	0.00018	0.0928	0.0977
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00044	0.00043	0.0002	0.0002	0.094	0.0999
30-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00014	0.00023	0.0542	0.0554
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.00042	0.00046	0.00016	0.00024	0.0972	0.0965
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00043	0.00044	0.00016	0.00027	0.0916	0.0928
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00045	0.0004	0.00016	0.00018	0.0861	0.0758
6-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00013	0.0617	0.0619
6-Apr-21	FR_FR2 (RG_FOUKI)	0.00041	0.00041	0.00013	0.00016	0.0845	0.0856
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.00043	0.00044	0.00015	0.00017	0.0864	0.0885
6-Apr-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	0.0001	0.0147	0.0146
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00037	0.00039	0.00014	0.00016	0.0878	0.0899
6-Apr-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00016	0.0531	0.0531
7-Apr-21	FR_FR3 (RG_FOBKS)	0.00041	0.00042	0.00013	0.00014	0.0868	0.0842
7-Apr-21	FR_FR5	0.00015	0.00014	<0.0001	0.0001	0.109	0.114
7-Apr-21	FR_FRABCH (RG_FO22)	0.00019	0.00018	0.00012	<0.0001	0.0975	0.0903
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00042	0.00042	<0.0001	0.00015	0.0755	0.0802
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00042	0.00042	0.00015	0.00014	0.0808	0.0776
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	0.00019	0.00018	0.00011	0.00013	0.0931	0.0922
9-Apr-21	FR_FR4 (RG_FOBSC)	0.0004	0.0004	0.00012	0.00015	0.0876	0.081
12-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.0001	0.0586	0.0567
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.00038	0.00044	0.00011	0.00013	0.092	0.0868
13-Apr-21	FR_FR4 (RG_FOBSC)	0.00041	0.00046	0.00011	0.00015	0.0857	0.0885
13-Apr-21	FR_FRABCH (RG_FO22)	0.00016	0.00017	<0.0001	0.00013	0.0992	0.0946
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00044	0.00044	0.00012	0.00015	0.0964	0.0835
13-Apr-21	FR_FRRD (RG_FRUPO)	0.00022	0.00024	<0.0001	<0.0001	0.0955	0.0871
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0004	0.0004	0.00013	0.00015	0.105	0.0905
13-Apr-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.0001	0.00013	0.0574	0.0563
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.0004	0.00044	0.00013	0.00015	0.0916	0.089
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00038	0.00043	0.00012	0.00014	0.0844	0.0854
15-Apr-21	FR_FR4 (RG_FOBSC)	0.00045	0.00046	0.00011	0.00021	0.091	0.0867
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	0.0001	0.00012	0.0515	0.0513
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00034	0.00036	0.00012	0.00016	0.0705	0.075
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.00033	0.00035	0.00012	0.00014	0.074	0.0778
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00029	0.00031	0.00011	0.00012	0.0729	0.0772
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.00032	0.00037	0.00011	0.00015	0.073	0.071
21-Apr-21	FR_FRABCH (RG_FO22)	0.00018	0.00019	0.00012	0.00016	0.0921	0.0935
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00034	0.00036	0.00011	0.00016	0.0762	0.0728
22-Apr-21	FR_FR2 (RG_FOUKI)	0.00032	0.00034	0.00013	0.00014	0.0752	0.0765
26-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00012	0.0455	0.0472

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.00034	0.00035	<0.0001	0.00018	0.0794	0.0758
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00038	0.00039	0.00011	0.00022	0.077	0.074
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.00034	0.00035	0.00011	0.00017	0.0799	0.0741
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00034	0.00034	0.00012	0.00018	0.0777	0.0772
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	0.00017	0.00016	<0.0001	0.00012	0.0928	0.0886
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00039	0.0004	0.00013	0.00014	0.0734	0.0742
30-Apr-21	FR_FR4 (RG_FOBSC)	0.00032	0.00036	0.00013	0.00019	0.0671	0.0675
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00026	0.00026	0.00015	0.00025	0.0636	0.0563
3-May-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	0.0001	0.00012	0.0132	0.0136
3-May-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00013	0.00013	0.0466	0.0432
4-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	0.00011	0.0001	0.0437	0.0417
4-May-21	FR_FR2 (RG_FOUKI)	0.00027	0.00028	0.00014	0.00015	0.0736	0.0625
4-May-21	FR_FR3 (RG_FOBKS)	0.00027	0.00028	0.00012	0.00017	0.0696	0.0608
4-May-21	FR_FRNTP (RG_FOUSH)	0.00028	0.00027	0.00011	0.00016	0.0664	0.0601
4-May-21	FR_MULTIPLATE (RG_MP1)	0.00023	0.00027	0.00012	0.00017	0.0594	0.0616
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	0.00028	0.00013	0.00019	0.0655	0.0593
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	0.00015	0.00015	<0.0001	0.00015	0.0799	0.088
5-May-21	FR_FRABCH (RG_FO22)	0.00019	0.0002	0.00013	0.00018	0.0835	0.0822
5-May-21	FR_FRCP1 (RG_FOBCP)	0.00029	0.00028	0.00011	0.00018	0.0577	0.0613
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.0002	0.00022	0.00012	0.00017	0.081	0.0712
7-May-21	FR_FR4 (RG_FOBSC)	0.00022	0.00022	0.00012	0.00018	0.0537	0.0566
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.0001	0.0376	0.0393
11-May-21	FR_FR2 (RG_FOUKI)	0.00024	0.00024	<0.0001	0.00012	0.0529	0.0496
11-May-21	FR_FRCP1 (RG_FOBCP)	0.00024	0.00028	0.00011	0.00015	0.0574	0.0595
11-May-21	FR_FRNTP (RG_FOUSH)	0.00023	0.00024	0.00011	0.00012	0.0546	0.051
11-May-21	FR_MULTIPLATE (RG_MP1)	0.00021	0.00022	0.00013	0.00012	0.0542	0.0488
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.00017	0.00017	<0.0001	0.0001	0.0707	0.0763
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00027	0.00025	0.00011	0.0001	0.0528	0.0529
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00016	0.00017	0.00014	0.00029	0.0388	0.049
18-May-21	FR_FR2 (RG_FOUKI)	0.00013	0.00015	0.0001	0.00032	0.0346	0.0424
18-May-21	FR_FR4 (RG_FOBSC)	0.00013	0.00019	0.00012	0.00044	0.0351	0.05
18-May-21	FR_FRABCH (RG_FO22)	0.00014	0.00016	0.00013	0.00037	0.0501	0.06
18-May-21	FR_FRCP1 (RG_FOBCP)	0.00015	0.00018	0.00014	0.0003	0.0401	0.0516
18-May-21	FR_FRRD (RG_FRUPO)	0.00013	0.00017	0.00012	0.00034	0.0469	0.0578
18-May-21	FR_MULTIPLATE (RG_MP1)	0.00012	0.00014	0.00011	0.00024	0.0347	0.0391
18-May-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00014	0.0002	0.0359	0.038
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.0002	0.0002	0.00012	0.00017	0.0444	0.0444
20-May-21	FR_FRNTP (RG_FOUSH)	0.00012	0.00014	0.00013	0.00024	0.0338	0.0405
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.00017	0.00018	0.00012	0.00016	0.044	0.0443
25-May-21	FR_FR4 (RG_FOBSC)	0.0002	0.00022	0.00012	0.00026	0.0467	0.049
25-May-21	FR_FRABCH (RG_FO22)	0.00018	0.00019	0.00012	0.00018	0.0638	0.0629
25-May-21	FR_FRCP1 (RG_FOBCP)	0.00022	0.00022	0.00012	0.00014	0.0521	0.0536
25-May-21	FR_FRRD (RG_FRUPO)	0.00018	0.00019	<0.0001	0.00015	0.0632	0.0636
25-May-21	FR_MULTIPLATE (RG_MP1)	0.00018	0.00018	0.00014	0.00015	0.0425	0.0428
25-May-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00011	0.00016	0.0395	0.0395
26-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00013	0.0329	0.0328
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00017	0.00019	0.00011	0.00015	0.0425	0.0434
27-May-21	FR_FR4 (RG_FOBSC)	0.00019	0.00019	0.00011	0.00014	0.043	0.0441
27-May-21	FR_FRNTP (RG_FOUSH)	0.00013	0.00015	0.00011	0.00013	0.0398	0.0407
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00013	0.0311	0.0316
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00016	0.00017	<0.0001	0.00015	0.0378	0.0405
1-Jun-21	FR_FR2 (RG_FOUKI)	0.00012	0.00012	0.00012	0.00013	0.0317	0.0338
1-Jun-21	FR_FR4 (RG_FOBSC)	0.00013	0.00014	0.00011	0.00021	0.0338	0.0386
1-Jun-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	0.00011	0.00023	0.0482	0.0524
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00017	0.00018	0.0001	0.00025	0.0393	0.0442
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.00012	0.00014	0.00012	0.0002	0.0334	0.0336
1-Jun-21	FR_FRRD (RG_FRUPO)	0.00014	0.00016	<0.0001	0.00022	0.0487	0.0511
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00012	0.00012	<0.0001	0.00014	0.032	0.0336
1-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.0001	0.00018	0.0339	0.034
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.00016	0.00018	0.00011	0.00042	0.036	0.0466
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00012	0.00014	0.00013	0.00025	0.0326	0.0377
7-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	0.0001	0.00015	0.0285	0.0304
7-Jun-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	0.0001	0.00927	0.0092
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00015	0.00016	0.00014	0.00019	0.0384	0.0395
7-Jun-21	GH_PC2 (RG_FODPO)	0.00022	0.00024	0.00012	0.0002	0.0524	0.0564
8-Jun-21	FR_FR2 (RG_FOUKI)	0.00014	0.00019	0.00012	0.00017	0.0388	0.0394
8-Jun-21	FR_FR4 (RG_FOBSC)	0.00021	0.00027	0.00012	0.00031	0.0384	0.0443

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.00021	0.00021	<0.0001	0.0002	0.0537	0.0556
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00026	0.00025	<0.0001	0.00014	0.0448	0.0436
8-Jun-21	FR_FRRD (RG_FRUPO)	0.00021	0.00027	<0.0001	0.00027	0.0596	0.0632
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00014	0.00018	0.00012	0.00017	0.0377	0.039
8-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00011	0.00011	0.0359	0.0362
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.00017	0.00016	0.0001	0.00015	0.0417	0.0466
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00016	0.0002	<0.0001	0.00015	0.0425	0.0457
10-Jun-21	FR_FR4 (RG_FOBSC)	0.00031	0.00032	0.0001	0.00011	0.0488	0.0441
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.00025	0.00028	0.00012	0.00012	0.0569	0.0557
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0001	0.00011	0.00017	0.0258	0.0258
14-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	0.0001	0.00014	0.03005	0.03
14-Jun-21	FR_FR3 (RG_FOBKS)	0.00015	0.00015	0.00012	0.00012	0.0395	0.0389
14-Jun-21	FR_FR5	0.00016	0.00016	<0.0001	0.00014	0.0561	0.055
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00012	0.00013	0.00012	0.00017	0.0363	0.0352
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00016	0.00017	0.00011	0.00013	0.0397	0.0394
14-Jun-21	RG_FO26	<0.0001	<0.0001	0.00014	0.00016	0.0317	0.0311
15-Jun-21	FR_FR2 (RG_FOUKI)	0.00012	0.00012	0.0001	0.00012	0.0341	0.0333
15-Jun-21	FR_FR4 (RG_FOBSC)	0.00015	0.00015	0.00012	0.00012	0.0362	0.0353
15-Jun-21	FR_FRABCH (RG_FO22)	0.00014	0.00018	0.00011	0.00014	0.0466	0.0441
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00018	0.0002	<0.0001	0.00014	0.0402	0.046
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.000125	0.000145	0.000115	0.000165	0.0333	0.03505
15-Jun-21	FR_FRRD (RG_FRUPO)	0.00016	0.00017	0.0001	0.00014	0.0546	0.0532
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0001	0.0001	0.00011	0.00015	0.0305	0.03
15-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.000125	0.000175	0.0367	0.0373
15-Jun-21	RG_FOUNGD	<0.0001	<0.0001	0.00012	0.00017	0.0309	0.0299
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.00013	0.00015	0.0001	0.00012	0.0354	0.0352
16-Jun-21	FR_FR4 (RG_FOBSC)	0.00019	0.0002	0.0001	0.00012	0.0411	0.04
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.0001	0.0001	<0.0001	0.00012	0.0306	0.0302
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	0.00012	0.00642	0.00636
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.000135	0.00014	0.000105	0.000145	0.0363	0.03505
17-Jun-21	FR_FR2 (RG_FOUKI)	0.00013	0.00016	0.0001	0.00012	0.0377	0.0383
17-Jun-21	FR_FR4 (RG_FOBSC)	0.00025	0.00024	0.0001	0.00014	0.048	0.0463
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0002	0.00019	<0.0001	0.00014	0.0447	0.0447
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.00029	0.0002	<0.0001	0.00016	0.0453	0.0444
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00015	0.00015	0.0001	0.00018	0.0393	0.0398
17-Jun-21	GH_PC2 (RG_FODPO)	0.0002	0.00017	<0.0001	0.00018	0.0558	0.058
18-Jun-21	FR_FRABCH (RG_FO22)	0.00017	0.00018	0.00014	0.00014	0.0546	0.0545
18-Jun-21	FR_FRRD (RG_FRUPO)	0.00019	0.0002	0.00013	0.0001	0.0584	0.055
18-Jun-21	RG_FOUEW	0.00024	0.00016	0.00014	0.0001	0.0527	0.0508
21-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00012	0.025	0.02515
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00015	0.00017	<0.0001	0.00013	0.0336	0.0375
21-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.0001	0.00012	0.0395	0.0393
22-Jun-21	FR_FR2 (RG_FOUKI)	0.00014	0.00016	0.0001	0.00011	0.0363	0.0338
22-Jun-21	FR_FRABCH (RG_FO22)	0.00017	0.00016	<0.0001	<0.0001	0.0538	0.0514
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0002	0.00022	<0.0001	0.00012	0.0441	0.044
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.00014	0.00013	<0.0001	0.0001	0.0358	0.0328
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00013	0.00012	0.00012	0.0001	0.0346	0.0306
23-Jun-21	FR_FR4 (RG_FOBSC)	0.00019	0.00017	<0.0001	<0.0001	0.0415	0.0368
28-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	<0.0001	0.0222	0.0234
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00016	0.00016	<0.0001	0.00012	0.0355	0.0372
29-Jun-21	FR_FR2 (RG_FOUKI)	0.00016	0.00017	<0.0001	0.00016	0.0364	0.037
29-Jun-21	FR_FR4 (RG_FOBSC)	0.00017	0.00019	<0.0001	0.00012	0.0397	0.0386
29-Jun-21	FR_FRABCH (RG_FO22)	0.00017	0.00018	<0.0001	0.00012	0.0537	0.0536
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00021	0.00022	<0.0001	0.00013	0.0433	0.0458
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.00017	0.00016	0.0001	0.00012	0.0352	0.0359
29-Jun-21	FR_FRRD (RG_FRUPO)	0.00017	0.00018	<0.0001	0.00012	0.0613	0.0598
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00013	0.00014	<0.0001	0.00011	0.0363	0.0357
29-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00011	0.00013	0.0469	0.0463
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.00019	0.00019	<0.0001	0.00018	0.0402	0.0413
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.0001	0.0236	0.0237
2-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.0001	0.0486	0.0505
4-Jul-21	FR_FR2 (RG_FOUKI)	0.00015	0.0002	<0.0001	0.0001	0.0423	0.0487
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.00016	0.0002	<0.0001	0.0001	0.0409	0.0472
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.00021	0.0002	0.00012	0.00011	0.0421	0.041
5-Jul-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0086	0.0087
6-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	<0.0001	0.0246	0.0238
6-Jul-21	FR_FR4 (RG_FOBSC)	0.00016	0.00018	<0.0001	0.00012	0.0381	0.041
6-Jul-21	FR_FRABCH (RG_FO22)	0.00017	0.00019	<0.0001	0.00012	0.06	0.0595
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0002	0.00023	<0.0001	0.00015	0.0482	0.049
6-Jul-21	FR_FRRD (RG_FRUPO)	0.00016	0.00017	<0.0001	0.00011	0.0578	0.0613
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00012	0.00013	<0.0001	<0.0001	0.0368	0.0374
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.00017	0.00018	<0.0001	0.00014	0.0406	0.0385
6-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00014	0.0464	0.0545
7-Jul-21	FR_FR2 (RG_FOUKI)	0.00016	0.00018	0.0001	0.0001	0.0418	0.0456

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.00015	0.00019	0.0001	0.00011	0.0396	0.0468
7-Jul-21	GH_PC2 (RG_FODPO)	0.00017	0.0002	<0.0001	<0.0002	0.0556	0.0628
8-Jul-21	FR_FR3 (RG_FOBKS)	0.00019	0.00022	0.0001	0.00011	0.0493	0.0466
8-Jul-21	FR_FR5	0.00014	0.00015	<0.0001	0.00011	0.0746	0.0714
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	<0.0001	0.03	0.0289
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.00022	0.00022	<0.0001	0.0001	0.05	0.0478
13-Jul-21	FR_FR2 (RG_FOUKI)	0.00024	0.00022	<0.0001	0.00013	0.0521	0.054
13-Jul-21	FR_FR4 (RG_FOBSC)	0.00025	0.00025	0.0001	0.00011	0.0538	0.0537
13-Jul-21	FR_FRABCH (RG_FO22)	0.00018	0.00019	<0.0001	<0.0001	0.0755	0.0686
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.00026	0.00028	<0.0001	0.00015	0.0567	0.0575
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.00021	0.00022	<0.0001	0.0001	0.0507	0.0483
13-Jul-21	FR_FRRD (RG_FRUPO)	0.00019	0.00018	<0.0001	<0.0001	0.0767	0.076
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00019	0.00019	<0.0001	<0.0001	0.0522	0.0532
13-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00011	0.0652	0.0607
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.00022	0.00022	<0.0001	0.00011	0.0542	0.0544
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.00017	0.00019	<0.0001	0.00011	0.0584	0.0583
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.00024	0.00023	0.00012	0.00012	0.0617	0.0616
20-Jul-21	FR_FR4 (RG_FOBSC)	0.00026	0.00025	0.00012	0.00015	0.0586	0.0596
20-Jul-21	FR_FRRD (RG_FRUPO)	0.00014	0.00015	<0.0001	<0.0001	0.0823	0.0829
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0002	0.00019	<0.0001	0.00011	0.0606	0.0623
20-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00015	0.0668	0.0662
22-Jul-21	FR_FRABCH (RG_FO22)	0.00016	0.00018	<0.0001	<0.0001	0.0806	0.0796
26-Jul-21	FR_FRABCH (RG_FO22)	0.00016	0.00016	<0.0001	0.00013	0.087	0.0799
27-Jul-21	FR_FR2 (RG_FOUKI)	0.0003	0.00031	0.00011	0.00018	0.0735	0.0665
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.00031	0.00032	0.00011	0.00016	0.0726	0.0676
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00031	0.00032	0.00011	0.00013	0.0774	0.073
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00034	0.00036	0.00012	0.00022	0.0747	0.0689
4-Aug-21	FR_FR2 (RG_FOUKI)	0.0003	0.00029	0.0001	0.00011	0.0736	0.0746
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.0003	0.0003	0.00011	0.00013	0.0738	0.0719
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00031	0.00027	0.00023	0.0001	0.0794	0.0756
5-Aug-21	FR_FRABCH (RG_FO22)	0.00014	0.00015	<0.0001	<0.0001	0.102	0.0962
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00037	0.00039	0.00014	0.00013	0.08	0.0778
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.00024	0.00025	<0.0001	0.00012	0.0743	0.0732
10-Aug-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00012	0.0413	0.0436
10-Aug-21	FR_FR2 (RG_FOUKI)	0.00024	0.00025	<0.0001	0.00015	0.0707	0.0751
10-Aug-21	FR_FR4 (RG_FOBSC)	0.00029	0.00029	0.00012	0.00016	0.0663	0.0699
10-Aug-21	FR_FRABCH (RG_FO22)	0.00012	0.00014	<0.0001	0.00012	0.0946	0.0916
10-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00028	0.0003	0.00011	0.00015	0.0764	0.0792
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.0001	0.00011	<0.0001	0.00012	0.0902	0.0907
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00022	0.00023	<0.0001	0.00013	0.0741	0.0761
10-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.0001	0.00014	0.0739	0.076
11-Aug-21	FR_FR3 (RG_FOBKS)	0.00025	0.00026	0.0001	0.00014	0.0749	0.0768
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	0.00029	0.00011	0.00014	0.0716	0.0751
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	0.00023	0.00024	<0.0001	0.00012	0.0748	0.0768
12-Aug-21	FR_FR4 (RG_FOBSC)	0.00028	0.00033	<0.0001	0.00014	0.0682	0.0753
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00026	0.00026	<0.0001	0.00012	0.0727	0.0766
13-Aug-21	FR_FR3 (RG_FOBKS)	0.00026	0.00023	0.00011	0.00013	0.0748	0.0731
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00029	0.00029	<0.0001	0.00013	0.0723	0.0712
14-Aug-21	FR_FR3 (RG_FOBKS)	0.00028	0.00029	0.00012	0.00015	0.0763	0.0774
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0003	0.0003	0.00014	0.00015	0.0736	0.0761
15-Aug-21	FR_FR3 (RG_FOBKS)	0.00026	0.00026	<0.0001	0.00011	0.0722	0.0723
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00031	0.00029	<0.0001	0.00012	0.0682	0.0686
16-Aug-21	FR_FR3 (RG_FOBKS)	0.00025	0.00025	0.00013	0.0001	0.0774	0.0738
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	0.0003	0.00012	0.0001	0.0735	0.0722
17-Aug-21	FR_FR2 (RG_FOUKI)	0.00025	0.00029	0.00012	0.00029	0.0706	0.0816
17-Aug-21	FR_FR4 (RG_FOBSC)	0.00029	0.0004	0.00014	0.0006	0.0643	0.0966
17-Aug-21	FR_FR5	0.0001	0.0001	<0.0001	<0.0001	0.0927	0.0944
17-Aug-21	FR_FRABCH (RG_FO22)	0.00011	0.00012	<0.0001	0.00015	0.0851	0.0901
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0003	0.00032	0.00011	0.00034	0.0658	0.0767
17-Aug-21	FR_FRRD (RG_FRUPO)	0.00012	0.00012	<0.0001	<0.0001	0.09	0.0867
17-Aug-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	0.00015	0.0115	0.0121
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0002	0.00022	0.00011	0.00027	0.0668	0.076
17-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00011	0.00017	0.0607	0.0647
18-Aug-21	GH_PC2 (RG_FODPO)	0.00016	0.00018	<0.0001	0.00013	0.0744	0.0767
19-Aug-21	FR_FR2 (RG_FOUKI)	0.00018	0.00018	<0.0001	0.00011	0.0575	0.056
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.00018	0.00018	0.0001	0.00011	0.0553	0.0547
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00017	0.00016	<0.0001	0.0001	0.0586	0.0563
24-Aug-21	FR_FR2 (RG_FOUKI)	0.00022	0.00022	0.0001	0.00012	0.058	0.0567
24-Aug-21	FR_FR4 (RG_FOBSC)	0.00024	0.00025	<0.0001	0.0001	0.0557	0.0566
24-Aug-21	FR_FRABCH (RG_FO22)	0.00015	0.00017	<0.0001	0.0002	0.0795	0.0818
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00023	0.00028	<0.0001	0.00014	0.0585	0.063
24-Aug-21	FR_FRRD (RG_FRUPO)	0.00015	0.00014	<0.0001	0.00011	0.0832	0.0844
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00017	0.00017	<0.0001	<0.0001	0.0581	0.057
24-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00012	0.0627	0.0614
25-Aug-21	FR_FR2 (RG_FOUKI)	0.00025	0.00027	<0.0001	0.00016	0.0596	0.0589
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.00025	0.00025	0.0001	0.00013	0.0602	0.0597

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00017	0.0002	<0.0001	0.00013	0.0581	0.0615
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	0.00033	0.00035	0.00011	0.00019	0.0682	0.0648
31-Aug-21	FR_FR4 (RG_FOBSC)	0.00035	0.00037	0.00011	0.00019	0.0651	0.0644
31-Aug-21	FR_FRABCH (RG_FO22)	0.00018	0.00018	<0.0001	0.0001	0.0868	0.0826
31-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00034	0.00034	0.00012	0.00013	0.0716	0.0707
31-Aug-21	FR_FRRD (RG_FRUPO)	0.00015	0.00016	0.0001	0.00014	0.0992	0.0909
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00024	0.00024	0.00011	0.00019	0.0703	0.0668
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00036	0.00037	0.00011	0.00013	0.0614	0.0588
31-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	<0.0001	0.0676	0.0678
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.00035	0.00035	0.00012	0.00012	0.0595	0.0657
3-Sep-21	FR_FR4 (RG_FOBSC)	0.00029	0.00032	0.00012	0.00013	0.063	0.0594
7-Sep-21	FR_FR2 (RG_FOUKI)	0.00027	0.00027	0.00011	0.00011	0.0703	0.068
7-Sep-21	FR_FR4 (RG_FOBSC)	0.00032	0.00032	0.0001	0.00014	0.0666	0.0659
7-Sep-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	<0.0001	0.00019	0.0894	0.0868
7-Sep-21	FR_FRCP1 (RG_FOBCP)	0.00029	0.0003	0.00012	0.00014	0.076	0.0735
7-Sep-21	FR_FRRD (RG_FRUPO)	0.00012	0.00012	<0.0001	<0.0001	0.0938	0.0918
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00023	0.00023	0.0001	0.00011	0.0738	0.0724
7-Sep-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00012	0.0714	0.0646
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	0.00025	0.00027	<0.0001	0.00013	0.0744	0.0727
9-Sep-21	FR_FR3 (RG_FOBKS)	0.00026	0.00027	<0.0001	0.00016	0.076	0.0699
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.00026	0.00028	<0.0001	0.00015	0.0741	0.074
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00023	0.00025	<0.0001	0.00014	0.0778	0.0764
11-Sep-21	GH_PC2 (RG_FODPO)	0.00019	0.00021	<0.0001	0.00013	0.0816	0.083
11-Sep-21	RG_FOUEW	0.00014	0.00014	<0.0001	0.00016	0.0899	0.0902
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	0.00014	0.00016	<0.0001	0.00011	0.0913	0.0945
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0001	<0.0001	<0.0001	0.0669	0.0678
13-Sep-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00011	0.042	0.0422
13-Sep-21	FR_FR4 (RG_FOBSC)	0.00035	0.00036	0.00014	0.00017	0.0655	0.066
13-Sep-21	FR_FR5	0.00012	0.00014	<0.0001	0.00013	0.0918	0.0949
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.00035	0.00036	0.00012	0.00014	0.0706	0.0718
13-Sep-21	FR_FRRD (RG_FRUPO)	0.00011	0.00016	<0.0001	0.00013	0.0942	0.0937
13-Sep-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	0.00011	0.0131	0.0128
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00037	0.00041	0.00013	0.00017	0.0661	0.0642
13-Sep-21	GH_PC2 (RG_FODPO)	0.00019	0.00022	<0.0001	0.0001	0.0794	0.0795
14-Sep-21	FR_FR2 (RG_FOUKI)	0.00032	0.00033	0.00011	0.00016	0.0709	0.0717
14-Sep-21	FR_FR3 (RG_FOBKS)	0.00032	0.00036	0.00012	0.00018	0.0731	0.0684
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.00035	0.00037	0.00012	0.00017	0.0697	0.0745
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00031	0.00033	0.0001	0.00013	0.0771	0.0796
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00038	0.00037	0.00013	0.00016	0.0659	0.0634
15-Sep-21	FR_FR1 (RG_FODHE)	<0.0001	0.00015	<0.0001	0.00013	0.0406	0.0412
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	0.00035	0.00038	0.0001	<0.0003	0.0734	0.0745
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00032	0.00037	<0.0001	<0.0003	0.0782	0.0839
15-Sep-21	RG_FO26	<0.0001	<0.0001	<0.0001	<0.0002	0.0466	0.0472
16-Sep-21	FR_FRABCH (RG_FO22)	0.00014	0.00016	<0.0001	0.00013	0.096	0.0912
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.00018	0.0002	<0.0001	0.0001	0.0762	0.0739
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.00032	0.00032	<0.0001	0.00012	0.0796	0.0766
16-Sep-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.013	0.0127
16-Sep-21	RG_FOUNGD	0.00016	0.00018	<0.0001	<0.0001	0.0844	0.0821
17-Sep-21	FR_FR4 (RG_FOBSC)	0.00035	0.00035	0.00012	0.00014	0.0703	0.0648
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	0.00012	0.00011	<0.0001	0.00011	0.102	0.0979
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.00035	0.0004	<0.0001	0.00014	0.0755	0.0772
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	<0.0001	0.0739	0.071
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.00036	0.00036	<0.0001	0.00011	0.0863	0.0831
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.0004	0.0004	0.00013	0.00013	0.0868	0.0856
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00036	0.00036	0.0001	0.00011	0.0822	0.08
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	0.00014	0.00015	<0.0001	<0.0001	0.0995	0.0945
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00045	0.00046	0.00012	0.00015	0.0852	0.0843
28-Sep-21	FR_FR2 (RG_FOUKI)	0.00048	0.00048	0.00014	0.00015	0.0962	0.104
28-Sep-21	FR_FRABCH (RG_FO22)	0.00015	0.00015	<0.0001	<0.0001	0.0944	0.104
28-Sep-21	FR_FRNTP (RG_FOUSH)	0.00051	0.00054	0.00016	0.00018	0.0993	0.108
28-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00041	0.00041	0.00012	0.00015	0.0822	0.0866

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.00044	0.00045	0.00011	0.00014	0.0938	0.0896
4-Oct-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	<0.0001	0.045	0.0466
4-Oct-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0142	0.0147
5-Oct-21	FR_FR2 (RG_FOUKI)	0.00056	0.00056	0.00014	0.00015	0.102	0.111
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00033	0.00033	0.00011	0.00011	0.0864	0.0856
6-Oct-21	FR_FR3 (RG_FOBKS)	0.00061	0.00067	0.00014	0.00016	0.104	0.11
6-Oct-21	FR_FR5	<0.0001	<0.0001	<0.0001	<0.0001	0.101	0.099
6-Oct-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	<0.0001	<0.0001	0.0973	0.0975
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	0.00023	0.00025	<0.0001	<0.0001	0.0871	0.093
7-Oct-21	FR_FR4 (RG_FOBSC)	0.00042	0.00041	0.00011	0.00014	0.0854	0.0845
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	0.00031	0.00033	<0.0001	0.00014	0.0865	0.0963
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.00033	0.00032	<0.0001	0.00016	0.0865	0.0935
10-Oct-21	FR_FR2 (RG_FOUKI)	0.00028	0.00029	<0.0001	0.00014	0.0876	0.0955
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.00031	0.00031	<0.0001	0.00013	0.0894	0.0961
11-Oct-21	FR_FR2 (RG_FOUKI)	0.00027	0.0003	0.0001	0.00014	0.0863	0.0967
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.00031	0.00031	<0.0001	0.00015	0.0876	0.1
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.00036	0.00039	<0.0001	0.00015	0.082	0.0815
12-Oct-21	FR_FR2 (RG_FOUKI)	0.0003	0.00031	<0.0001	0.00011	0.0823	0.087
12-Oct-21	FR_FR4 (RG_FOBSC)	0.00034	0.00036	0.0001	0.00012	0.0817	0.0791
12-Oct-21	FR_FRABCH (RG_FO22)	0.00012	0.00016	<0.0001	<0.0001	0.103	0.109
12-Oct-21	FR_FRCP1 (RG_FOBCP)	0.00034	0.00038	0.00011	0.00013	0.083	0.0899
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	0.0001	<0.0001	<0.0001	0.0987	0.102
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00032	0.00035	0.00012	0.00014	0.0869	0.0941
13-Oct-21	FR_FR2 (RG_FOUKI)	0.00039	0.00044	<0.0001	0.00011	0.0916	0.0892
13-Oct-21	FR_FRNTP (RG_FOUSH)	0.00044	0.00049	0.00012	0.00015	0.0941	0.0856
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	0.00045	0.00048	0.00012	0.00015	0.0892	0.088
19-Oct-21	FR_FR4 (RG_FOBSC)	0.00048	0.00047	0.00014	0.00016	0.0877	0.0805
19-Oct-21	FR_FRABCH (RG_FO22)	0.00012	0.00016	<0.0001	0.00014	0.0955	0.107
19-Oct-21	FR_FRCP1 (RG_FOBCP)	0.00048	0.00048	0.00011	0.00016	0.0887	0.0908
19-Oct-21	FR_FRNTP (RG_FOUSH)	0.00052	0.00054	0.00011	0.00016	0.0949	0.0977
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	0.0001025	<0.0001	<0.0001	0.10525	0.10295
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00027	0.00031	<0.0001	0.00012	0.0859	0.0807
19-Oct-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.000115	0.0712	0.07445
20-Oct-21	FR_FR2 (RG_FOUKI)	0.00046	0.00045	<0.0001	0.00014	0.0892	0.0955
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.00048	0.00047	0.00011	0.00023	0.0827	0.0834
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	0.00039	0.00041	0.0001	0.00012	0.102	0.098
26-Oct-21	FR_FR4 (RG_FOBSC)	0.00043	0.00044	0.0001	0.00019	0.0874	0.0958
26-Oct-21	FR_FRABCH (RG_FO22)	0.00014	0.00015	<0.0001	<0.0001	0.103	0.1
26-Oct-21	FR_FRCP1 (RG_FOBCP)	0.00041	0.00042	0.0001	0.00012	0.0871	0.091
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.00045	0.00046	0.00011	0.00014	0.0984	0.105
26-Oct-21	FR_FRRD (RG_FRUPO)	0.0001	0.0001	<0.0001	<0.0001	0.112	0.101
26-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00026	0.00027	<0.0001	0.0001	0.0902	0.0891
26-Oct-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	<0.0001	0.0706	0.0748
27-Oct-21	FR_FOUCL (RG_FOUCL)	<0.0001	0.0001	<0.0001	0.0001	0.0807	0.0839
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	0.00034	0.00032	0.0001	0.00016	0.086	0.0816
28-Oct-21	FR_FRABCH (RG_FO22)	0.00013	0.00016	<0.0001	0.0001	0.098	0.0929
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	0.0001	0.102	0.0983
29-Oct-21	FR_FR4 (RG_FOBSC)	0.00048	0.00054	0.00011	0.00016	0.0958	0.0938
29-Oct-21	FR_FRCP1 (RG_FOBCP)	0.00048	0.00053	0.00011	0.00016	0.0898	0.0948
2-Nov-21	FR_FR2 (RG_FOUKI)	0.00069	0.00074	0.00014	0.00018	0.101	0.11
2-Nov-21	FR_FR4 (RG_FOBSC)	0.00072	0.00073	0.00014	0.00022	0.101	0.0996
2-Nov-21	FR_FRABCH (RG_FO22)	0.00015	0.00016	<0.0001	<0.0001	0.0962	0.0958
2-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0007	0.00071	0.00015	0.00014	0.0906	0.0909
2-Nov-21	FR_FRRD (RG_FRUPO)	0.00014	0.00013	<0.0001	0.00014	0.103	0.11
2-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00073	0.00075	0.00012	0.00018	0.0946	0.101
2-Nov-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	<0.0001	0.0665	0.0666
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	0.00073	0.00075	0.00014	0.00021	0.0952	0.109
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.00061	0.00064	0.00012	0.00019	0.0901	0.0896
8-Nov-21	FR_FR3 (RG_FOBKS)	0.00062	0.00062	0.00017	0.00016	0.102	0.106
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.00064	0.00062	0.00018	0.00022	0.0971	0.0974
8-Nov-21	GH_PC2 (RG_FODPO)	0.00024	0.00026	0.00014	0.00015	0.0898	0.0867
9-Nov-21	FR_FR2 (RG_FOUKI)	0.00048	0.00049	0.00013	0.00016	0.106	0.0986
9-Nov-21	FR_FR4 (RG_FOBSC)	0.00052	0.00051	0.00013	0.00017	0.0944	0.0899
9-Nov-21	FR_FRABCH (RG_FO22)	0.00017	0.00017	0.0001	0.00013	0.0911	0.105
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.00052	0.0005	0.00013	0.00018	0.0957	0.0822
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.0001	0.00013	<0.0001	0.00011	0.11	0.106
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00051	0.0005	0.00013	0.00016	0.0976	0.0949
9-Nov-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00013	0.0721	0.0656
10-Nov-21	FR_FR4 (RG_FOBSC)	0.00063	0.00066	0.00014	0.00017	0.0868	0.0912
10-Nov-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0134	0.0132
12-Nov-21	FR_FR2 (RG_FOUKI)	0.00039	0.00042	0.0001	0.00011	0.0902	0.0883
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0001	<0.0001	<0.0001	0.062	0.0633
12-Nov-21	FR_FRNTP (RG_FOUSH)	0.00043	0.00048	0.0001	0.00012	0.0896	0.0923
15-Nov-21	FR_FR5	0.00016	0.00016	<0.0001	0.00011	0.102	0.109
15-Nov-21	FR_FRABCH (RG_FO22)	0.00022	0.00021	<0.0001	0.00011	0.0977	0.108
16-Nov-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.0001	0.0454	0.0454
17-Nov-21	FR_FR2 (RG_FOUKI)	0.00076	0.00073	0.00014	0.00015	0.116	0.112
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.00087	0.00086	0.00017	0.00015	0.121	0.119
17-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00039	0.0004	0.00012	0.00013	0.0901	0.0874
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	0.00028	0.00026	<0.0001	0.00012	0.112	0.0955

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Antimony (Sb)-Dissolved_mg/L	Antimony (Sb)-Total_mg/L	Arsenic (As)-Dissolved_mg/L	Arsenic (As)-Total_mg/L	Barium (Ba)-Dissolved_mg/L	Barium (Ba)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.00097	0.00096	0.00015	0.00018	0.106	0.105
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.00106	0.00102	0.00015	0.0002	0.0993	0.106
24-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00034	0.00034	0.00012	0.00013	0.0852	0.0848
29-Nov-21	FR_FR2 (RG_FOUKI)	0.00034	0.00035	<0.0001	0.00016	0.0834	0.12
29-Nov-21	FR_FRNTP (RG_FOUSH)	0.00034	0.00035	<0.0001	0.00013	0.0815	0.0899
29-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00028	0.0003	<0.0001	0.00014	0.0827	0.0859
1-Dec-21	FR_FRABCH (RG_FO22)	0.00014	0.00015	<0.0001	<0.0001	0.0946	0.0924
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00039	0.00041	0.00012	0.00017	0.0709	0.0879
7-Dec-21	FR_FR2 (RG_FOUKI)	0.00042	0.00045	0.00011	0.00015	0.0875	0.0939
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.00049	0.0005	0.00012	0.00015	0.0849	0.0853
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.00053	0.00051	0.00014	0.00016	0.0884	0.0858
8-Dec-21	FR_FR3 (RG_FOBKS)	0.0007	0.00072	0.00012	0.00019	0.0891	0.0994
8-Dec-21	FR_FRABCH (RG_FO22)	0.0001	0.00011	<0.0001	<0.0001	0.102	0.106
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0001	<0.0001	<0.0001	0.114	0.11
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0007	0.0007	0.00015	0.00018	0.0802	0.0905
9-Dec-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	<0.0001	0.0404	0.0425
9-Dec-21	FR_FR4 (RG_FOBSC)	0.00082	0.00083	0.00017	0.00022	0.0828	0.091
9-Dec-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0001	<0.0001	<0.0001	0.0137	0.014
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.0006	0.0006	0.00012	0.00016	0.0809	0.0884
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	0.0001	0.00011	<0.0001	<0.0001	0.102	0.0983
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	0.00011	0.00011	<0.0001	<0.0001	0.106	0.0979
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	0.00031	0.00041	0.00012	0.00017	0.0898	0.0849
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	<0.0001	0.00016	0.0586	0.0596
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0001	<0.0001	0.00012	0.0836	0.0823
17-Dec-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0001	<0.0001	0.00015	0.0425	0.0429
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.0003	0.00034	0.00012	0.0002	0.0876	0.0883
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	0.00037	0.00033	0.00011	0.00017	0.0863	0.0836
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0008	0.00085	0.00017	0.00018	0.0834	0.092
17-Dec-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0001	0.00013	0.00012	0.0624	0.0615
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	0.00018	0.0002	<0.0001	0.00012	0.0819	0.084
20-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	0.00011	<0.0001	<0.0001	0.0921	0.094
21-Dec-21	GH_PC2 (RG_FODPO)	<0.0001	0.00011	<0.0001	0.00012	0.0886	0.0924
22-Dec-21	FR_FR5	<0.0001	<0.0001	<0.0001	0.00011	0.107	0.0996
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0001	<0.0001	<0.0001	0.0961	0.0936
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00032	0.00036	<0.0001	0.00016	0.078	0.0804
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.000048	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.000051	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
12-Jan-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.014	<0.25
12-Jan-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
12-Jan-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.25
12-Jan-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
12-Jan-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.25
19-Jan-21	FR_FR2 (RG_FOUKI)	0.000055	<0.00002	<0.00005	<0.00005	0.013	0.016	<0.25
19-Jan-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
21-Jan-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.25
27-Jan-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
27-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.013	<0.25
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.25
2-Feb-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.25
2-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.014	<0.25
8-Feb-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
9-Feb-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.25
9-Feb-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
9-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
16-Feb-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.012	<0.25
16-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
16-Feb-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.01	<0.25
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.25
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
23-Feb-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
23-Feb-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.25
23-Feb-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.018	<0.25
23-Feb-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.25
23-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.25
23-Feb-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
24-Feb-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
2-Mar-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
2-Mar-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
2-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
2-Mar-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
2-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	<0.00002	0.000052	<0.00005	<0.00005	<0.01	<0.01	<0.05
5-Mar-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.25
5-Mar-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
8-Mar-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.25
9-Mar-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.015	<0.25
9-Mar-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
9-Mar-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
9-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.017	<0.25
9-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.25
9-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.25
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
16-Mar-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
16-Mar-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.014	<0.25
16-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.013	<0.25
16-Mar-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.05
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.25
16-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.012	<0.05
16-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
23-Mar-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
23-Mar-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
23-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
23-Mar-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
23-Mar-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.25
23-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
23-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
30-Mar-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
30-Mar-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
30-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
30-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
30-Mar-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
6-Apr-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Apr-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
6-Apr-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
6-Apr-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
6-Apr-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Apr-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.013	<0.25
7-Apr-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
7-Apr-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.05
7-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
9-Apr-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
12-Apr-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
13-Apr-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
13-Apr-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
13-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.013	<0.25
13-Apr-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
13-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
13-Apr-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
15-Apr-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
20-Apr-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.05
20-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
21-Apr-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.25
22-Apr-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
26-Apr-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
27-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
27-Apr-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
27-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
30-Apr-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-May-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-May-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-May-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-May-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.012	<0.05
4-May-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
4-May-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
4-May-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
5-May-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
5-May-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.25
7-May-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-May-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-May-21	FR_FRCP1 (RG_FOBCP)	<0.00002	0.000027	<0.00005	<0.00005	<0.01	0.011	<0.05
11-May-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-May-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	0.000022	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_FR2 (RG_FOUKI)	<0.00002	0.000023	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_FR4 (RG_FOBSC)	<0.00002	0.000038	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_FRABCH (RG_FO22)	<0.00002	0.000035	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_FRCP1 (RG_FOBCP)	<0.00002	0.000031	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_FRRD (RG_FRUPO)	<0.00002	0.000029	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-May-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-May-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-May-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-May-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-May-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-May-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
25-May-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-May-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
26-May-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
27-May-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
27-May-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Jun-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	0.000041	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jun-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jun-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jun-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
8-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
8-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	0.000022	<0.00005	<0.00005	<0.01	0.01	<0.05

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
8-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.05
8-Jun-21	FR_FRRD (RG_FRUPO)	<0.00002	0.000023	<0.00005	<0.00005	0.011	0.013	<0.05
8-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
8-Jun-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
10-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.05
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jun-21	RG_FO26	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
15-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Jun-21	RG_FOUNGD	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.05
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Jun-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-Jun-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
18-Jun-21	RG_FOUEW	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
21-Jun-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
21-Jun-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
22-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
22-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.05
22-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
22-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
22-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
23-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
28-Jun-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
29-Jun-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
29-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
29-Jun-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
29-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
29-Jun-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
29-Jun-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
2-Jul-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-Jul-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
5-Jul-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Jul-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Jul-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Jul-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
6-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.05
6-Jul-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.05
6-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Jul-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jul-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
7-Jul-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.05
8-Jul-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
8-Jul-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
13-Jul-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
13-Jul-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
13-Jul-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.013	<0.05
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.05
13-Jul-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.05
13-Jul-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
13-Jul-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	<0.01	<0.05
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
20-Jul-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
20-Jul-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-Jul-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
22-Jul-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
26-Jul-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
27-Jul-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.013	<0.05
27-Jul-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.05
27-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	<0.01	<0.05
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.05
4-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.014	<0.05
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.05
4-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.011	<0.05
5-Aug-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
10-Aug-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
10-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.05
10-Aug-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
10-Aug-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.016	<0.25
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
10-Aug-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
11-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
12-Aug-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.013	<0.25
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
13-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.05
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
14-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.05
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
15-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.05
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.25
16-Aug-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.05
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.05
17-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	0.000035	<0.00005	<0.00005	0.014	0.015	<0.05
17-Aug-21	FR_FR4 (RG_FOBSC)	<0.00002	0.00007	<0.00005	<0.00005	0.013	0.017	<0.05
17-Aug-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
17-Aug-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
17-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.00002	0.000036	<0.00005	<0.00005	0.013	0.014	<0.25
17-Aug-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
17-Aug-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	0.000025	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Aug-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
18-Aug-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
19-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
19-Aug-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.05
19-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
24-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.05
24-Aug-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
24-Aug-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
24-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
24-Aug-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.05
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
24-Aug-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
25-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.05
25-Aug-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.05

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.05
31-Aug-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.018	<0.25
31-Aug-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
31-Aug-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.019	<0.25
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.05
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
31-Aug-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
1-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.014	<0.05
3-Sep-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
7-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.05
7-Sep-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
7-Sep-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.016	<0.25
7-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.014	<0.25
7-Sep-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.25
7-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.05
7-Sep-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.015	<0.05
9-Sep-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
9-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
9-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
11-Sep-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.05
11-Sep-21	RG_FOUEW	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.05
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.05
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
13-Sep-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
13-Sep-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.018	<0.25
13-Sep-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.018	<0.25
13-Sep-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.019	<0.25
13-Sep-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.25
13-Sep-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
14-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.05
14-Sep-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.018	<0.25
14-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.05
14-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.05
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.05
15-Sep-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.016	<0.25
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
15-Sep-21	RG_FO26	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Sep-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.05
16-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.05
16-Sep-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
16-Sep-21	RG_FOUNGD	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Sep-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.015	<0.25
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.019	0.019	<0.25
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.019	0.019	<0.05
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.25
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.05
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.05
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.016	<0.25
28-Sep-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.018	<0.25
28-Sep-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
28-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.018	<0.25
28-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.05
4-Oct-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
4-Oct-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
5-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.02	<0.25
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
6-Oct-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.019	0.021	<0.05
6-Oct-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
6-Oct-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.015	<0.25
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
7-Oct-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.05
9-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
10-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
10-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.05
11-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.05
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
12-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.05
12-Oct-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
12-Oct-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.019	<0.25
12-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.012	<0.05
13-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
13-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
19-Oct-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
19-Oct-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
19-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.25
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.01775	0.0185	0.616
19-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.25
19-Oct-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	0.47
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	<0.25
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
26-Oct-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
26-Oct-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.013	<0.25
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.014	<0.25
26-Oct-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.016	<0.25
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.017	0.017	<0.25
26-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
26-Oct-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
27-Oct-21	FR_FOUCL (RG_FOUCL)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
28-Oct-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.013	<0.25
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.018	<0.25
29-Oct-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.016	<0.25
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.015	<0.25
2-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.014	<0.25
2-Nov-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.014	<0.25
2-Nov-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.012	<0.25
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
2-Nov-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.015	<0.25
2-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	<0.01	<0.25
2-Nov-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.25
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
8-Nov-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.019	<0.25
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
8-Nov-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
9-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
9-Nov-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
9-Nov-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
9-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
9-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
9-Nov-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
10-Nov-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.017	<0.25
10-Nov-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
12-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.014	0.014	<0.25
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
12-Nov-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.013	0.013	<0.25
15-Nov-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
15-Nov-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
16-Nov-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
17-Nov-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
17-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Beryllium (Be)-Dissolved_mg/L	Beryllium (Be)-Total_mg/L	Bismuth (Bi)-Dissolved_mg/L	Bismuth (Bi)-Total_mg/L	Boron (B)-Dissolved_mg/L	Boron (B)-Total_mg/L	Bromide (Br)_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.016	0.016	<0.25
24-Nov-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.015	0.017	<0.25
24-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	<0.01	<0.25
29-Nov-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.015	<0.25
29-Nov-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.25
29-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.25
1-Dec-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
7-Dec-21	FR_FR2 (RG_FOUKI)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.011	<0.25
7-Dec-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.25
7-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.01	<0.25
8-Dec-21	FR_FR3 (RG_FOBKS)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.012	<0.25
8-Dec-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.014	<0.25
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.00002	<0.00002	<0.00005	<0.00005	0.018	0.018	<0.25
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	0.011	<0.25
9-Dec-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
9-Dec-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
9-Dec-21	FR_HC3 (RG_HENUP)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	0.012	<0.25
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.013	<0.25
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	NA	<0.00005	NA	0.014	<0.25
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.01	<0.25
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Dec-21	FR_FR1 (RG_FODHE)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	<0.00002	<0.00002	<0.00005	<0.00005	0.01	<0.01	<0.25
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.00002	<0.00002	<0.00005	<0.00005	0.011	<0.01	<0.25
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	<0.00005	<0.00005	0.012	0.012	<0.25
17-Dec-21	FR_UFR1 (RG_URF1)	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	<0.00002	<0.00002	<0.00005	<0.00005	<0.01	<0.01	<0.05
20-Dec-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	NA	<0.00005	NA	0.014	<0.25
21-Dec-21	GH_PC2 (RG_FODPO)	<0.00002	<0.00002	NA	<0.00005	NA	0.013	<0.25
22-Dec-21	FR_FR5	<0.00002	<0.00002	<0.00005	<0.00005	0.01	0.011	<0.25
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	<0.00002	<0.00002	NA	<0.00005	NA	0.012	<0.25
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00002	<0.00002	NA	<0.00005	NA	0.012	<0.25
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	0.0000779	0.0000815	174	184	NA	NA	NA
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.0000492	0.0000642	137	152	NA	NA	NA
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00006	0.0000774	133	146	NA	NA	NA
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	0.0000097	0.0000101	48.7	51	NA	NA	NA
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000676	0.0000717	174	174	NA	NA	NA
12-Jan-21	FR_FR2 (RG_FOUKI)	0.0000622	0.0000712	148	145	NA	NA	NA
12-Jan-21	FR_FR3 (RG_FOBKS)	0.0000472	0.0000573	148	147	NA	NA	NA
12-Jan-21	FR_FR5	0.0000192	0.0000218	142	140	NA	NA	NA
12-Jan-21	FR_FRNTP (RG_FOUSH)	0.0000637	0.0000712	147	144	NA	NA	NA
12-Jan-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000051	51.1	51.5	NA	NA	NA
12-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0000677	0.0000676	140	142	NA	NA	NA
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	0.0000442	0.0000487	203	162	NA	NA	NA
19-Jan-21	FR_FR2 (RG_FOUKI)	0.00006	0.0000692	136	157	NA	NA	NA
19-Jan-21	FR_FRABCH (RG_FO22)	0.0000365	0.0000494	169	162	NA	NA	NA
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.0000788	0.0000758	212	223	NA	NA	NA
21-Jan-21	GH_PC2 (RG_FODPO)	0.0000299	0.0000297	179	177	NA	NA	NA
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	0.0000605	0.0000631	159	160	NA	NA	NA
27-Jan-21	FR_FRNTP (RG_FOUSH)	0.0000622	0.0000626	158	161	NA	NA	NA
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0000571	0.0000506	155	128	NA	NA	NA
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	0.0000496	0.0000721	138	160	NA	NA	NA
2-Feb-21	FR_FRNTP (RG_FOUSH)	0.0000564	0.0000626	147	156	NA	NA	NA
2-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0000608	0.0000683	145	158	NA	NA	NA
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	0.0000055	0.0000072	54.2	58.8	NA	NA	NA
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	0.0000525	0.0000616	179	186	NA	NA	NA
8-Feb-21	FR_FR5	0.0000231	0.000027	172	179	NA	NA	NA
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000757	0.0000883	201	258	NA	NA	NA
9-Feb-21	FR_FR2 (RG_FOUKI)	0.0000711	0.0000659	159	161	NA	NA	NA
9-Feb-21	FR_FRNTP (RG_FOUSH)	0.0000569	0.0000583	155	190	NA	NA	NA
9-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0000704	0.0000573	155	158	NA	NA	NA
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	0.0000715	0.000056	188	164	NA	NA	NA
16-Feb-21	FR_FRNTP (RG_FOUSH)	0.0000512	0.0000554	189	165	NA	NA	NA
16-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0000636	0.0000586	187	164	NA	NA	NA
16-Feb-21	GH_PC2 (RG_FODPO)	0.0000412	0.0000586	207	176	NA	NA	NA
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	0.0000581	0.0000559	227	212	NA	NA	NA
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.0000744	0.0000677	158	168	NA	NA	NA
23-Feb-21	FR_FR4 (RG_FOBSC)	0.0000772	0.000103	201	207	NA	NA	NA
23-Feb-21	FR_FRABCH (RG_FO22)	0.0000381	0.0000391	176	169	NA	NA	NA
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.0000631	0.000171	257	271	NA	NA	NA
23-Feb-21	FR_FRRD (RG_FRUPO)	0.0000543	0.000071	209	221	NA	NA	NA
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0000751	0.0000813	158	163	NA	NA	NA
23-Feb-21	FR_UFR1 (RG_URF1)	0.0000077	0.0000111	53.4	54.2	NA	NA	NA
24-Feb-21	FR_FRNTP (RG_FOUSH)	0.0000592	0.0000835	174	165	NA	NA	NA
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	0.0000632	0.0000726	171	174	NA	NA	NA
2-Mar-21	FR_FR4 (RG_FOBSC)	0.000075	0.0000867	202	215	NA	NA	NA
2-Mar-21	FR_FRABCH (RG_FO22)	0.0000387	0.000037	178	180	NA	NA	NA
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0000732	0.0000956	204	213	NA	NA	NA
2-Mar-21	FR_FRNTP (RG_FOUSH)	0.0000603	0.0000576	170	169	NA	NA	NA
2-Mar-21	FR_FRRD (RG_FRUPO)	0.0000563	0.0000613	221	226	NA	NA	NA
2-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0000788	0.0000722	167	178	NA	NA	NA
2-Mar-21	FR_UFR1 (RG_URF1)	0.0000091	0.0000099	53.1	58.5	NA	NA	NA
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.0000497	0.0000919	150	152	NA	NA	NA
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.0000204	0.0000701	8.1	9.06	NA	NA	NA
5-Mar-21	FR_FR5	0.0000327	0.0000233	163	158	NA	NA	NA
5-Mar-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000074	61.7	59.3	NA	NA	NA
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000851	0.0000889	183	202	NA	NA	NA
8-Mar-21	FR_FRNTP (RG_FOUSH)	0.0000731	0.0000858	176	149	NA	NA	NA
9-Mar-21	FR_FR2 (RG_FOUKI)	0.0000702	0.0000957	154	165	NA	NA	NA
9-Mar-21	FR_FR4 (RG_FOBSC)	0.0000839	0.000117	178	186	NA	NA	NA
9-Mar-21	FR_FRABCH (RG_FO22)	0.0000374	0.0000458	194	167	NA	NA	NA
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0000818	0.000104	208	190	NA	NA	NA
9-Mar-21	FR_FRRD (RG_FRUPO)	0.0000583	0.0000577	220	236	NA	NA	NA
9-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0000903	0.0000897	155	159	NA	NA	NA
9-Mar-21	FR_UFR1 (RG_URF1)	0.0000144	0.0000291	46.8	41.7	NA	NA	NA
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	0.0000126	0.0000374	45.5	49	NA	NA	NA
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	0.0000409	0.0000417	165	163	NA	NA	NA
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.000071	0.000126	139	126	NA	NA	NA
16-Mar-21	FR_FR4 (RG_FOBSC)	0.0000836	0.000121	155	143	NA	NA	NA
16-Mar-21	FR_FRABCH (RG_FO22)	0.0000378	0.0000412	159	179	NA	NA	NA
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0000857	0.000123	134	152	NA	NA	NA
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.0000874	0.000103	117	127	NA	NA	NA
16-Mar-21	FR_FRRD (RG_FRUPO)	0.0000487	0.0000658	209	188	NA	NA	NA
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0000974	0.000128	141	123	NA	NA	NA
16-Mar-21	FR_UFR1 (RG_URF1)	0.0000166	0.0000496	31.4	36.5	NA	NA	NA
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000983	0.00014	124	128	NA	NA	NA
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.000138	0.000129	134	138	NA	NA	NA
23-Mar-21	FR_FR4 (RG_FOBSC)	0.000123	0.000152	146	155	NA	NA	NA
23-Mar-21	FR_FRABCH (RG_FO22)	0.0000501	0.000049	152	163	NA	NA	NA
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.000139	0.00013	136	147	NA	NA	NA
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.000139	0.000152	121	146	NA	NA	NA
23-Mar-21	FR_FRRD (RG_FRUPO)	0.0000846	0.0000986	170	185	NA	NA	NA
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.000171	0.000157	133	133	NA	NA	NA
23-Mar-21	FR_UFR1 (RG_URF1)	0.0000116	0.0000236	30.8	33.4	NA	NA	NA
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.000136	0.000139	161	144	NA	NA	NA
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.000122	0.00013	153	140	NA	NA	NA
30-Mar-21	FR_FR4 (RG_FOBSC)	0.000135	0.00015	164	156	NA	NA	NA
30-Mar-21	FR_FRABCH (RG_FO22)	0.0000524	0.0000577	174	169	NA	NA	NA
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.000121	0.00016	180	164	NA	NA	NA
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	0.0000823	0.0000925	182	171	NA	NA	NA
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.000149	0.000151	156	139	NA	NA	NA
30-Mar-21	FR_UFR1 (RG_URF1)	0.0000083	0.000019	39.8	38.1	NA	NA	NA
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.00015	0.000158	157	154	NA	NA	NA
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.000136	0.000154	173	167	NA	NA	NA
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.000144	0.000131	155	136	NA	NA	NA
6-Apr-21	FR_FR1 (RG_FODHE)	0.0000123	0.0000224	89.4	83.4	NA	NA	NA
6-Apr-21	FR_FR2 (RG_FOUKI)	0.000124	0.000135	133	136	NA	NA	NA
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.00013	0.000168	131	136	NA	NA	NA
6-Apr-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000053	52.9	53.4	NA	NA	NA
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.000166	0.000173	134	137	NA	NA	NA
6-Apr-21	FR_UFR1 (RG_URF1)	<0.000005	0.0000101	40	41	NA	NA	NA
7-Apr-21	FR_FR3 (RG_FOBKS)	0.000121	0.000132	149	136	NA	NA	NA
7-Apr-21	FR_FR5	0.0000339	0.000044	163	145	NA	NA	NA
7-Apr-21	FR_FRABCH (RG_FO22)	0.0000567	0.000063	179	164	NA	NA	NA
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.000136	0.000158	148	153	NA	NA	NA
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.000155	0.000159	157	147	NA	NA	NA
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	0.0000578	0.0000726	186	164	NA	NA	NA
9-Apr-21	FR_FR4 (RG_FOBSC)	0.000154	0.000142	138	139	NA	NA	NA
12-Apr-21	FR_FR1 (RG_FODHE)	0.0000148	0.000019	77.3	80.1	NA	NA	NA
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.00012	0.000121	142	153	NA	NA	NA
13-Apr-21	FR_FR4 (RG_FOBSC)	0.000138	0.000152	164	170	NA	NA	NA
13-Apr-21	FR_FRABCH (RG_FO22)	0.0000562	0.0000706	151	156	NA	NA	NA
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00014	0.000158	155	154	NA	NA	NA
13-Apr-21	FR_FRRD (RG_FRUPO)	0.0000842	0.0000747	180	184	NA	NA	NA
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.000155	0.000172	156	149	NA	NA	NA
13-Apr-21	FR_UFR1 (RG_URF1)	0.0000112	0.0000105	39.5	39.5	NA	NA	NA
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.000121	0.000133	138	143	NA	NA	NA
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00013	0.000144	154	162	NA	NA	NA
15-Apr-21	FR_FR4 (RG_FOBSC)	0.000136	0.000149	172	152	NA	NA	NA
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	0.0000196	0.0000261	65.6	71.9	NA	NA	NA
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.000109	0.000133	132	130	NA	NA	NA
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.000121	0.000127	117	120	NA	NA	NA
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.000113	0.000144	116	118	NA	NA	NA
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.000114	0.000144	124	126	NA	NA	NA
21-Apr-21	FR_FRABCH (RG_FO22)	0.0000518	0.0000849	151	145	NA	NA	NA
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00013	0.000144	134	127	NA	NA	NA
22-Apr-21	FR_FR2 (RG_FOUKI)	0.0000966	0.000117	120	119	NA	NA	NA
26-Apr-21	FR_FR1 (RG_FODHE)	0.0000133	0.0000183	65.3	74.5	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.000106	0.000115	138	141	NA	NA	NA
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.000145	0.000151	147	156	NA	NA	NA
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.00011	0.000118	133	140	NA	NA	NA
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.000133	0.00014	134	140	NA	NA	NA
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	0.0000671	0.0000594	154	152	NA	NA	NA
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.000128	0.000149	140	140	NA	NA	NA
30-Apr-21	FR_FR4 (RG_FOBSC)	0.000122	0.000135	129	132	NA	NA	NA
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0001	0.00011	118	114	NA	NA	NA
3-May-21	FR_HC3 (RG_HENUP)	0.0000062	0.0000062	46	46.8	NA	NA	NA
3-May-21	FR_UFR1 (RG_URF1)	0.0000144	0.0000105	37	37.4	NA	NA	NA
4-May-21	FR_FR1 (RG_FODHE)	0.0000188	0.0000185	60.2	57.5	NA	NA	NA
4-May-21	FR_FR2 (RG_FOUKI)	0.000092	0.000105	106	95	NA	NA	NA
4-May-21	FR_FR3 (RG_FOBKS)	0.0000882	0.000095	110	94.3	NA	NA	NA
4-May-21	FR_FRNTP (RG_FOUSH)	0.0000956	0.000104	106	93.6	NA	NA	NA
4-May-21	FR_MULTIPLATE (RG_MP1)	0.0000852	0.000101	92.5	93	NA	NA	NA
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000986	0.000122	113	98.9	NA	NA	NA
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	0.0000393	<0.00005	110	112	NA	NA	NA
5-May-21	FR_FRABCH (RG_FO22)	0.0000622	0.0000661	134	130	NA	NA	NA
5-May-21	FR_FRCP1 (RG_FOBCP)	0.000111	0.000114	104	106	NA	NA	NA
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.0000665	0.0000896	136	130	NA	NA	NA
7-May-21	FR_FR4 (RG_FOBSC)	0.0000857	0.00012	92.6	92.2	NA	NA	NA
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	0.0000116	0.0000168	51.9	53.1	NA	NA	NA
11-May-21	FR_FR2 (RG_FOUKI)	0.0000739	0.0000716	86	82.5	NA	NA	NA
11-May-21	FR_FRCP1 (RG_FOBCP)	0.0000905	0.0000995	100	105	NA	NA	NA
11-May-21	FR_FRNTP (RG_FOUSH)	0.0000755	0.0000793	86	87.2	NA	NA	NA
11-May-21	FR_MULTIPLATE (RG_MP1)	0.0000747	0.0000871	83	82.2	NA	NA	NA
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.000061	0.0000685	127	132	NA	NA	NA
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.000099	0.000105	100	99.9	NA	NA	NA
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000492	0.000155	59	63.1	NA	NA	NA
18-May-21	FR_FR2 (RG_FOUKI)	0.0000305	0.0000962	49.8	52.2	NA	NA	NA
18-May-21	FR_FR4 (RG_FOBSC)	0.0000493	0.000157	52.4	55.3	NA	NA	NA
18-May-21	FR_FRABCH (RG_FO22)	0.0000368	0.00016	71.6	73.5	NA	NA	NA
18-May-21	FR_FRCP1 (RG_FOBCP)	0.0000348	0.0002	61.9	66.6	NA	NA	NA
18-May-21	FR_FRRD (RG_FRUPO)	0.0000338	0.00013	76.1	80.4	NA	NA	NA
18-May-21	FR_MULTIPLATE (RG_MP1)	0.0000301	0.0000786	47	50.6	NA	NA	NA
18-May-21	FR_UFR1 (RG_URF1)	0.0000085	0.000032	31.6	31.4	NA	NA	NA
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.0000673	0.000073	70.8	67.3	NA	NA	NA
20-May-21	FR_FRNTP (RG_FOUSH)	0.0000293	0.0000891	47.9	52.3	NA	NA	NA
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.0000523	0.000057	64.6	60.8	NA	NA	NA
25-May-21	FR_FR4 (RG_FOBSC)	0.0000605	0.000103	76.6	75.3	NA	NA	NA
25-May-21	FR_FRABCH (RG_FO22)	0.0000516	0.0000657	101	97	NA	NA	NA
25-May-21	FR_FRCP1 (RG_FOBCP)	0.0000532	0.0000641	86.5	84.1	NA	NA	NA
25-May-21	FR_FRRD (RG_FRUPO)	0.0000486	0.0000723	106	104	NA	NA	NA
25-May-21	FR_MULTIPLATE (RG_MP1)	0.0000452	0.0000497	62.4	57.6	NA	NA	NA
25-May-21	FR_UFR1 (RG_URF1)	0.0000086	0.0000113	33.1	33.2	NA	NA	NA
26-May-21	FR_FR1 (RG_FODHE)	0.0000111	0.0000142	40.2	41.9	NA	NA	NA
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000661	0.0000835	64	68.8	NA	NA	NA
27-May-21	FR_FR4 (RG_FOBSC)	0.0000659	0.0000648	73	76.1	NA	NA	NA
27-May-21	FR_FRNTP (RG_FOUSH)	0.0000417	0.0000589	51.6	60.7	NA	NA	NA
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	0.0000119	0.0000287	38.3	40.5	NA	NA	NA
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000451	0.0000666	57.5	60.4	NA	NA	NA
1-Jun-21	FR_FR2 (RG_FOUKI)	0.0000264	0.000056	49.6	51.4	NA	NA	NA
1-Jun-21	FR_FR4 (RG_FOBSC)	0.000037	0.0000854	55.6	58.8	NA	NA	NA
1-Jun-21	FR_FRABCH (RG_FO22)	0.0000296	0.0000775	81	74.8	NA	NA	NA
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0000356	0.0000833	72.3	64.4	NA	NA	NA
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.0000567	0.0000492	52.2	49.2	NA	NA	NA
1-Jun-21	FR_FRRD (RG_FRUPO)	0.000032	0.0000944	88.7	88.3	NA	NA	NA
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000232	0.0000629	49.4	51.7	NA	NA	NA
1-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.0000183	31.8	30.2	NA	NA	NA
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.0000293	0.000132	57.8	67.7	NA	NA	NA
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000383	0.000106	48.7	51.1	NA	NA	NA
7-Jun-21	FR_FR1 (RG_FODHE)	0.0000111	0.0000144	35.9	40.8	NA	NA	NA
7-Jun-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000066	32.9	36.1	NA	NA	NA
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000522	0.0000748	61.3	58.3	NA	NA	NA
7-Jun-21	GH_PC2 (RG_FODPO)	0.0000867	0.000109	103	94.8	NA	NA	NA
8-Jun-21	FR_FR2 (RG_FOUKI)	0.0000415	0.0000568	55.7	54.6	NA	NA	NA
8-Jun-21	FR_FR4 (RG_FOBSC)	0.0000879	0.000136	67.9	67.5	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.0000619	0.0000846	86.3	97.6	NA	NA	NA
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0000981	0.000111	78.2	84.5	NA	NA	NA
8-Jun-21	FR_FRRD (RG_FRUPO)	0.0000852	0.00014	101	103	NA	NA	NA
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000346	0.0000432	50.9	49.7	NA	NA	NA
8-Jun-21	FR_UFR1 (RG_URF1)	0.0000067	0.0000112	30.1	33.4	NA	NA	NA
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.000031	0.0000503	57.8	60.5	NA	NA	NA
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000425	0.000061	59.9	63	NA	NA	NA
10-Jun-21	FR_FR4 (RG_FOBSC)	0.000135	0.000122	95.8	85.2	NA	NA	NA
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.0000946	0.000106	103	99.1	NA	NA	NA
14-Jun-21	FR_FOUCL (RG_FOUCL)	0.0000076	0.0000159	41.1	40.7	NA	NA	NA
14-Jun-21	FR_FR1 (RG_FODHE)	0.0000118	0.00001405	42	40.9	NA	NA	NA
14-Jun-21	FR_FR3 (RG_FOBKS)	0.000028	0.0000443	56	55.4	NA	NA	NA
14-Jun-21	FR_FR5	0.0000264	0.0000585	75.6	79.8	NA	NA	NA
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000221	0.0000342	55.4	53.6	NA	NA	NA
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000462	0.000056	58.4	60.3	NA	NA	NA
14-Jun-21	RG_FO26	0.0000072	0.0000098	35.2	33.1	NA	NA	NA
15-Jun-21	FR_FR2 (RG_FOUKI)	0.0000231	0.000038	49.7	50.2	NA	NA	NA
15-Jun-21	FR_FR4 (RG_FOBSC)	0.0000361	0.0000556	56.5	58.8	NA	NA	NA
15-Jun-21	FR_FRABCH (RG_FO22)	0.000032	0.0000531	72.8	74.6	NA	NA	NA
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.000031	0.0000467	63.9	63.4	NA	NA	NA
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.00002205	0.00003975	47.6	47.5	NA	NA	NA
15-Jun-21	FR_FRRD (RG_FRUPO)	0.0000362	0.0000512	87.8	93.2	NA	NA	NA
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000227	0.0000342	44.3	46.4	NA	NA	NA
15-Jun-21	FR_UFR1 (RG_URF1)	0.0000065	0.00002305	34.5	33.75	NA	NA	NA
15-Jun-21	RG_FOUNGD	0.0000154	0.0000172	46.3	46.6	NA	NA	NA
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.0000243	0.0000287	48.4	49.8	NA	NA	NA
16-Jun-21	FR_FR4 (RG_FOBSC)	0.0000447	0.00006	65.8	67.5	NA	NA	NA
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	0.0000198	0.0000277	43.5	44.1	NA	NA	NA
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000065	27.5	29.5	NA	NA	NA
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00003595	0.0000474	55	52.5	NA	NA	NA
17-Jun-21	FR_FR2 (RG_FOUKI)	0.0000283	0.0000325	52.1	55.6	NA	NA	NA
17-Jun-21	FR_FR4 (RG_FOBSC)	0.0000584	0.0000559	88.5	85	NA	NA	NA
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0000392	0.0000468	70.2	70.5	NA	NA	NA
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.0000463	0.0000502	70.7	71.3	NA	NA	NA
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000491	0.000072	59.4	59.8	NA	NA	NA
17-Jun-21	GH_PC2 (RG_FODPO)	0.0000363	0.0000691	87.7	82.7	NA	NA	NA
18-Jun-21	FR_FRABCH (RG_FO22)	0.0000399	0.0000474	89.5	90	NA	NA	NA
18-Jun-21	FR_FRRD (RG_FRUPO)	0.0000406	0.0000454	99.7	98.6	NA	NA	NA
18-Jun-21	RG_FOUEW	0.0000299	0.0000362	81.2	77.7	NA	NA	NA
21-Jun-21	FR_FR1 (RG_FODHE)	0.0000086	0.0000141	39.55	39.4	NA	NA	NA
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000469	0.0000466	65.4	64	NA	NA	NA
21-Jun-21	FR_UFR1 (RG_URF1)	0.0000066	0.00001165	35.75	36	NA	NA	NA
22-Jun-21	FR_FR2 (RG_FOUKI)	0.0000292	0.0000343	54.8	60.7	NA	NA	NA
22-Jun-21	FR_FRABCH (RG_FO22)	0.0000328	0.0000394	90.8	86.2	NA	NA	NA
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0000416	0.0000531	75.4	77.6	NA	NA	NA
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.0000287	0.0000435	53.6	53.2	NA	NA	NA
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000264	0.0000293	50.8	50.2	NA	NA	NA
23-Jun-21	FR_FR4 (RG_FOBSC)	0.0000534	0.000057	68.8	68	NA	NA	NA
28-Jun-21	FR_FR1 (RG_FODHE)	0.0000095	0.0000117	33.6	35.4	NA	NA	NA
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.000046	0.0000573	57.9	60.1	NA	NA	NA
29-Jun-21	FR_FR2 (RG_FOUKI)	0.0000305	0.0000364	56.9	57.9	NA	NA	NA
29-Jun-21	FR_FR4 (RG_FOBSC)	0.0000613	0.0000531	69.3	67.3	NA	NA	NA
29-Jun-21	FR_FRABCH (RG_FO22)	0.0000367	0.0000408	79.9	87.2	NA	NA	NA
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0000424	0.0000554	69.3	73.8	NA	NA	NA
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.0000265	0.0000345	51.7	53.5	NA	NA	NA
29-Jun-21	FR_FRRD (RG_FRUPO)	0.000039	0.0000444	99.3	99.7	NA	NA	NA
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0000304	0.0000303	54.8	54.7	NA	NA	NA
29-Jun-21	FR_UFR1 (RG_URF1)	0.0000081	0.0000093	40	36.9	NA	NA	NA
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.000052	0.0000484	67.5	69.6	NA	NA	NA
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	0.00001	0.0000084	37.7	37.2	NA	NA	NA
2-Jul-21	FR_UFR1 (RG_URF1)	0.0000079	0.0000098	38.1	40.4	NA	NA	NA
4-Jul-21	FR_FR2 (RG_FOUKI)	0.0000329	0.0000421	68.9	72.6	NA	NA	NA
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.0000251	0.0000377	66.6	67.6	NA	NA	NA
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000594	0.0000534	74.3	76.1	NA	NA	NA
5-Jul-21	FR_HC3 (RG_HENUP)	<0.000005	0.000007	31.7	33.6	NA	NA	NA
6-Jul-21	FR_FR1 (RG_FODHE)	0.0000095	0.00001	38.7	38.5	NA	NA	NA
6-Jul-21	FR_FR4 (RG_FOBSC)	0.0000525	0.0000649	67.6	64.2	NA	NA	NA
6-Jul-21	FR_FRABCH (RG_FO22)	0.0000444	0.0000448	94.7	96.4	NA	NA	NA
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0000582	0.0000575	76.6	80	NA	NA	NA
6-Jul-21	FR_FRRD (RG_FRUPO)	0.0000415	0.000049	98	95.1	NA	NA	NA
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0000221	0.0000311	57.8	54.1	NA	NA	NA
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000483	0.0000605	67.6	64.7	NA	NA	NA
6-Jul-21	FR_UFR1 (RG_URF1)	0.0000093	0.0000192	38.5	37.4	NA	NA	NA
7-Jul-21	FR_FR2 (RG_FOUKI)	0.0000292	0.0000371	68.2	65.9	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.0000256	0.0000335	68	65.8	NA	NA	NA
7-Jul-21	GH_PC2 (RG_FODPO)	0.0000354	0.0000546	101	100	NA	NA	NA
8-Jul-21	FR_FR3 (RG_FOBKS)	0.0000308	0.0000313	71.9	68.4	NA	NA	NA
8-Jul-21	FR_FR5	0.0000305	0.0000372	98	94.6	NA	NA	NA
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	0.0000132	0.0000056	43.6	43.6	NA	NA	NA
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000746	0.0000812	83.9	81.5	NA	NA	NA
13-Jul-21	FR_FR2 (RG_FOUKI)	0.0000347	0.0000501	75.4	75.9	NA	NA	NA
13-Jul-21	FR_FR4 (RG_FOBSC)	0.00008	0.0000795	85.6	87.8	NA	NA	NA
13-Jul-21	FR_FRABCH (RG_FO22)	0.0000455	0.0000417	114	110	NA	NA	NA
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0000637	0.000077	93.4	97.9	NA	NA	NA
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.0000372	0.0000367	75.1	72.5	NA	NA	NA
13-Jul-21	FR_FRRD (RG_FRUPO)	0.000053	0.0000433	117	114	NA	NA	NA
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0000355	0.0000392	71.3	70	NA	NA	NA
13-Jul-21	FR_UFR1 (RG_URF1)	0.0000107	0.0000106	43	42.6	NA	NA	NA
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.0000877	0.0000925	87.1	90.2	NA	NA	NA
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.0000225	0.0000313	74.9	69.2	NA	NA	NA
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.0000315	0.0000327	83.2	81.8	NA	NA	NA
20-Jul-21	FR_FR4 (RG_FOBSC)	0.000107	0.000109	102	97	NA	NA	NA
20-Jul-21	FR_FRRD (RG_FRUPO)	0.000046	0.0000444	134	129	NA	NA	NA
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0000249	0.0000252	80.2	76.4	NA	NA	NA
20-Jul-21	FR_UFR1 (RG_URF1)	0.0000084	0.0000195	44.9	44.5	NA	NA	NA
22-Jul-21	FR_FRABCH (RG_FO22)	0.0000417	0.0000443	120	128	NA	NA	NA
26-Jul-21	FR_FRABCH (RG_FO22)	0.0000414	0.0000434	128	123	NA	NA	NA
27-Jul-21	FR_FR2 (RG_FOUKI)	0.0000421	0.0000539	99	91.1	NA	NA	NA
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.0000291	0.0000308	96.9	92.6	NA	NA	NA
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0000318	0.0000402	96.1	90.1	NA	NA	NA
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000133	0.000131	128	116	NA	NA	NA
4-Aug-21	FR_FR2 (RG_FOUKI)	0.0000367	0.0000452	105	91.3	NA	NA	NA
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.0000357	0.0000334	102	89.5	NA	NA	NA
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0000393	0.0000374	98.4	86.9	NA	NA	NA
5-Aug-21	FR_FRABCH (RG_FO22)	0.000055	0.0000462	144	133	NA	NA	NA
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000147	0.00014	129	124	NA	NA	NA
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.0000309	0.0000304	99.2	95.5	NA	NA	NA
10-Aug-21	FR_FR1 (RG_FODHE)	0.0000152	0.0000185	60.8	62	NA	NA	NA
10-Aug-21	FR_FR2 (RG_FOUKI)	0.0000365	0.000045	100	100	NA	NA	NA
10-Aug-21	FR_FR4 (RG_FOBSC)	0.000157	0.000149	126	123	NA	NA	NA
10-Aug-21	FR_FRABCH (RG_FO22)	0.0000437	0.0000414	139	140	NA	NA	NA
10-Aug-21	FR_FRCP1 (RG_FOBCP)	0.000126	0.000133	130	125	NA	NA	NA
10-Aug-21	FR_FRRD (RG_FRUPO)	0.0000418	0.0000367	146	146	NA	NA	NA
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0000482	0.0000266	94.5	95.4	NA	NA	NA
10-Aug-21	FR_UFR1 (RG_URF1)	0.0000112	0.0000111	49.8	50.2	NA	NA	NA
11-Aug-21	FR_FR3 (RG_FOBKS)	0.0000265	0.0000319	97.4	100	NA	NA	NA
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000981	0.000109	116	117	NA	NA	NA
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	0.0000298	0.0000382	97	98.5	NA	NA	NA
12-Aug-21	FR_FR4 (RG_FOBSC)	0.000147	0.0002	134	141	NA	NA	NA
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000103	0.000111	114	118	NA	NA	NA
13-Aug-21	FR_FR3 (RG_FOBKS)	0.0000357	0.0000397	99.5	100	NA	NA	NA
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000099	0.000107	114	114	NA	NA	NA
14-Aug-21	FR_FR3 (RG_FOBKS)	0.0000298	0.0000333	98.9	100	NA	NA	NA
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0000927	0.000107	115	118	NA	NA	NA
15-Aug-21	FR_FR3 (RG_FOBKS)	0.0000287	0.000029	97.6	106	NA	NA	NA
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000136	0.000144	118	137	NA	NA	NA
16-Aug-21	FR_FR3 (RG_FOBKS)	0.000028	0.0000289	104	107	NA	NA	NA
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000107	0.000104	124	129	NA	NA	NA
17-Aug-21	FR_FR2 (RG_FOUKI)	0.0000408	0.000102	96.2	101	NA	NA	NA
17-Aug-21	FR_FR4 (RG_FOBSC)	0.000137	0.000292	118	132	NA	NA	NA
17-Aug-21	FR_FR5	0.0000342	0.0000327	116	116	NA	NA	NA
17-Aug-21	FR_FRABCH (RG_FO22)	0.0000482	0.0000647	131	135	NA	NA	NA
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.000128	0.000221	121	128	NA	NA	NA
17-Aug-21	FR_FRRD (RG_FRUPO)	0.0000453	0.0000517	130	139	NA	NA	NA
17-Aug-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000195	40.8	46.2	NA	NA	NA
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0000297	0.0000914	83.3	84.9	NA	NA	NA
17-Aug-21	FR_UFR1 (RG_URF1)	0.0000114	0.0000573	46	47.1	NA	NA	NA
18-Aug-21	GH_PC2 (RG_FODPO)	0.0000518	0.0000584	115	117	NA	NA	NA
19-Aug-21	FR_FR2 (RG_FOUKI)	0.0000293	0.0000348	83.4	82.3	NA	NA	NA
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.0000247	0.0000306	83.6	79.7	NA	NA	NA
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.000027	0.0000275	77.7	78.6	NA	NA	NA
24-Aug-21	FR_FR2 (RG_FOUKI)	0.0000307	0.0000335	84.7	84.7	NA	NA	NA
24-Aug-21	FR_FR4 (RG_FOBSC)	0.0000862	0.0000957	97.1	102	NA	NA	NA
24-Aug-21	FR_FRABCH (RG_FO22)	0.000043	0.0000754	119	123	NA	NA	NA
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0000721	0.0000833	98.4	98.9	NA	NA	NA
24-Aug-21	FR_FRRD (RG_FRUPO)	0.0000413	0.0000463	131	138	NA	NA	NA
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0000282	0.000031	76.4	76.2	NA	NA	NA
24-Aug-21	FR_UFR1 (RG_URF1)	0.0000063	0.0000114	46.4	46.4	NA	NA	NA
25-Aug-21	FR_FR2 (RG_FOUKI)	0.00003	0.0000432	87.9	84.4	NA	NA	NA
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.0000345	0.0000295	88.8	86.8	NA	NA	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0000316	0.0000321	79.5	76.4	NA	NA	NA
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	0.0000295	0.0000428	103	108	NA	NA	NA
31-Aug-21	FR_FR4 (RG_FOBSC)	0.000116	0.000125	124	130	NA	NA	NA
31-Aug-21	FR_FRABCH (RG_FO22)	0.0000411	0.000044	133	132	NA	NA	NA
31-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0000979	0.000104	120	120	NA	NA	NA
31-Aug-21	FR_FRRD (RG_FRUPO)	0.0000417	0.0000457	141	152	NA	NA	NA
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00003	0.0000354	93.7	96.8	NA	NA	NA
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.000113	0.000124	127	113	NA	NA	NA
31-Aug-21	FR_UFR1 (RG_URF1)	0.0000066	0.0000079	48.3	49.4	NA	NA	NA
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000263	0.0000353	115	96	NA	NA	NA
3-Sep-21	FR_FR4 (RG_FOBSC)	0.000124	0.000132	121	134	NA	NA	NA
7-Sep-21	FR_FR2 (RG_FOUKI)	0.0000344	0.0000392	104	115	NA	NA	NA
7-Sep-21	FR_FR4 (RG_FOBSC)	0.000139	0.000133	124	141	NA	NA	NA
7-Sep-21	FR_FRABCH (RG_FO22)	0.0000395	0.0000388	132	144	NA	NA	NA
7-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0000905	0.000118	124	124	NA	NA	NA
7-Sep-21	FR_FRRD (RG_FRUPO)	0.0000398	0.0000456	137	151	NA	NA	NA
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0000306	0.0000334	94.1	109	NA	NA	NA
7-Sep-21	FR_UFR1 (RG_URF1)	0.0000097	0.0000091	49.9	49.9	NA	NA	NA
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	0.0000342	0.0000383	113	102	NA	NA	NA
9-Sep-21	FR_FR3 (RG_FOBKS)	0.0000284	0.0000292	111	104	NA	NA	NA
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000326	0.0000363	110	105	NA	NA	NA
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0000329	0.0000434	104	99	NA	NA	NA
11-Sep-21	GH_PC2 (RG_FODPO)	0.0000431	0.0000593	135	136	NA	NA	NA
11-Sep-21	RG_FOUEW	0.0000384	0.0000427	127	127	NA	NA	NA
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	0.0000395	0.0000449	137	136	NA	NA	NA
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	0.0000105	0.0000098	66.5	64.8	NA	NA	NA
13-Sep-21	FR_FR1 (RG_FODHE)	0.0000139	0.0000133	61.3	61.4	NA	NA	NA
13-Sep-21	FR_FR4 (RG_FOBSC)	0.000132	0.000139	139	135	NA	NA	NA
13-Sep-21	FR_FR5	0.000029	0.000031	116	121	NA	NA	NA
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.000106	0.000104	140	137	NA	NA	NA
13-Sep-21	FR_FRRD (RG_FRUPO)	0.0000303	0.0000402	137	146	NA	NA	NA
13-Sep-21	FR_HC3 (RG_HENUP)	<0.000005	<0.000005	44	45.8	NA	NA	NA
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00012	0.000136	129	133	NA	NA	NA
13-Sep-21	GH_PC2 (RG_FODPO)	0.000046	0.0000537	130	135	NA	NA	NA
14-Sep-21	FR_FR2 (RG_FOUKI)	0.0000317	0.0000404	109	113	NA	NA	NA
14-Sep-21	FR_FR3 (RG_FOBKS)	0.0000237	0.0000275	104	115	NA	NA	NA
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000281	0.000041	109	115	NA	NA	NA
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0000269	0.0000305	97.9	108	NA	NA	NA
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.000134	0.000132	131	136	NA	NA	NA
15-Sep-21	FR_FR1 (RG_FODHE)	0.0000119	0.0000136	58.2	58.7	NA	NA	NA
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	0.000103	0.000102	128	136	NA	NA	NA
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00003	0.000031	97	112	NA	NA	NA
15-Sep-21	RG_FO26	0.0000085	0.0000074	46.5	52.1	NA	NA	NA
16-Sep-21	FR_FRABCH (RG_FO22)	0.0000404	0.0000386	144	137	NA	NA	NA
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.0000256	0.000037	94.7	98.3	NA	NA	NA
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000302	0.0000264	103	106	NA	NA	NA
16-Sep-21	FR_HC3 (RG_HENUP)	<0.000005	<0.000005	45	45.2	NA	NA	NA
16-Sep-21	RG_FOUNGD	0.0000274	0.0000299	88.9	92.6	NA	NA	NA
17-Sep-21	FR_FR4 (RG_FOBSC)	0.000143	0.00013	131	129	NA	NA	NA
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	0.0000339	0.000046	150	150	NA	NA	NA
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.0000282	0.0000309	115	112	NA	NA	NA
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	0.0000081	0.0000094	51.9	51.2	NA	NA	NA
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.000029	0.0000379	112	112	NA	NA	NA
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000326	0.0000344	110	112	NA	NA	NA
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0000268	0.0000417	109	106	NA	NA	NA
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	0.0000414	0.0000356	137	153	NA	NA	NA
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.000133	0.000141	145	136	NA	NA	NA
28-Sep-21	FR_FR2 (RG_FOUKI)	0.0000281	0.0000263	120	118	NA	NA	NA
28-Sep-21	FR_FRABCH (RG_FO22)	0.0000348	0.0000392	148	148	NA	NA	NA
28-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000304	0.0000329	121	115	NA	NA	NA
28-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0000319	0.0000393	117	109	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.0000309	0.0000371	106	123	NA	NA	NA
4-Oct-21	FR_FR1 (RG_FODHE)	0.0000158	0.0000143	65.8	72	NA	NA	NA
4-Oct-21	FR_HC3 (RG_HENUP)	0.0000055	<0.000005	50.1	52.9	NA	NA	NA
5-Oct-21	FR_FR2 (RG_FOUKI)	0.0000289	0.0000336	112	128	NA	NA	NA
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0000352	0.0000355	108	120	NA	NA	NA
6-Oct-21	FR_FR3 (RG_FOBKS)	0.0000158	0.0000299	119	122	NA	NA	NA
6-Oct-21	FR_FR5	0.0000221	0.0000237	116	114	NA	NA	NA
6-Oct-21	FR_FRABCH (RG_FO22)	0.0000368	0.0000434	155	148	NA	NA	NA
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	0.0000442	0.0000555	146	148	NA	NA	NA
7-Oct-21	FR_FR4 (RG_FOBSC)	0.000154	0.000159	147	152	NA	NA	NA
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	0.0000327	0.0000344	117	114	NA	NA	NA
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000364	0.0000279	115	110	NA	NA	NA
10-Oct-21	FR_FR2 (RG_FOUKI)	0.0000339	0.0000334	115	112	NA	NA	NA
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000264	0.0000303	115	110	NA	NA	NA
11-Oct-21	FR_FR2 (RG_FOUKI)	0.0000386	0.0000355	113	113	NA	NA	NA
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000319	0.0000353	116	113	NA	NA	NA
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.000168	0.000196	152	152	NA	NA	NA
12-Oct-21	FR_FR2 (RG_FOUKI)	0.000038	0.0000404	117	125	NA	NA	NA
12-Oct-21	FR_FR4 (RG_FOBSC)	0.000174	0.000169	152	160	NA	NA	NA
12-Oct-21	FR_FRABCH (RG_FO22)	0.0000413	0.0000486	148	154	NA	NA	NA
12-Oct-21	FR_FRCP1 (RG_FOBCP)	0.000166	0.000168	147	156	NA	NA	NA
12-Oct-21	FR_FRRD (RG_FRUPO)	0.0000448	0.0000488	160	170	NA	NA	NA
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0000339	0.0000568	117	126	NA	NA	NA
13-Oct-21	FR_FR2 (RG_FOUKI)	0.000105	0.0000382	117	117	NA	NA	NA
13-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000293	0.0000356	118	122	NA	NA	NA
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	0.0000322	0.0000339	128	125	NA	NA	NA
19-Oct-21	FR_FR4 (RG_FOBSC)	0.000144	0.00022	164	155	NA	NA	NA
19-Oct-21	FR_FRABCH (RG_FO22)	0.0000325	0.0000519	162	154	NA	NA	NA
19-Oct-21	FR_FRCP1 (RG_FOBCP)	0.000141	0.000136	162	160	NA	NA	NA
19-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000319	0.0000376	136	125	NA	NA	NA
19-Oct-21	FR_FRRD (RG_FRUPO)	0.000042125	0.00004495	169	163.25	NA	NA	NA
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0000289	0.0000337	131	118	NA	NA	NA
19-Oct-21	FR_UFR1 (RG_URF1)	0.00000655	0.00000805	53.6	53.8	NA	NA	NA
20-Oct-21	FR_FR2 (RG_FOUKI)	0.0000279	0.0000405	123	127	NA	NA	NA
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.000139	0.000157	160	151	NA	NA	NA
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	0.0000355	0.000033	125	123	NA	NA	NA
26-Oct-21	FR_FR4 (RG_FOBSC)	0.000153	0.000178	155	152	NA	NA	NA
26-Oct-21	FR_FRABCH (RG_FO22)	0.0000447	0.000045	146	158	NA	NA	NA
26-Oct-21	FR_FRCP1 (RG_FOBCP)	0.000135	0.00014	147	158	NA	NA	NA
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.0000331	0.0000511	123	131	NA	NA	NA
26-Oct-21	FR_FRRD (RG_FRUPO)	0.0000465	0.0000492	170	166	NA	NA	NA
26-Oct-21	FR_MULTIPLATE (RG_MP1)	0.000036	0.0000497	122	118	NA	NA	NA
26-Oct-21	FR_UFR1 (RG_URF1)	0.0000079	0.0000096	49.7	52.7	NA	NA	NA
27-Oct-21	FR_FOUCL (RG_FOUCL)	0.0000245	0.0000245	84.4	87.8	NA	NA	NA
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	0.0000361	0.0000467	133	129	NA	NA	NA
28-Oct-21	FR_FRABCH (RG_FO22)	0.0000368	<0.000005	151	162	NA	NA	NA
28-Oct-21	FR_FRRD (RG_FRUPO)	0.0000458	0.0000154	167	167	NA	NA	NA
29-Oct-21	FR_FR4 (RG_FOBSC)	0.00016	0.000175	160	168	NA	NA	NA
29-Oct-21	FR_FRCP1 (RG_FOBCP)	0.000138	0.000146	157	159	NA	NA	NA
2-Nov-21	FR_FR2 (RG_FOUKI)	0.0000417	0.0000462	133	128	NA	NA	NA
2-Nov-21	FR_FR4 (RG_FOBSC)	0.000138	0.000146	171	159	NA	NA	NA
2-Nov-21	FR_FRABCH (RG_FO22)	0.000045	0.000044	153	155	NA	NA	NA
2-Nov-21	FR_FRCP1 (RG_FOBCP)	0.000138	0.000146	159	167	NA	NA	NA
2-Nov-21	FR_FRRD (RG_FRUPO)	0.00005	0.000058	156	162	NA	NA	NA
2-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0000498	0.0000598	130	130	NA	NA	NA
2-Nov-21	FR_UFR1 (RG_URF1)	<0.000005	0.000011	50.9	50.9	NA	NA	NA
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	0.0000508	0.0000528	133	136	NA	NA	NA
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.000146	0.00013	174	161	NA	NA	NA
8-Nov-21	FR_FR3 (RG_FOBKS)	0.0000303	0.0000274	126	136	NA	NA	NA
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.000121	0.000169	153	159	NA	NA	NA
8-Nov-21	GH_PC2 (RG_FODPO)	0.0000542	0.0000661	144	151	NA	NA	NA
9-Nov-21	FR_FR2 (RG_FOUKI)	0.0000405	0.0000469	133	132	NA	NA	NA
9-Nov-21	FR_FR4 (RG_FOBSC)	0.000139	0.000142	164	161	NA	NA	NA
9-Nov-21	FR_FRABCH (RG_FO22)	0.0000339	0.0000401	151	154	NA	NA	NA
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.000143	0.000127	163	161	NA	NA	NA
9-Nov-21	FR_FRRD (RG_FRUPO)	0.0000475	0.0000438	166	162	NA	NA	NA
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0000565	0.0000548	132	132	NA	NA	NA
9-Nov-21	FR_UFR1 (RG_URF1)	0.0000075	0.0000093	49.6	49.8	NA	NA	NA
10-Nov-21	FR_FR4 (RG_FOBSC)	0.00011	0.000121	167	161	NA	NA	NA
10-Nov-21	FR_HC3 (RG_HENUP)	<0.000005	0.0000083	49	51.9	NA	NA	NA
12-Nov-21	FR_FR2 (RG_FOUKI)	0.0000456	0.0000466	134	140	NA	NA	NA
12-Nov-21	FR_FR4 (RG_FOBSC)	0.0000057	0.0000115	41	42.4	NA	NA	NA
12-Nov-21	FR_FRNTP (RG_FOUSH)	0.000047	0.0000505	133	135	NA	NA	NA
15-Nov-21	FR_FR5	0.0000242	0.0000294	120	127	NA	NA	NA
15-Nov-21	FR_FRABCH (RG_FO22)	0.0000422	0.0000501	143	149	NA	NA	NA
16-Nov-21	FR_FR1 (RG_FODHE)	0.0000162	0.0000171	62.5	65.6	NA	NA	NA
17-Nov-21	FR_FR2 (RG_FOUKI)	0.00006	0.0000699	115	123	NA	NA	NA
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.0000701	0.0000802	120	123	NA	NA	NA
17-Nov-21	FR_MULTIPLATE (RG_MP1)	0.000077	0.0000937	122	125	NA	NA	NA
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	0.0000508	0.00005	152	147	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Cadmium (Cd)-Dissolved_mg/L	Cadmium (Cd)-Total_mg/L	Calcium (Ca)-Dissolved_mg/L	Calcium (Ca)-Total_mg/L	Cation - Anion Difference_%	Cation - Anion Ratio_%	Cation Sum_meq/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.0000928	0.0000896	132	139	NA	NA	NA
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.0000924	0.0000927	133	140	NA	NA	NA
24-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0000999	0.0000976	130	134	NA	NA	NA
29-Nov-21	FR_FR2 (RG_FOUKI)	0.0000766	0.0000835	127	130	NA	NA	NA
29-Nov-21	FR_FRNTP (RG_FOUSH)	0.0000783	0.0000937	128	126	NA	NA	NA
29-Nov-21	FR_MULTIPLATE (RG_MP1)	0.000098	0.0001	131	127	NA	NA	NA
1-Dec-21	FR_FRABCH (RG_FO22)	0.0000493	0.0000505	141	149	NA	NA	NA
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.000116	0.000143	128	131	NA	NA	NA
7-Dec-21	FR_FR2 (RG_FOUKI)	0.000103	0.000112	140	128	NA	NA	NA
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.000125	0.000131	134	127	NA	NA	NA
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.000133	0.000132	137	130	NA	NA	NA
8-Dec-21	FR_FR3 (RG_FOBKS)	0.0000874	0.000102	132	134	NA	NA	NA
8-Dec-21	FR_FRABCH (RG_FO22)	0.000038	0.000041	156	156	NA	NA	NA
8-Dec-21	FR_FRRD (RG_FRUPO)	0.0000503	0.0000538	167	164	NA	NA	NA
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.000147	0.000169	144	150	NA	NA	NA
9-Dec-21	FR_FR1 (RG_FODHE)	0.0000207	0.000024	89.5	88.7	NA	NA	NA
9-Dec-21	FR_FR4 (RG_FOBSC)	0.000128	0.000168	143	151	NA	NA	NA
9-Dec-21	FR_HC3 (RG_HENUP)	<0.000005	<0.000005	51.3	50.6	NA	NA	NA
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.000143	0.000162	165	160	NA	NA	NA
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	0.0000367	0.0000372	154	156	0.366	99.3	13.6
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	0.0000443	0.0000364	174	158	NA	NA	NA
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	0.0000925	0.00014	144	152	NA	NA	NA
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	0.0000124	0.000016	46	44.4	NA	NA	NA
17-Dec-21	FR_FOUCL (RG_FOUCL)	0.0000297	0.0000351	93.3	96	NA	NA	NA
17-Dec-21	FR_FR1 (RG_FODHE)	0.0000194	0.0000243	92.3	98.1	NA	NA	NA
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.000114	0.0000968	145	148	NA	NA	NA
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	0.000128	0.000122	144	147	NA	NA	NA
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.000144	0.000166	147	157	NA	NA	NA
17-Dec-21	FR_UFR1 (RG_URF1)	0.0000159	0.0000126	46.7	43.9	NA	NA	NA
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	0.000119	0.000124	131	141	NA	NA	NA
20-Dec-21	FR_FRABCH (RG_FO22)	0.0000459	0.0000546	148	160	NA	NA	NA
21-Dec-21	GH_PC2 (RG_FODPO)	0.0000337	0.0000286	150	162	NA	NA	NA
22-Dec-21	FR_FR5	0.0000286	0.0000299	130	133	NA	NA	NA
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	0.0000343	0.0000323	153	152	NA	NA	NA
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.000135	0.000144	196	184	NA	NA	NA
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	1119	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	2	<0.0001	<0.0001	0.00024	0.00027	NA	1300
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.86	<0.0001	0.0001	0.00047	0.0005	1043	1040
6-Jan-21	FR_MULTIPLATE (RG_MP1)	4.75	<0.0001	0.00012	<0.0001	0.00012	1089	1030
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	1145	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	1157	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1125	NA
8-Jan-21	FR_UFR1 (RG_URF1)	0.12	0.0002	0.00014	<0.0001	<0.0001	NA	333
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	2.24	<0.0001	<0.0001	0.00028	0.00032	NA	1280
12-Jan-21	FR_FR2 (RG_FOUKI)	8.18	<0.0001	0.0001	0.00035	0.00037	1070	1050
12-Jan-21	FR_FR3 (RG_FOBKS)	1.96	<0.0001	0.00012	0.00029	0.00032	NA	1060
12-Jan-21	FR_FR5	1.83	0.00014	0.00014	<0.0001	<0.0001	NA	1020
12-Jan-21	FR_FRNTP (RG_FOUSH)	2.29	<0.0001	0.0001	0.00047	0.00051	1163	1070
12-Jan-21	FR_HC3 (RG_HENUP)	1.04	0.00014	0.00022	<0.0001	<0.0001	NA	348
12-Jan-21	FR_MULTIPLATE (RG_MP1)	1.23	<0.0001	<0.0001	0.00011	0.0001	1017	1030
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	1129	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	1152	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1114	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	3.03	0.00012	0.00018	0.0001	0.0001	NA	1320
19-Jan-21	FR_FR2 (RG_FOUKI)	2.71	<0.0001	<0.0001	0.00033	0.00033	1183	1030
19-Jan-21	FR_FRABCH (RG_FO22)	1.95	0.00012	0.00021	0.0001	0.00016	NA	1160
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	1175	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1147	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	4.17	<0.0001	<0.0001	0.00031	0.00035	NA	1450
21-Jan-21	GH_PC2 (RG_FODPO)	2.18	0.0001	0.00016	<0.0001	<0.0001	NA	1150
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	1203	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	1219	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1188	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	2.35	<0.0001	<0.0001	0.00034	0.00039	1183.5	1100
27-Jan-21	FR_FRNTP (RG_FOUSH)	1.21	0.00012	0.00014	0.00054	0.00056	1194.5	1110
27-Jan-21	FR_MULTIPLATE (RG_MP1)	1.48	<0.0001	<0.0001	0.00012	0.00013	1140	1060
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1039	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	4.41	<0.0001	0.0002	0.0003	0.00037	NA	1040
2-Feb-21	FR_FRNTP (RG_FOUSH)	1.79	<0.0001	0.00011	0.00047	0.00054	1212	1080
2-Feb-21	FR_MULTIPLATE (RG_MP1)	1.61	<0.0001	0.00011	<0.0001	0.00011	1177	1080
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	1206	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	1225	NA
4-Feb-21	FR_HC3 (RG_HENUP)	0.36	0.00016	0.00016	<0.0001	<0.0001	NA	351
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	1180	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	2.42	<0.0001	<0.0001	0.0002	0.00022	NA	1100
8-Feb-21	FR_FR5	2	<0.0001	<0.0001	<0.0001	<0.0001	NA	1030
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	2.58	<0.0001	<0.0001	0.00019	0.00019	NA	1570
9-Feb-21	FR_FR2 (RG_FOUKI)	3.98	<0.0001	<0.0001	0.00022	0.00023	NA	1120
9-Feb-21	FR_FRNTP (RG_FOUSH)	1.98	0.00011	<0.0001	0.00032	0.00034	NA	1130
9-Feb-21	FR_MULTIPLATE (RG_MP1)	1.83	<0.0001	0.00013	<0.0001	<0.0001	NA	1080
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	4	<0.0001	0.00012	0.00026	0.00024	NA	1100
16-Feb-21	FR_FRNTP (RG_FOUSH)	4.35	0.00011	<0.0001	0.00037	0.00035	NA	1110
16-Feb-21	FR_MULTIPLATE (RG_MP1)	3.44	<0.0001	0.00013	<0.0001	<0.0001	NA	1080
16-Feb-21	GH_PC2 (RG_FODPO)	2.8	0.00013	0.00018	<0.0001	0.00014	NA	1200
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	2.48	0.00014	0.00018	0.00012	0.00012	NA	1430
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	4.03	<0.0001	<0.0001	0.00036	0.00037	NA	1130
23-Feb-21	FR_FR4 (RG_FOBSC)	3.92	<0.0001	<0.0001	0.00029	0.00029	NA	1480
23-Feb-21	FR_FRABCH (RG_FO22)	1.78	0.00012	0.0001	<0.0001	<0.0001	NA	1180
23-Feb-21	FR_FRCP1 (RG_FOBCP)	4.61	0.00012	0.00038	0.00038	0.00073	NA	1930
23-Feb-21	FR_FRRD (RG_FRUPO)	2.71	0.00017	0.00019	0.00012	0.00014	NA	1460
23-Feb-21	FR_MULTIPLATE (RG_MP1)	3.71	0.0001	0.00011	<0.0001	<0.0001	NA	1110
23-Feb-21	FR_UFR1 (RG_URF1)	0.13	0.00014	0.00012	<0.0001	<0.0001	NA	311
24-Feb-21	FR_FRNTP (RG_FOUSH)	3.95	<0.0001	0.00019	0.00051	0.00063	NA	1150
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	5.36	<0.0001	0.00015	0.00039	0.00042	NA	1120
2-Mar-21	FR_FR4 (RG_FOBSC)	4.66	<0.0001	0.00019	0.0003	0.00034	NA	1440
2-Mar-21	FR_FRABCH (RG_FO22)	2.61	0.00012	0.00015	<0.0001	0.0001	NA	1190
2-Mar-21	FR_FRCP1 (RG_FOBCP)	4.69	0.0002	0.00018	0.00028	0.00035	NA	1480
2-Mar-21	FR_FRNTP (RG_FOUSH)	4.48	<0.0001	0.00011	0.00059	0.00058	NA	1160
2-Mar-21	FR_FRRD (RG_FRUPO)	3.21	0.00023	0.0002	0.00012	0.00012	NA	1480
2-Mar-21	FR_MULTIPLATE (RG_MP1)	4.24	0.00013	0.0001	0.00013	0.00013	NA	1140
2-Mar-21	FR_UFR1 (RG_URF1)	0.18	0.00013	0.00015	<0.0001	<0.0001	NA	340
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	5.52	<0.0001	0.00016	0.00038	0.0005	NA	1050
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.18	<0.0001	0.00101	0.00021	0.00054	NA	59.1
5-Mar-21	FR_FR5	1.97	0.00013	0.00013	<0.0001	<0.0001	NA	1020
5-Mar-21	FR_HC3 (RG_HENUP)	0.24	0.00014	0.00014	<0.0001	<0.0001	NA	358
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	3.37	<0.0001	0.00016	0.00038	0.00042	NA	1290
8-Mar-21	FR_FRNTP (RG_FOUSH)	3.89	<0.0001	0.00011	0.00056	0.00059	NA	1120
9-Mar-21	FR_FR2 (RG_FOUKI)	3.45	<0.0001	0.00012	0.00039	0.00049	NA	1110
9-Mar-21	FR_FR4 (RG_FOBSC)	3.39	<0.0001	0.00018	0.00034	0.00048	NA	1320
9-Mar-21	FR_FRABCH (RG_FO22)	4.62	<0.0001	0.00013	<0.0001	0.0001	1344	1230
9-Mar-21	FR_FRCP1 (RG_FOBCP)	4.93	<0.0001	0.00012	0.00032	0.00038	1540	1430
9-Mar-21	FR_FRRD (RG_FRUPO)	2.9	0.00013	0.00017	0.00012	0.00013	NA	1510
9-Mar-21	FR_MULTIPLATE (RG_MP1)	3.04	<0.0001	0.00013	0.00016	0.00018	NA	1120
9-Mar-21	FR_UFR1 (RG_URF1)	0.61	0.00016	0.00062	<0.0001	<0.0001	301.6	286
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	0.29	0.00011	0.00045	<0.0001	<0.0001	NA	293
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	2.31	0.00013	0.00016	<0.0001	<0.0001	NA	1280
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	3.33	<0.0001	0.00046	0.00048	0.00071	NA	982
16-Mar-21	FR_FR4 (RG_FOBSC)	3.34	<0.0001	0.00055	0.00044	0.00061	NA	1110
16-Mar-21	FR_FRABCH (RG_FO22)	3.36	0.00011	0.00016	0.00011	0.00013	NA	1270
16-Mar-21	FR_FRCP1 (RG_FOBCP)	2.92	<0.0001	0.00025	0.00039	0.00055	NA	1150
16-Mar-21	FR_FRNTP (RG_FOUSH)	3.605	<0.0001	0.00042	0.0006	0.00075	NA	998
16-Mar-21	FR_FRRD (RG_FRUPO)	4.85	0.00016	0.00031	0.0001	0.00014	NA	1400
16-Mar-21	FR_MULTIPLATE (RG_MP1)	2.47	0.0001	0.00052	0.00037	0.00049	NA	937
16-Mar-21	FR_UFR1 (RG_URF1)	0.14	0.00011	0.00103	<0.0001	0.00011	239.9	240
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	986	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.92	<0.0001	0.0004	0.00059	0.00079	NA	974
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	2.29	<0.0001	0.00021	0.00066	0.00073	NA	975
23-Mar-21	FR_FR4 (RG_FOBSC)	2.3	<0.0001	0.00023	0.00057	0.00074	NA	1080
23-Mar-21	FR_FRABCH (RG_FO22)	3.17	0.00012	0.00012	0.00015	0.00017	NA	1170
23-Mar-21	FR_FRCP1 (RG_FOBCP)	2.22	0.00013	0.00029	0.00056	0.00067	NA	1080
23-Mar-21	FR_FRNTP (RG_FOUSH)	2	<0.0001	0.00033	0.00079	0.00088	NA	995
23-Mar-21	FR_FRRD (RG_FRUPO)	3.78	0.00011	0.00022	0.00027	0.00037	NA	1250
23-Mar-21	FR_MULTIPLATE (RG_MP1)	1.94	0.00013	0.00032	0.00046	0.00049	NA	953
23-Mar-21	FR_UFR1 (RG_URF1)	0.1	0.00014	0.00055	<0.0001	<0.0001	NA	211
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.46	<0.0001	0.00024	0.0005	0.00055	NA	1060
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	3.67	<0.0001	0.00015	0.00025	0.00033	NA	1050
30-Mar-21	FR_FR4 (RG_FOBSC)	3.02	<0.0001	0.00016	0.00025	0.00031	NA	1160
30-Mar-21	FR_FRABCH (RG_FO22)	3.67	<0.0001	0.00012	0.00011	0.00012	NA	1240
30-Mar-21	FR_FRCP1 (RG_FOBCP)	3.33	0.00011	0.00014	0.00023	0.00027	NA	1290
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	4.35	<0.0001	0.00017	0.00015	0.00021	NA	1290
30-Mar-21	FR_MULTIPLATE (RG_MP1)	2.8	<0.0001	0.00019	0.00028	0.00028	1179.118	1060
30-Mar-21	FR_UFR1 (RG_URF1)	0.16	0.00017	0.00048	<0.0001	<0.0001	264.9	257
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	2.24	<0.0001	0.00011	0.00029	0.00032	NA	1160
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	3.04	0.00011	0.00022	0.00024	0.00028	NA	1250
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	2.03	<0.0001	0.00021	0.00036	0.00036	NA	1170
6-Apr-21	FR_FR1 (RG_FODHE)	0.22	0.00012	0.0001	<0.0001	<0.0001	NA	611
6-Apr-21	FR_FR2 (RG_FOUKI)	1.64	<0.0001	0.00017	0.00044	0.00047	NA	1090
6-Apr-21	FR_FRNTP (RG_FOUSH)	1.23	<0.0001	0.00021	0.0005	0.00058	NA	1110
6-Apr-21	FR_HC3 (RG_HENUP)	0.22	0.00013	0.00014	<0.0001	<0.0001	NA	343
6-Apr-21	FR_MULTIPLATE (RG_MP1)	1.22	0.00011	0.00022	0.00034	0.00037	NA	1090
6-Apr-21	FR_UFR1 (RG_URF1)	<0.1	0.00014	0.00028	<0.0001	<0.0001	NA	263
7-Apr-21	FR_FR3 (RG_FOBKS)	1.81	<0.0001	0.00017	0.00038	0.00041	NA	1070
7-Apr-21	FR_FR5	2.78	0.0001	0.00012	<0.0001	0.0001	NA	1110
7-Apr-21	FR_FRABCH (RG_FO22)	2.81	0.0001	0.00013	0.00012	0.00014	NA	1210
7-Apr-21	FR_FRCP1 (RG_FOBCP)	1.96	<0.0001	0.00016	0.00033	0.00039	NA	1180
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.81	<0.0001	0.00017	0.00038	0.00038	NA	1170
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	2.18	0.00011	0.00013	0.00014	0.00014	NA	1160
9-Apr-21	FR_FR4 (RG_FOBSC)	1.74	<0.0001	0.00014	0.0003	0.00033	NA	1200
12-Apr-21	FR_FR1 (RG_FODHE)	0.22	0.00015	0.00011	<0.0001	<0.0001	NA	641
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	1.69	<0.0001	0.00016	0.00033	0.00034	NA	1120
13-Apr-21	FR_FR4 (RG_FOBSC)	1.68	<0.0001	0.00013	0.00031	0.00037	NA	1260
13-Apr-21	FR_FRABCH (RG_FO22)	2.28	0.00019	0.0002	0.00011	0.00016	NA	1230
13-Apr-21	FR_FRCP1 (RG_FOBCP)	1.6	<0.0001	0.00012	0.00032	0.0003	NA	1260
13-Apr-21	FR_FRRD (RG_FRUPO)	2.96	<0.0001	<0.0001	0.00015	0.00017	NA	1340
13-Apr-21	FR_MULTIPLATE (RG_MP1)	1.17	<0.0001	0.00012	0.00028	0.0003	NA	1120
13-Apr-21	FR_UFR1 (RG_URF1)	<0.1	0.00011	0.00025	<0.0001	<0.0001	NA	283
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	1.32	<0.0001	0.00014	0.00042	0.00044	NA	1120
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	2.79	<0.0001	0.0001	0.00034	0.00037	NA	1260
15-Apr-21	FR_FR4 (RG_FOBSC)	1.74	<0.0001	0.00012	0.00036	0.00036	NA	1260
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	0.23	0.00011	0.00013	<0.0001	<0.0001	NA	548
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	2.92	<0.0001	0.00015	0.0003	0.00033	NA	1040
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.88	<0.0001	0.00016	0.00036	0.00039	NA	948
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.92	<0.0001	0.00016	0.00025	0.00029	NA	925
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	1.37	<0.0001	0.00013	0.00027	0.00033	NA	1050
21-Apr-21	FR_FRABCH (RG_FO22)	2.98	0.00012	0.00026	0.00013	0.0002	NA	1150
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.76	<0.0001	0.00016	0.0003	0.00035	NA	1040
22-Apr-21	FR_FR2 (RG_FOUKI)	1.34	<0.0001	0.00027	0.00032	0.00036	NA	951
26-Apr-21	FR_FR1 (RG_FODHE)	0.23	<0.0001	0.00011	<0.0001	<0.0001	NA	506

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	1.38	<0.0001	<0.0001	0.00032	0.00036	NA	984
27-Apr-21	FR_FRCP1 (RG_FOBCP)	1.91	<0.0001	0.00021	0.0003	0.00036	NA	1090
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.95	<0.0001	<0.0001	0.00036	0.00038	NA	968
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.85	<0.0001	0.00011	0.00018	0.0002	NA	959
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	2.18	<0.0001	0.00015	0.00011	0.00012	NA	1160
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.13	<0.0001	0.00016	0.00029	0.00035	NA	1100
30-Apr-21	FR_FR4 (RG_FOBSC)	1.26	<0.0001	0.00019	0.00026	0.00032	NA	1010
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.71	<0.0001	0.00028	0.0002	0.0002	NA	822
3-May-21	FR_HC3 (RG_HENUP)	0.18	<0.0001	0.00016	<0.0001	<0.0001	NA	303
3-May-21	FR_UFR1 (RG_URF1)	<0.1	0.00015	0.00019	<0.0001	<0.0001	NA	251
4-May-21	FR_FR1 (RG_FODHE)	0.15	<0.0001	0.00012	<0.0001	<0.0001	429	426
4-May-21	FR_FR2 (RG_FOUKI)	0.69	<0.0001	0.00019	0.00021	0.00027	NA	754
4-May-21	FR_FR3 (RG_FOBKS)	0.68	<0.0001	0.0002	0.00019	0.00025	NA	753
4-May-21	FR_FRNTP (RG_FOUSH)	0.47	<0.0001	0.00016	0.00024	0.00028	NA	740
4-May-21	FR_MULTIPLATE (RG_MP1)	0.44	<0.0001	0.00015	0.00013	0.00019	NA	722
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.73	<0.0001	0.00021	0.00019	0.00026	NA	805
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	1.68	0.00013	0.00017	<0.0001	0.0001	NA	862
5-May-21	FR_FRABCH (RG_FO22)	2.25	<0.0001	0.00017	0.0001	0.00013	NA	967
5-May-21	FR_FRCP1 (RG_FOBCP)	0.91	<0.0001	0.00021	0.00018	0.00026	NA	821
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	2.03	<0.0001	0.00022	0.00012	0.00018	NA	980
7-May-21	FR_FR4 (RG_FOBSC)	0.62	<0.0001	0.00023	0.00013	0.00026	NA	728
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	0.13	<0.0001	0.00012	<0.0001	<0.0001	NA	379
11-May-21	FR_FR2 (RG_FOUKI)	0.68	<0.0001	0.0002	0.00016	0.0002	NA	681
11-May-21	FR_FRCP1 (RG_FOBCP)	0.72	<0.0001	0.00015	0.00014	0.0002	NA	800
11-May-21	FR_FRNTP (RG_FOUSH)	0.44	<0.0001	0.00014	0.00019	0.0002	NA	668
11-May-21	FR_MULTIPLATE (RG_MP1)	0.4	<0.0001	0.00013	<0.0001	0.0001	NA	665
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	1.52	<0.0001	<0.0001	<0.0001	0.00011	NA	974
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	758.8	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	734.4	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.82	<0.0001	<0.0001	0.0002	0.00023	NA	800
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.32	<0.0001	0.00434	<0.0001	0.00057	NA	483
18-May-21	FR_FR2 (RG_FOUKI)	0.33	0.00011	0.00087	<0.0001	0.00038	NA	398
18-May-21	FR_FR4 (RG_FOBSC)	0.39	0.00011	0.00125	<0.0001	0.00062	NA	433
18-May-21	FR_FRABCH (RG_FO22)	0.63	0.00011	0.00111	<0.0001	0.00051	NA	579
18-May-21	FR_FRCP1 (RG_FOBCP)	0.4	0.0001	0.00066	<0.0001	0.00068	NA	483
18-May-21	FR_FRRD (RG_FRUPO)	0.87	0.0001	0.00113	<0.0001	0.00048	NA	638
18-May-21	FR_MULTIPLATE (RG_MP1)	0.22	0.00011	0.00053	<0.0001	0.00025	NA	384
18-May-21	FR_UFR1 (RG_URF1)	<0.1	0.00015	0.00038	<0.0001	0.00012	NA	210
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.5	0.00011	0.00024	<0.0001	0.00016	NA	555
20-May-21	FR_FRNTP (RG_FOUSH)	0.21	0.0001	0.00052	<0.0001	0.00032	NA	374
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.4	<0.0001	0.00026	0.00011	0.00018	NA	500
25-May-21	FR_FR4 (RG_FOBSC)	0.5	<0.0001	0.00052	<0.0001	0.00025	NA	609
25-May-21	FR_FRABCH (RG_FO22)	1.08	<0.0001	0.00019	<0.0001	0.00012	NA	808
25-May-21	FR_FRCP1 (RG_FOBCP)	0.63	<0.0001	0.00019	<0.0001	0.00011	NA	708
25-May-21	FR_FRRD (RG_FRUPO)	1.08	<0.0001	0.00017	<0.0001	0.00012	NA	848
25-May-21	FR_MULTIPLATE (RG_MP1)	0.26	<0.0001	0.00019	0.00011	0.00012	NA	476
25-May-21	FR_UFR1 (RG_URF1)	<0.1	0.0001	0.00017	<0.0001	<0.0001	NA	228
26-May-21	FR_FR1 (RG_FODHE)	0.14	<0.0001	0.0001	<0.0001	<0.0001	NA	310
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.58	<0.0001	0.00019	<0.0001	0.00014	NA	553
27-May-21	FR_FR4 (RG_FOBSC)	0.53	<0.0001	0.00016	<0.0001	0.00013	NA	580
27-May-21	FR_FRNTP (RG_FOUSH)	0.25	<0.0001	0.00016	<0.0001	0.00014	NA	434
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	0.11	0.00012	0.00023	<0.0001	<0.0001	NA	284
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.4	<0.0001	0.00036	<0.0001	0.00015	NA	469
1-Jun-21	FR_FR2 (RG_FOUKI)	0.29	0.00013	0.0002	<0.0001	0.00018	NA	368
1-Jun-21	FR_FR4 (RG_FOBSC)	0.33	0.00052	0.00036	<0.0001	0.00024	NA	437
1-Jun-21	FR_FRABCH (RG_FO22)	0.63	<0.0001	0.0005	<0.0001	0.00022	NA	607
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.39	0.0001	0.00046	<0.0001	0.00026	553	535
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.21	0.00011	0.0003	<0.0001	0.00016	NA	372
1-Jun-21	FR_FRRD (RG_FRUPO)	0.82	0.00015	0.00043	<0.0001	0.00028	NA	675
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.21	0.0001	0.00022	<0.0001	0.00014	NA	365
1-Jun-21	FR_UFR1 (RG_URF1)	0.15	0.00012	0.0004	<0.0001	<0.0001	NA	212
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.33	0.00012	0.0012	<0.0001	0.00052	NA	436
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.29	0.00011	0.00044	<0.0001	0.00031	NA	354
7-Jun-21	FR_FR1 (RG_FODHE)	0.13	<0.0001	0.00018	<0.0001	<0.0001	NA	268
7-Jun-21	FR_HC3 (RG_HENUP)	0.11	<0.0001	0.00015	<0.0001	<0.0001	NA	215
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.41	<0.0001	0.00027	0.0001	0.00021	NA	452
7-Jun-21	GH_PC2 (RG_FODPO)	0.6	<0.0001	0.00035	0.0001	0.00022	NA	721
8-Jun-21	FR_FR2 (RG_FOUKI)	0.4	0.00012	0.00044	0.00017	0.00027	NA	442
8-Jun-21	FR_FR4 (RG_FOBSC)	0.46	<0.0001	0.00052	0.00013	0.00042	NA	552

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
8-Jun-21	FR_FRABCH (RG_FO22)	0.8	<0.0001	0.00024	<0.0001	0.00018	NA	746
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.54	<0.0001	0.00014	0.00012	0.00017	NA	666
8-Jun-21	FR_FRRD (RG_FRUPO)	1.02	0.0001	0.00063	0.0001	0.00032	NA	818
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.24	0.0001	0.00029	<0.0001	0.00012	NA	395
8-Jun-21	FR_UFR1 (RG_URF1)	<0.1	<0.0001	0.00018	<0.0001	<0.0001	NA	221
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.25	<0.0001	0.00015	0.00018	0.00025	NA	453
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.46	<0.0001	0.00016	0.00016	0.00019	NA	497
10-Jun-21	FR_FR4 (RG_FOBSC)	0.49	<0.0001	<0.0001	0.00015	0.00016	NA	690
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	523	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	471.2	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.71	<0.0001	0.00014	0.00018	0.00023	NA	795
14-Jun-21	FR_FOUCL (RG_FOUCL)	0.11	0.00011	0.00016	<0.0001	<0.0001	NA	273
14-Jun-21	FR_FR1 (RG_FODHE)	0.105	0.000125	0.00016	<0.0001	<0.0001	NA	287
14-Jun-21	FR_FR3 (RG_FOBKS)	0.39	0.0001	0.00017	0.00011	0.00016	NA	431
14-Jun-21	FR_FR5	0.78	0.00011	0.0002	<0.0001	0.00013	NA	623
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.23	0.00012	0.00016	<0.0001	<0.0001	NA	396
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.41	0.0001	0.0002	0.00011	0.00015	NA	467
14-Jun-21	RG_FO26	<0.1	0.00013	0.00018	<0.0001	<0.0001	NA	234
15-Jun-21	FR_FR2 (RG_FOUKI)	0.26	0.0001	0.00016	<0.0001	0.00014	NA	378
15-Jun-21	FR_FR4 (RG_FOBSC)	0.34	<0.0001	0.00015	<0.0001	0.00012	NA	453
15-Jun-21	FR_FRABCH (RG_FO22)	0.63	<0.0001	0.00024	<0.0001	0.00012	637	597
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.42	<0.0001	0.00024	<0.0001	0.00014	553	524
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.23	0.000105	0.000245	0.000105	0.000155	NA	369
15-Jun-21	FR_FRRD (RG_FRUPO)	0.75	<0.0001	0.00021	<0.0001	0.00012	NA	705
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.16	0.00012	0.00021	<0.0001	<0.0001	NA	341
15-Jun-21	FR_UFR1 (RG_URF1)	<0.1	0.00015	0.00024	<0.0001	<0.0001	231.2	225
15-Jun-21	RG_FOUNGD	0.16	<0.0001	0.00016	<0.0001	<0.0001	NA	326
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.4	0.00011	0.00014	0.0001	0.00014	NA	403
16-Jun-21	FR_FR4 (RG_FOBSC)	0.45	<0.0001	0.00017	0.0001	0.00014	NA	526
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	0.17	<0.0001	0.00014	<0.0001	<0.0001	NA	339
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.1	0.00012	0.00019	<0.0001	<0.0001	NA	175
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.365	0.0001	0.000145	0.000105	0.00014	NA	434
17-Jun-21	FR_FR2 (RG_FOUKI)	0.4	0.00011	0.00014	0.00011	0.00014	NA	432
17-Jun-21	FR_FR4 (RG_FOBSC)	0.64	<0.0001	<0.0001	<0.0001	<0.0001	NA	703
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.52	<0.0001	0.00012	<0.0001	<0.0001	NA	599
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.53	<0.0001	0.00012	<0.0001	0.0001	NA	600
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.47	<0.0001	0.00022	0.00011	0.00019	NA	487
17-Jun-21	GH_PC2 (RG_FODPO)	0.8	<0.0001	0.00025	<0.0001	0.00014	NA	712
18-Jun-21	FR_FRABCH (RG_FO22)	0.8	0.0001	0.00023	<0.0001	0.00011	NA	705
18-Jun-21	FR_FRRD (RG_FRUPO)	0.91	<0.0001	<0.0001	<0.0001	<0.0001	NA	764
18-Jun-21	RG_FOUEW	0.73	0.00011	0.00015	<0.0001	<0.0001	NA	651
21-Jun-21	FR_FR1 (RG_FODHE)	0.15	0.000105	0.000115	<0.0001	<0.0001	NA	268
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.52	<0.0001	0.00017	0.00012	0.00014	NA	502
21-Jun-21	FR_UFR1 (RG_URF1)	<0.1	0.00014	0.000135	<0.0001	<0.0001	NA	239.5
22-Jun-21	FR_FR2 (RG_FOUKI)	0.42	<0.0001	0.00012	0.00014	0.00015	NA	420
22-Jun-21	FR_FRABCH (RG_FO22)	0.76	0.00011	0.00011	<0.0001	<0.0001	NA	687
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.52	<0.0001	0.00014	0.0001	0.00012	NA	596
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.3	<0.0001	0.00018	0.00015	0.00019	NA	414
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.25	<0.0001	0.00011	<0.0001	<0.0001	NA	392
23-Jun-21	FR_FR4 (RG_FOBSC)	0.54	<0.0001	0.00023	0.00011	0.00013	NA	565
28-Jun-21	FR_FR1 (RG_FODHE)	0.11	<0.0001	0.00014	<0.0001	<0.0001	NA	258
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.49	<0.0001	0.00013	0.0001	0.00014	NA	506
29-Jun-21	FR_FR2 (RG_FOUKI)	0.38	0.00012	0.00021	0.00011	0.00012	NA	454
29-Jun-21	FR_FR4 (RG_FOBSC)	0.42	0.00012	0.00016	<0.0001	0.00012	NA	535
29-Jun-21	FR_FRABCH (RG_FO22)	0.67	<0.0001	0.00014	<0.0001	<0.0001	NA	713
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.46	<0.0001	0.00015	<0.0001	0.00011	NA	622
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.23	0.0001	0.00013	0.00011	0.00014	NA	434
29-Jun-21	FR_FRRD (RG_FRUPO)	0.81	0.00013	0.00012	<0.0001	<0.0001	NA	790
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.21	0.00011	0.00018	<0.0001	<0.0001	NA	414
29-Jun-21	FR_UFR1 (RG_URF1)	<0.1	0.00029	0.00011	<0.0001	<0.0001	NA	265
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.47	0.00011	0.00013	<0.0001	0.00012	NA	560
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	453.7	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	456.3	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	0.12	<0.0001	<0.0001	<0.0001	<0.0001	NA	263
2-Jul-21	FR_UFR1 (RG_URF1)	0.14	<0.0001	0.00012	<0.0001	<0.0001	NA	264
4-Jul-21	FR_FR2 (RG_FOUKI)	0.58	<0.0001	<0.0001	0.00011	0.00015	NA	534
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.38	<0.0001	0.00014	0.00013	0.00018	NA	539
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.73	<0.0001	<0.0001	0.00012	0.00015	NA	594
5-Jul-21	FR_HC3 (RG_HENUP)	0.2	<0.0001	0.00011	<0.0001	<0.0001	NA	204
6-Jul-21	FR_FR1 (RG_FODHE)	<0.1	<0.0001	0.00013	<0.0001	<0.0001	NA	273
6-Jul-21	FR_FR4 (RG_FOBSC)	0.5	<0.0001	0.00015	0.00012	0.00018	NA	558
6-Jul-21	FR_FRABCH (RG_FO22)	0.91	<0.0001	0.00014	<0.0001	<0.0001	NA	758
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.65	<0.0001	0.00012	0.00011	0.00016	NA	642
6-Jul-21	FR_FRRD (RG_FRUPO)	0.79	<0.0001	0.00014	<0.0001	0.00011	819.09	783
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.25	<0.0001	0.00012	<0.0001	<0.0001	NA	442
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.57	<0.0001	0.00019	0.00013	0.00018	NA	553
6-Jul-21	FR_UFR1 (RG_URF1)	0.13	0.00011	0.00024	<0.0001	<0.0001	270.07	270
7-Jul-21	FR_FR2 (RG_FOUKI)	0.58	<0.0001	0.00014	0.00014	0.00016	540.65	522

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.35	<0.0001	0.00014	0.00014	0.00019	NA	498
7-Jul-21	GH_PC2 (RG_FODPO)	0.81	<0.0001	0.00016	<0.0001	<0.0001	NA	760
8-Jul-21	FR_FR3 (RG_FOBKS)	0.53	<0.0001	0.00012	0.00014	0.00018	NA	559
8-Jul-21	FR_FR5	1.21	0.00011	0.00017	<0.0001	<0.0001	NA	731
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	0.13	0.00012	<0.0001	<0.0001	<0.0001	NA	308
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.84	<0.0001	<0.0001	0.00014	0.00017	NA	673
13-Jul-21	FR_FR2 (RG_FOUKI)	0.77	0.00011	0.00013	0.00015	0.00024	625.94	601
13-Jul-21	FR_FR4 (RG_FOBSC)	0.87	0.0001	<0.0001	0.00014	0.00016	739.56	703
13-Jul-21	FR_FRABCH (RG_FO22)	1.04	0.00011	<0.0001	<0.0001	<0.0001	NA	862
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.72	<0.0001	0.00012	<0.0001	0.00012	NA	754
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.44	<0.0001	0.00011	0.00015	0.00017	NA	574
13-Jul-21	FR_FRRD (RG_FRUPO)	1.1	0.0001	0.00013	<0.0001	<0.0001	959.55	934
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.36	<0.0001	0.00011	<0.0001	<0.0001	571.55	552
13-Jul-21	FR_UFR1 (RG_URF1)	<0.1	0.0001	0.00012	<0.0001	<0.0001	386.68	282
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.83	<0.0001	<0.0001	<0.0001	<0.0001	NA	689
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.48	0.00012	0.00012	<0.0001	<0.0001	NA	594
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.86	0.00013	0.00011	<0.0001	<0.0001	652	653
20-Jul-21	FR_FR4 (RG_FOBSC)	0.75	0.00012	0.00015	<0.0001	0.00014	915	832
20-Jul-21	FR_FRRD (RG_FRUPO)	1.51	0.00011	0.00012	<0.0001	<0.0001	1072	1020
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.5	<0.0001	0.00011	<0.0001	<0.0001	657	613
20-Jul-21	FR_UFR1 (RG_URF1)	<0.1	0.00021	0.00017	<0.0001	<0.0001	328	302
22-Jul-21	FR_FRABCH (RG_FO22)	1.21	<0.0001	0.00012	<0.0001	<0.0001	10.31	972
26-Jul-21	FR_FRABCH (RG_FO22)	1.44	0.00012	0.00013	<0.0001	<0.0001	1065	975
27-Jul-21	FR_FR2 (RG_FOUKI)	1.36	<0.0001	0.00016	0.00016	0.00024	NA	740
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.69	<0.0001	0.00014	0.0002	0.00026	NA	733
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.6	<0.0001	0.00012	<0.0001	<0.0001	NA	728
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.2	<0.0001	0.00013	0.00016	0.00019	NA	987
4-Aug-21	FR_FR2 (RG_FOUKI)	1.26	<0.0001	<0.0001	0.0002	0.00021	NA	758
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.77	<0.0001	<0.0001	0.00028	0.0003	NA	758
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.7	0.00012	0.00012	<0.0001	<0.0001	NA	731
5-Aug-21	FR_FRABCH (RG_FO22)	1.34	<0.0001	<0.0001	<0.0001	<0.0001	NA	1030
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.13	<0.0001	<0.0001	0.00026	0.00027	NA	1050
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.96	0.00012	0.00012	<0.0001	<0.0001	NA	733
10-Aug-21	FR_FR1 (RG_FODHE)	0.18	0.00012	0.00013	<0.0001	<0.0001	NA	441
10-Aug-21	FR_FR2 (RG_FOUKI)	1.06	<0.0001	0.00012	0.00015	0.00021	789.94	770
10-Aug-21	FR_FR4 (RG_FOBSC)	1.14	<0.0001	0.00014	0.00014	0.00016	1039	1020
10-Aug-21	FR_FRABCH (RG_FO22)	2.03	<0.0001	0.00013	<0.0001	<0.0001	1152	1050
10-Aug-21	FR_FRCP1 (RG_FOBCP)	4.46	<0.0001	0.00012	0.00011	0.00011	1080	1000
10-Aug-21	FR_FRRD (RG_FRUPO)	1.25	0.00014	0.00015	<0.0001	<0.0001	1142.1	1110
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.51	0.00011	0.00012	<0.0001	<0.0001	705.7	731
10-Aug-21	FR_UFR1 (RG_URF1)	0.12	0.00011	0.00014	<0.0001	<0.0001	NA	328
11-Aug-21	FR_FR3 (RG_FOBKS)	1.01	<0.0001	0.0001	0.00016	0.00017	NA	782
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.12	<0.0001	0.00011	0.00017	0.0002	NA	940
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	1.04	<0.0001	<0.0001	<0.0001	0.00011	NA	773
12-Aug-21	FR_FR4 (RG_FOBSC)	1.3	0.0001	0.00013	0.00012	0.00023	NA	1020
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.08	0.0001	0.00011	0.00011	0.00013	NA	939
13-Aug-21	FR_FR3 (RG_FOBKS)	1.05	<0.0001	0.00012	0.00017	0.00017	NA	802
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.16	<0.0001	0.0001	0.00016	0.00017	1017	944
14-Aug-21	FR_FR3 (RG_FOBKS)	1.25	<0.0001	0.00017	0.00015	0.00017	NA	813
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.36	<0.0001	0.00018	0.00016	0.00019	NA	959
15-Aug-21	FR_FR3 (RG_FOBKS)	0.92	<0.0001	<0.0001	0.00017	0.00018	NA	811
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.61	<0.0001	<0.0001	0.0002	0.00021	NA	1050
16-Aug-21	FR_FR3 (RG_FOBKS)	1.09	0.0001	<0.0001	0.00013	0.00014	NA	801
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.21	0.0001	<0.0001	0.00016	0.00016	NA	965
17-Aug-21	FR_FR2 (RG_FOUKI)	0.9	0.00013	0.00092	0.0003	0.00067	758.5	765
17-Aug-21	FR_FR4 (RG_FOBSC)	1.12	0.00014	0.00174	0.00032	0.00109	1028.3	1000
17-Aug-21	FR_FR5	1.66	<0.0001	0.00013	<0.0001	<0.0001	NA	877
17-Aug-21	FR_FRABCH (RG_FO22)	1.72	0.00011	0.0002	<0.0001	0.00012	1095	1000
17-Aug-21	FR_FRCP1 (RG_FOBCP)	1.86	<0.0001	0.00064	0.00026	0.00065	1066	990
17-Aug-21	FR_FRRD (RG_FRUPO)	14.8	<0.0001	0.00013	<0.0001	<0.0001	246.9	1070
17-Aug-21	FR_HC3 (RG_HENUP)	0.19	<0.0001	0.00034	<0.0001	<0.0001	NA	264
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.38	0.00011	0.0008	<0.0001	0.00036	396.4	652
17-Aug-21	FR_UFR1 (RG_URF1)	0.18	0.00012	0.00027	<0.0001	0.00013	323.4	302
18-Aug-21	GH_PC2 (RG_FODPO)	1.04	<0.0001	0.00015	<0.0001	0.00014	NA	886
19-Aug-21	FR_FR2 (RG_FOUKI)	0.59	<0.0001	<0.0001	0.00014	0.00017	NA	612
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.38	<0.0001	0.00012	0.00018	0.00027	NA	591
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.3	0.0001	<0.0001	<0.0001	<0.0001	NA	553
24-Aug-21	FR_FR2 (RG_FOUKI)	0.79	<0.0001	0.00011	0.00036	0.00038	681.1	653
24-Aug-21	FR_FR4 (RG_FOBSC)	0.88	<0.0001	<0.0001	0.0003	0.00033	816.08	783
24-Aug-21	FR_FRABCH (RG_FO22)	2.38	<0.0001	0.00027	<0.0001	0.00016	1005	945
24-Aug-21	FR_FRCP1 (RG_FOBCP)	1.08	0.0001	0.00013	0.00024	0.00028	833	787
24-Aug-21	FR_FRRD (RG_FRUPO)	1.46	0.0001	0.00012	<0.0001	<0.0001	1052	1010
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.41	<0.0001	<0.0001	<0.0001	<0.0001	593.25	572
24-Aug-21	FR_UFR1 (RG_URF1)	0.16	<0.0001	0.00014	<0.0001	<0.0001	324.4	307
25-Aug-21	FR_FR2 (RG_FOUKI)	0.85	<0.0001	<0.0001	0.00035	0.00036	NA	664
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.57	<0.0001	<0.0001	0.00047	0.00045	NA	657

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.45	<0.0001	0.00016	<0.0001	<0.0001	NA	592
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	1.1	<0.0001	<0.0001	0.00047	0.00051	757.1	798
31-Aug-21	FR_FR4 (RG_FOBSC)	1.19	<0.0001	<0.0001	0.00038	0.00039	NA	997
31-Aug-21	FR_FRABCH (RG_FO22)	1.31	<0.0001	<0.0001	<0.0001	<0.0001	1088	1070
31-Aug-21	FR_FRCP1 (RG_FOBCP)	1.05	<0.0001	<0.0001	0.0003	0.00029	1007	982
31-Aug-21	FR_FRRD (RG_FRUPO)	1.44	0.00012	0.0001	<0.0001	<0.0001	1027.7	1110
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.51	<0.0001	0.00016	<0.0001	<0.0001	NA	722
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.21	<0.0001	<0.0001	0.00043	0.00044	NA	963
31-Aug-21	FR_UFR1 (RG_URF1)	0.12	0.0001	<0.0001	<0.0001	<0.0001	1088	337
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.66	<0.0001	<0.0001	0.00078	0.00079	NA	793
3-Sep-21	FR_FR4 (RG_FOBSC)	1.62	<0.0001	<0.0001	0.00055	0.00057	NA	1000
7-Sep-21	FR_FR2 (RG_FOUKI)	1.33	<0.0001	0.00011	0.00048	0.00051	878.06	842
7-Sep-21	FR_FR4 (RG_FOBSC)	2.18	<0.0001	<0.0001	0.0004	0.00042	NA	1080
7-Sep-21	FR_FRABCH (RG_FO22)	1.76	0.00011	0.00014	<0.0001	<0.0001	NA	1080
7-Sep-21	FR_FRCP1 (RG_FOBCP)	1.6	<0.0001	<0.0001	0.0003	0.00031	NA	1050
7-Sep-21	FR_FRRD (RG_FRUPO)	1.92	0.00011	0.00013	<0.0001	<0.0001	1155.7	1120
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.73	<0.0001	<0.0001	<0.0001	<0.0001	NA	784
7-Sep-21	FR_UFR1 (RG_URF1)	0.22	0.00012	0.00014	<0.0001	<0.0001	350	295
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	1.15	<0.0001	<0.0001	0.0003	0.00031	NA	866
9-Sep-21	FR_FR3 (RG_FOBKS)	1.19	<0.0001	<0.0001	0.00025	0.00028	NA	846
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.75	0.0001	0.00012	0.00043	0.00045	NA	863
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.66	<0.0001	0.00016	<0.0001	<0.0001	NA	824
11-Sep-21	GH_PC2 (RG_FODPO)	1.63	<0.0001	0.00012	0.00012	0.00013	NA	1110
11-Sep-21	RG_FOUEW	1.59	0.00013	0.00015	<0.0001	<0.0001	NA	1030
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	1.7	0.00014	0.00014	<0.0001	<0.0001	NA	1110
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	0.25	0.0001	0.00014	<0.0001	<0.0001	NA	478
13-Sep-21	FR_FR1 (RG_FODHE)	0.35	<0.0001	0.00012	<0.0001	<0.0001	NA	470
13-Sep-21	FR_FR4 (RG_FOBSC)	1.87	<0.0001	<0.0001	0.0006	0.00064	NA	1130
13-Sep-21	FR_FR5	1.54	0.0001	0.00014	<0.0001	<0.0001	NA	983
13-Sep-21	FR_FRCP1 (RG_FOBCP)	1.85	<0.0001	<0.0001	0.00041	0.00044	NA	1120
13-Sep-21	FR_FRRD (RG_FRUPO)	1.48	0.00012	0.00023	<0.0001	<0.0001	NA	1170
13-Sep-21	FR_HC3 (RG_HENUP)	0.18	0.00015	0.00012	<0.0001	<0.0001	NA	312
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	1.34	0.0001	<0.0001	0.00056	0.0006	NA	1110
13-Sep-21	GH_PC2 (RG_FODPO)	1.4	0.00012	0.00012	0.00014	0.00015	NA	1120
14-Sep-21	FR_FR2 (RG_FOUKI)	1.31	0.00011	<0.0001	0.00063	0.00068	NA	903
14-Sep-21	FR_FR3 (RG_FOBKS)	1.38	<0.0001	0.00013	0.00055	0.00055	NA	875
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.85	<0.0001	<0.0001	0.00085	0.00096	NA	904
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.68	0.00012	0.00013	<0.0001	0.00011	NA	814
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	1.34	0.0001	<0.0001	0.00053	0.00054	NA	1130
15-Sep-21	FR_FR1 (RG_FODHE)	0.16	0.00011	0.00012	<0.0001	<0.0001	NA	454
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	2.37	<0.0001	<0.0001	0.00033	0.00037	NA	1150
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.9	<0.0001	0.00012	<0.0001	0.00012	NA	835
15-Sep-21	RG_FO26	0.17	<0.0001	0.00013	<0.0001	<0.0001	NA	347
16-Sep-21	FR_FRABCH (RG_FO22)	2.22	<0.0001	<0.0001	<0.0001	<0.0001	1168	1100
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.59	<0.0001	0.00012	<0.0001	<0.0001	NA	760
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.81	<0.0001	0.00011	0.00019	0.00019	NA	857
16-Sep-21	FR_HC3 (RG_HENUP)	0.2	0.00012	0.00012	<0.0001	<0.0001	NA	327
16-Sep-21	RG_FOUNGD	0.47	<0.0001	<0.0001	<0.0001	<0.0001	NA	715
17-Sep-21	FR_FR4 (RG_FOBSC)	1.32	<0.0001	0.00011	0.00043	0.00044	NA	1150
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	2.2	0.00014	0.00015	<0.0001	<0.0001	NA	1210
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	1.52	0.0001	<0.0001	0.00064	0.00069	NA	905
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	0.16	<0.0001	0.00012	<0.0001	<0.0001	NA	349
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	1.11	<0.0001	0.00011	0.00045	0.00046	NA	920
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.83	<0.0001	0.0001	0.00061	0.00061	NA	917
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.7	<0.0001	<0.0001	0.0001	0.00011	NA	866
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	1.63	<0.0001	0.00017	<0.0001	<0.0001	NA	1120
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	1.76	<0.0001	0.0001	0.00034	0.00034	NA	1190
28-Sep-21	FR_FR2 (RG_FOUKI)	1.66	<0.0001	0.0001	0.00036	0.00041	NA	940
28-Sep-21	FR_FRABCH (RG_FO22)	1.93	<0.0001	0.0001	<0.0001	<0.0001	1231	1140
28-Sep-21	FR_FRNTP (RG_FOUSH)	1.43	<0.0001	0.00023	0.00052	0.00058	NA	949
28-Sep-21	FR_MULTIPLATE (RG_MP1)	1.3	<0.0001	0.00012	0.0002	0.00024	NA	896

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.85	0.00012	0.00021	0.0003	0.00034	NA	893
4-Oct-21	FR_FR1 (RG_FODHE)	0.18	<0.0001	0.00012	<0.0001	<0.0001	NA	481
4-Oct-21	FR_HC3 (RG_HENUP)	0.19	<0.0001	0.00015	<0.0001	<0.0001	NA	332
5-Oct-21	FR_FR2 (RG_FOUKI)	2.88	<0.0001	0.00014	0.0005	0.00055	NA	945
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.72	<0.0001	<0.0001	0.00016	0.00016	NA	916
6-Oct-21	FR_FR3 (RG_FOBKS)	1.55	<0.0001	0.00012	0.00046	0.0005	NA	955
6-Oct-21	FR_FR5	1.83	<0.0001	0.00013	<0.0001	<0.0001	NA	866
6-Oct-21	FR_FRABCH (RG_FO22)	1.92	0.00013	0.00014	<0.0001	<0.0001	1201	1170
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	1.84	<0.0001	0.00013	<0.0001	<0.0001	NA	1150
7-Oct-21	FR_FR4 (RG_FOBSC)	1.59	<0.0001	0.00011	0.0002	0.0002	NA	1210
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	1.13	0.00012	<0.0001	0.00012	0.00013	NA	882
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.91	0.00014	<0.0001	0.00013	0.00014	NA	883
10-Oct-21	FR_FR2 (RG_FOUKI)	1.15	0.00012	0.00013	<0.0001	0.00011	NA	882
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.78	0.00012	<0.0001	<0.0001	0.0001	NA	872
11-Oct-21	FR_FR2 (RG_FOUKI)	1.13	0.00015	0.00011	0.00011	0.0001	NA	893
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.69	0.00014	0.00012	0.0001	0.00014	NA	875
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	1.37	<0.0001	0.00016	0.00013	0.00013	939	1050
12-Oct-21	FR_FR2 (RG_FOUKI)	1.26	0.0001	0.0001	0.00011	0.00012	930.03	918
12-Oct-21	FR_FR4 (RG_FOBSC)	1.47	<0.0001	0.00011	0.00012	0.00014	1219.2	1210
12-Oct-21	FR_FRABCH (RG_FO22)	1.58	0.00012	0.00013	<0.0001	<0.0001	1224	1100
12-Oct-21	FR_FRCP1 (RG_FOBCP)	2.18	<0.0001	<0.0001	0.00011	0.00012	NA	1180
12-Oct-21	FR_FRRD (RG_FRUPO)	1.32	0.00014	0.00017	<0.0001	<0.0001	1244.5	1220
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.73	<0.0001	0.00023	0.00013	0.00019	921.55	912
13-Oct-21	FR_FR2 (RG_FOUKI)	1.53	0.0001	0.0001	0.00018	0.00022	NA	920
13-Oct-21	FR_FRNTP (RG_FOUSH)	1.2	<0.0001	<0.0001	0.00022	0.00027	NA	949
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	1.41	<0.0001	0.00015	0.0003	0.0003	949.46	953
19-Oct-21	FR_FR4 (RG_FOBSC)	1.56	<0.0001	0.00017	0.00024	0.00054	1246	1240
19-Oct-21	FR_FRABCH (RG_FO22)	1.73	0.00011	0.00019	<0.0001	0.0001	1236	1140
19-Oct-21	FR_FRCP1 (RG_FOBCP)	1.65	<0.0001	0.00035	0.0002	0.0002	NA	1230
19-Oct-21	FR_FRNTP (RG_FOUSH)	1	<0.0001	<0.0001	0.00043	0.00047	NA	939
19-Oct-21	FR_FRRD (RG_FRUPO)	2.02	0.00013	0.0001475	<0.0001	<0.0001	1220	1222.5
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.86	0.00012	0.00013	<0.0001	<0.0001	999.36	926
19-Oct-21	FR_UFR1 (RG_URF1)	0.12	0.000105	0.000115	<0.0001	<0.0001	NA	343
20-Oct-21	FR_FR2 (RG_FOUKI)	1.84	<0.0001	0.00012	0.00028	0.00033	NA	957
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	1.48	<0.0001	<0.0001	0.00028	0.00029	1336	1270
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	1269	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	1.96	<0.0005	0.00011	0.00025	0.0003	930.37	977
26-Oct-21	FR_FR4 (RG_FOBSC)	2.02	<0.0002	0.0002	0.00019	0.00033	1193.9	1260
26-Oct-21	FR_FRABCH (RG_FO22)	2.9	0.00016	0.00019	<0.0001	<0.0001	NA	1190
26-Oct-21	FR_FRCP1 (RG_FOBCP)	2.26	<0.0001	0.00011	0.00018	0.00019	NA	1250
26-Oct-21	FR_FRNTP (RG_FOUSH)	1.34	0.0001	0.00016	0.00039	0.00044	NA	972
26-Oct-21	FR_FRRD (RG_FRUPO)	2.29	<0.0004	0.00014	<0.0001	<0.0001	1210.4	1280
26-Oct-21	FR_MULTIPLATE (RG_MP1)	1	<0.0001	0.00012	<0.0001	<0.0001	891.22	941
26-Oct-21	FR_UFR1 (RG_URF1)	0.19	0.00011	0.00012	<0.0001	<0.0001	NA	352
27-Oct-21	FR_FOUCL (RG_FOUCL)	0.25	0.00013	0.00014	<0.0001	<0.0001	NA	641
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	1.24	0.0001	0.0001	0.0001	0.00011	NA	944
28-Oct-21	FR_FRABCH (RG_FO22)	2.08	0.00012	0.00012	<0.0001	<0.0001	NA	1200
28-Oct-21	FR_FRRD (RG_FRUPO)	2.16	0.00013	0.00014	<0.0001	<0.0001	NA	1280
29-Oct-21	FR_FR4 (RG_FOBSC)	2.04	<0.0001	<0.0001	0.00028	0.00028	NA	1300
29-Oct-21	FR_FRCP1 (RG_FOBCP)	2.01	<0.0001	<0.0001	0.00025	0.00025	NA	1290
2-Nov-21	FR_FR2 (RG_FOUKI)	1.5	<0.0001	0.00012	0.00046	0.00054	1073.7	1010
2-Nov-21	FR_FR4 (RG_FOBSC)	1.59	<0.0001	<0.0001	0.00043	0.00044	1361.3	1280
2-Nov-21	FR_FRABCH (RG_FO22)	1.54	0.0001	0.0001	<0.0001	<0.0001	NA	1180
2-Nov-21	FR_FRCP1 (RG_FOBCP)	1.78	<0.0001	<0.0001	0.00036	0.00039	NA	1300
2-Nov-21	FR_FRRD (RG_FRUPO)	1.71	0.00015	0.00015	<0.0001	<0.0001	1342.5	1240
2-Nov-21	FR_MULTIPLATE (RG_MP1)	1	0.00011	0.00011	0.00045	0.0005	1070.7	987
2-Nov-21	FR_UFR1 (RG_URF1)	0.14	<0.0001	0.00014	<0.0001	<0.0001	NA	340
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	1.59	0.0001	0.00011	0.00069	0.00076	NA	1030
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	1.56	<0.0001	0.00012	0.0004	0.00042	NA	1310
8-Nov-21	FR_FR3 (RG_FOBKS)	2.03	<0.0001	0.00011	0.0005	0.00047	NA	1060
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	2.25	<0.0001	0.00019	0.00046	0.00058	NA	1300
8-Nov-21	GH_PC2 (RG_FODPO)	2.22	0.00012	0.00026	0.0001	0.0002	NA	1210
9-Nov-21	FR_FR2 (RG_FOUKI)	1.71	0.00014	0.00029	0.00031	0.00032	NA	1000
9-Nov-21	FR_FR4 (RG_FOBSC)	24.5	<0.0001	0.0001	0.00027	0.00028	NA	1320
9-Nov-21	FR_FRABCH (RG_FO22)	5.37	0.00012	0.00016	<0.0001	<0.0001	2445	1200
9-Nov-21	FR_FRCP1 (RG_FOBCP)	2.47	<0.0001	0.00011	0.00026	0.00028	NA	1260
9-Nov-21	FR_FRRD (RG_FRUPO)	1.98	0.00014	0.00017	<0.0001	<0.0001	NA	1280
9-Nov-21	FR_MULTIPLATE (RG_MP1)	1.17	<0.0001	0.00011	0.00038	0.00036	NA	1000
9-Nov-21	FR_UFR1 (RG_URF1)	0.2	0.00012	0.00013	<0.0001	<0.0001	NA	328
10-Nov-21	FR_FR4 (RG_FOBSC)	2.15	<0.0001	0.0001	0.00042	0.00048	NA	1320
10-Nov-21	FR_HC3 (RG_HENUP)	0.29	0.00015	0.00014	<0.0001	<0.0001	NA	347
12-Nov-21	FR_FR2 (RG_FOUKI)	5.74	0.00017	0.00013	0.00023	0.00023	NA	1030
12-Nov-21	FR_FR4 (RG_FOBSC)	0.14	0.00019	0.00019	<0.0001	<0.0001	NA	288
12-Nov-21	FR_FRNTP (RG_FOUSH)	1.25	<0.0001	<0.0001	0.0003	0.00032	NA	1010
15-Nov-21	FR_FR5	2.29	0.00011	0.00018	<0.0001	<0.0001	NA	1000
15-Nov-21	FR_FRABCH (RG_FO22)	2.16	0.00011	0.00013	<0.0001	<0.0001	NA	1140
16-Nov-21	FR_FR1 (RG_FODHE)	0.4	<0.0001	0.00016	<0.0001	<0.0001	NA	500
17-Nov-21	FR_FR2 (RG_FOUKI)	1.61	<0.0001	0.00015	0.00031	0.00034	NA	954
17-Nov-21	FR_FRNTP (RG_FOUSH)	1.1	<0.0001	0.00017	0.0004	0.00042	NA	950
17-Nov-21	FR_MULTIPLATE (RG_MP1)	1.19	<0.0001	0.00018	0.00037	0.00041	NA	953
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	2.46	<0.0001	0.00012	0.00012	0.00012	1267	1170

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Chloride (Cl)_mg/L	Chromium (Cr)-Dissolved_mg/L	Chromium (Cr)-Total_mg/L	Cobalt (Co)-Dissolved_mg/L	Cobalt (Co)-Total_mg/L	Conductivity, Field_uS/cm	Conductivity_uS/cm
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	1.82	<0.0001	0.00011	0.00072	0.00072	NA	1060
24-Nov-21	FR_FRNTP (RG_FOUSH)	1.39	<0.0001	<0.0001	0.00092	0.00092	NA	1060
24-Nov-21	FR_MULTIPLATE (RG_MP1)	1.36	<0.0001	<0.0001	0.00022	0.00022	NA	1040
29-Nov-21	FR_FR2 (RG_FOUKI)	1.84	<0.0001	0.00024	0.00018	0.00026	NA	1010
29-Nov-21	FR_FRNTP (RG_FOUSH)	1.24	<0.0001	0.00011	0.00018	0.00022	NA	1000
29-Nov-21	FR_MULTIPLATE (RG_MP1)	1.11	0.00011	0.0001	0.00017	0.00018	NA	998
1-Dec-21	FR_FRABCH (RG_FO22)	2	<0.0001	0.00013	<0.0001	<0.0001	1213	1170
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	1.43	<0.0001	0.00034	0.00024	0.00033	NA	1040
7-Dec-21	FR_FR2 (RG_FOUKI)	2.32	<0.0001	0.00011	0.00023	0.0003	NA	1060
7-Dec-21	FR_FRNTP (RG_FOUSH)	7.43	<0.0001	<0.0001	0.0003	0.00031	NA	1050
7-Dec-21	FR_MULTIPLATE (RG_MP1)	1.41	<0.0001	0.00011	0.00032	0.00036	NA	1080
8-Dec-21	FR_FR3 (RG_FOBKS)	1.54	0.0001	0.00014	0.00039	0.00045	NA	996
8-Dec-21	FR_FRABCH (RG_FO22)	2.4	0.00011	0.00014	<0.0001	<0.0001	1300	1130
8-Dec-21	FR_FRRD (RG_FRUPO)	3.02	0.00013	0.00014	<0.0001	<0.0001	NA	1280
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	3.26	0.00012	0.00012	0.00039	0.00042	NA	1230
9-Dec-21	FR_FR1 (RG_FODHE)	0.29	<0.0001	0.00011	<0.0001	<0.0001	NA	673
9-Dec-21	FR_FR4 (RG_FOBSC)	2.12	<0.0001	<0.0001	0.00044	0.00053	NA	1230
9-Dec-21	FR_HC3 (RG_HENUP)	0.21	0.00012	0.00015	<0.0001	<0.0001	NA	341
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	323.4	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	2.41	<0.0001	0.0001	0.0003	0.00033	NA	1270
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	1224	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	1.64	0.00011	0.00011	<0.0001	<0.0001	NA	1160
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	2.88	0.00016	0.00012	NA	<0.0001	1277	1180
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	1.68	<0.0001	0.00013	0.00011	0.00023	NA	1060
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	0.2	0.00011	0.00022	<0.0001	<0.0001	NA	300
17-Dec-21	FR_FOUCL (RG_FOUCL)	0.39	0.00011	0.00015	<0.0001	<0.0001	NA	661
17-Dec-21	FR_FR1 (RG_FODHE)	0.52	0.00011	0.00017	<0.0001	<0.0001	NA	714
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	1.92	<0.0001	0.00015	0.00014	0.00012	NA	1050
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	2	<0.0001	0.00013	0.0002	0.00016	NA	1060
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	2.23	<0.0001	<0.0001	0.00044	0.00052	NA	1230
17-Dec-21	FR_UFR1 (RG_URF1)	0.12	<0.0005	0.00018	<0.0001	<0.0001	3315	308
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	1.27	0.00011	0.00012	<0.0001	<0.0001	NA	989
20-Dec-21	FR_FRABCH (RG_FO22)	1.96	<0.0001	0.00015	NA	<0.0001	NA	1160
21-Dec-21	GH_PC2 (RG_FODPO)	1.86	<0.0005	0.00015	NA	<0.0001	NA	1170
22-Dec-21	FR_FR5	2.19	0.00013	0.00016	<0.0001	<0.0001	NA	1010
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	1308	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	1228	NA
29-Dec-21	FR_FRABCH (RG_FO22)	5.37	0.00011	0.00013	NA	<0.0001	1325	1150
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	4.19	<0.0001	0.00013	NA	0.00013	NA	1530
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	113.1	15.67	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.12	81.3	11.86	NA	0.126
6-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.7	109.3	15.18	NA	0.148
6-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	2.22	103.7	14.31	NA	0.117
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	90.7	12.99	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	92.4	12.98	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	83.1	11.82	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.0002	0.0006	1.42	82	12	NA	0.111
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	2.13	NA	NA	NA	0.17
12-Jan-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.45	84.3	11.79	NA	0.138
12-Jan-21	FR_FR3 (RG_FOBKS)	0.0003	<0.0005	3.25	82	11.73	NA	0.169
12-Jan-21	FR_FR5	<0.0002	<0.0005	<0.5	83.1	11.73	NA	0.114
12-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.55	83.4	11.61	NA	0.178
12-Jan-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	0.87	70.6	11.5	NA	0.297
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	2.22	81.8	11.47	NA	0.113
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.83	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	83.3	12.1	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	82.5	11.92	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.4	11.78	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.26	81.2	10.38	NA	0.153
19-Jan-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	4.29	81.1	11.72	NA	0.173
19-Jan-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.85	80.1	11.54	NA	0.107
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	84.6	12.2	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.3	11.84	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.00024	<0.0005	1.09	85.7	12.46	NA	0.233
21-Jan-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	<0.5	79.9	10.1	NA	0.142
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.8	12.04	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	81.5	11.86	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	79.3	11.53	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.69	81.45	11.765	NA	0.131
27-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.96	80.5	11.665	NA	0.118
27-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.57	84.7	12.25	NA	0.131
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	78.7	11.25	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.96	81.3	11.36	NA	0.144
2-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.93	80.6	11.25	NA	0.136
2-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.01	80.1	11.23	NA	0.135
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	81.5	11.31	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	80.7	11.23	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	0.69	80.2	11.6	NA	0.341
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	80.8	11.52	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	<0.5	81.7	11.89	NA	0.152
8-Feb-21	FR_FR5	<0.0002	<0.0005	<0.5	81.4	11.78	NA	0.105
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	0.73	NA	11.34	NA	0.142
9-Feb-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	80.9	11.77	NA	0.145
9-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0002	0.00092	<0.5	80.4	11.71	NA	0.139
9-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	<0.5	80	11.67	NA	0.138
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	81.2	11.8	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	80.3	11.67	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.4	11.84	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	80.9	11.75	NA	0.175
16-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	<0.5	79.8	11.61	NA	<0.1
16-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	<0.5	79.2	11.53	NA	0.153
16-Feb-21	GH_PC2 (RG_FODPO)	0.00044	<0.0005	<0.5	75.3	10.01	NA	0.137
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.6	11.87	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	79.4	11.47	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.59	79.2	10.67	NA	0.113
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	79	11.39	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	12.13	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.00023	<0.0005	0.54	NA	11.89	NA	0.14
23-Feb-21	FR_FR4 (RG_FOBSC)	0.00028	<0.0005	0.56	NA	11.93	NA	0.12
23-Feb-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	<0.5	76.5	10.7	<0.00001	0.102
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.00048	0.00111	1.94	79.5	11.43	<0.00001	0.143
23-Feb-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	11.13	NA	<0.1
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00021	<0.0005	0.55	NA	11.56	NA	0.11
23-Feb-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	<0.5	79.1	11.56	NA	0.129
24-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	<0.5	82.8	11.92	NA	0.259
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.8	11.83	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	81.4	11.74	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	79.4	11.39	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	NA	11.75	NA	0.147
2-Mar-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.169
2-Mar-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.52	78.7	10.74	NA	0.145
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00027	0.00108	0.6	81.1	11.78	NA	0.214
2-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.53	80.8	11.41	NA	0.156
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	11.03	NA	0.124
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.155
2-Mar-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	<0.5	79.6	11.63	NA	0.136
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	82	11.13	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.8	11.13	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.00023	<0.0005	0.66	79.2	11.29	NA	0.129
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.4	11.42	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.00057	0.00177	2.52	79.5	11.37	NA	0.025
5-Mar-21	FR_FR5	<0.0002	<0.0005	<0.5	82.8	11.73	NA	0.102
5-Mar-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	80.1	11.61	NA	0.35
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	0.61	NA	11.72	NA	0.108
8-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.8	81.3	10.98	NA	0.191
9-Mar-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	NA	12	NA	<0.1
9-Mar-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	<0.5	NA	12.005	NA	<0.1
9-Mar-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.62	78.9	11.27	NA	0.153
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00022	<0.0005	1.19	83	12.06	NA	0.177
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	10.75	NA	<0.1
9-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	<0.5	NA	11.555	NA	<0.1
9-Mar-21	FR_UFR1 (RG_URF1)	0.00027	0.00056	2.15	80.1	11.72	NA	0.111
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.2	11.07	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	80.9	10.8	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	79.9	10.74	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	0.00026	<0.0005	1.24	NA	NA	NA	0.132
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.2	11.32	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	<0.5	75.7	9.68	NA	<0.1
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	77.9	11.39	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.00033	0.00066	1.85	NA	11.62	NA	0.22
16-Mar-21	FR_FR4 (RG_FOBSC)	0.00033	0.00067	0.93	NA	11.59	NA	0.2
16-Mar-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.64	78.6	10.51	NA	<0.1
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0003	0.00069	0.91	81	11.65	NA	<0.1
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.00036	0.00058	1.45	82.5	10.82	NA	10.596
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	10.17	NA	0.19
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00043	0.00073	1.51	NA	11.34	NA	0.161
16-Mar-21	FR_UFR1 (RG_URF1)	0.00045	0.0008	3.56	80.3	11.72	NA	0.103
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	81.5	10.45	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	82.9	10.94	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	82.2	11.19	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00057	0.0009	2.35	NA	NA	NA	0.189
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	83.4	11.17	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	13.49	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	77.6	11.07	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	78.8	11.23	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.00035	0.00059	1.33	NA	11.93	NA	0.13
23-Mar-21	FR_FR4 (RG_FOBSC)	0.00037	0.001	1.59	NA	12.06	NA	0.14
23-Mar-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.07	78.7	10.98	NA	<0.1
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00043	0.00077	1.96	83.2	12.15	NA	<0.1
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.00042	0.00068	1.76	83.1	11.29	NA	<0.1
23-Mar-21	FR_FRRD (RG_FRUPO)	0.00022	<0.0005	0.68	NA	11.14	NA	0.12
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00052	0.00066	1.62	NA	11.64	NA	0.12
23-Mar-21	FR_UFR1 (RG_URF1)	0.00048	0.00065	4.45	81.3	11.86	NA	0.086
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00036	<0.0005	1.52	82.2	11.63	NA	0.158
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.3	11.44	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	81.6	11.4	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	79.5	11.2	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	79.1	11.02	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	78.3	11.07	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.00031	<0.0005	1.34	NA	12.14	NA	0.157
30-Mar-21	FR_FR4 (RG_FOBSC)	0.00033	<0.0005	1.73	NA	12.17	NA	0.19
30-Mar-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.1	79	11.19	NA	0.13
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.00031	<0.0005	1.68	84.4	12.29	NA	0.169
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	84.5	11.18	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.26	NA	11.35	NA	0.156
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00032	<0.0005	1.53	NA	11.58939	NA	0.16
30-Mar-21	FR_UFR1 (RG_URF1)	0.00056	<0.0005	3.16	81.7	11.95	NA	0.145
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	84.3	10.59	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.0003	<0.0005	0.69	83.1	11.54	NA	0.122
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	84.3	10.87	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.00039	<0.0005	1.12	83.5	12.1	NA	0.128
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.62	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0004	<0.0005	2.32	NA	11.6	NA	0.137
6-Apr-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.03	84.4	11.12	NA	0.165
6-Apr-21	FR_FR2 (RG_FOUKI)	0.00032	<0.0005	1.53	83.8	11.38	NA	0.111
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.00034	<0.0005	1.77	83.8	11.29	NA	0.112
6-Apr-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	80.3	11.34	NA	0.321
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00039	0.00052	1.63	83.7	11.06	NA	0.104
6-Apr-21	FR_UFR1 (RG_URF1)	0.00022	<0.0005	1.65	82.1	11.79	NA	0.097
7-Apr-21	FR_FR3 (RG_FOBKS)	0.00038	<0.0005	2.02	86.5	10.84	NA	<0.1
7-Apr-21	FR_FR5	<0.0002	<0.0005	1.23	83.8	11.16	NA	<0.1
7-Apr-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.67	80.5	10.7	NA	0.078
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00034	<0.0005	8.16	86.4	11.27	NA	<0.1
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00198	<0.0005	2.15	86.1	10.8	NA	<0.1
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	84.7	11.46	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	83.6	11.25	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	84.2	11.31	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	1.35	78.5	10.49	NA	<0.1
9-Apr-21	FR_FR4 (RG_FOBSC)	0.00038	<0.0005	1.36	87.7	12.64	NA	0.123
12-Apr-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.47	88.7	12.18	NA	0.167
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	76.4	10.7	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.00024	<0.0005	1.94	NA	11.77	NA	0.135
13-Apr-21	FR_FR4 (RG_FOBSC)	0.0003	<0.0005	1.46	NA	12.09	NA	0.109
13-Apr-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.61	81.8	11.19	<0.00001	<0.1
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00032	<0.0005	1.99	88.6	12.62	<0.00001	<0.1
13-Apr-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.44	NA	10.95	NA	0.102
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00034	<0.0005	1.93	NA	11.41	NA	0.108
13-Apr-21	FR_UFR1 (RG_URF1)	0.00026	<0.0005	2.72	83	12.15	NA	0.091
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	84.7	11.52	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.00025	<0.0005	1.04	84.7	11.53	NA	<0.1
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00026	<0.0005	1.36	85	11.67	NA	<0.1
15-Apr-21	FR_FR4 (RG_FOBSC)	0.00029	<0.0005	1.63	83	10.3	NA	0.112
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	86	10.85	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	83.2	10.74	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.64	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.73	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.65	85.5	11.38	NA	0.099
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	81.3	11.28	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0003	<0.0005	1.84	89.1	11.26	NA	0.167
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.00032	<0.0005	1.42	NA	NA	NA	0.142
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00032	<0.0005	1.52	NA	NA	NA	0.151
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	83.8	12.14	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.00031	<0.0005	2.95	NA	NA	NA	0.172
21-Apr-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.32	76.4	10.34	NA	0.14
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00041	<0.0005	2.05	86.4	10.64	NA	0.174
22-Apr-21	FR_FR2 (RG_FOUKI)	0.0003	<0.0005	1.36	81.3	11.06	NA	0.162
26-Apr-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	<0.5	91.4	11.73	NA	0.151

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.8	10.99	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	88.2	11.31	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.00026	<0.0005	2.1	84.4	10.24	NA	0.198
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.00031	<0.0005	2.35	87.9	11.38	NA	0.143
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.00031	<0.0005	1.69	84.8	10.6	NA	0.184
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00032	<0.0005	1.82	83.9	10.94	NA	0.181
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	85.5	10.12	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.57	76.2	9.95	NA	0.111
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	86.4	10.42	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	86.6	10.66	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.00027	<0.0005	1.75	85.6	10.99	NA	0.134
30-Apr-21	FR_FR4 (RG_FOBSC)	0.0003	<0.0005	1.4	85	10.4	NA	0.137
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.81	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00034	0.00053	1.45	NA	11.4	NA	0.146
3-May-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	0.71	82.4	10.82	NA	0.302
3-May-21	FR_UFR1 (RG_URF1)	0.00027	<0.0005	1.89	82.8	10.98	NA	0.121
4-May-21	FR_FR1 (RG_FODHE)	0.00023	<0.0005	1.9	86.7	11.37	NA	0.162
4-May-21	FR_FR2 (RG_FOUKI)	0.00034	<0.0005	0.98	84.7	10.87	NA	0.141
4-May-21	FR_FR3 (RG_FOBKS)	0.00031	<0.0005	0.98	8.6	11	NA	0.142
4-May-21	FR_FRNTP (RG_FOUSH)	0.00034	<0.0005	1.32	85.8	10.92	NA	0.14
4-May-21	FR_MULTIPLATE (RG_MP1)	0.00032	<0.0005	1.55	85.6	10.86	NA	0.138
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00032	<0.0005	2.01	86.3	10.98	NA	0.138
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	86.8	10.66	NA	NA
5-May-21	FR_FR5	<0.0002	<0.0005	1.28	82.1	10.97	NA	0.158
5-May-21	FR_FRABCH (RG_FO22)	0.00022	0.00052	1.37	80.9	10.85	NA	<0.1
5-May-21	FR_FRCP1 (RG_FOBCP)	0.0003	<0.0005	1.65	85.8	11.48	NA	0.151
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	87.4	10.8	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	86.4	10.76	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.00041	<0.0005	1.67	83.3	10.68	NA	0.172
7-May-21	FR_FR4 (RG_FOBSC)	0.00029	<0.0005	1.23	83	10.6	NA	0.144
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.7	9.39	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	83.9	9.99	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.03	83.4	3.48	NA	0.162
11-May-21	FR_FR2 (RG_FOUKI)	0.0003	<0.0005	1.36	84.9	10.59	NA	0.147
11-May-21	FR_FRCP1 (RG_FOBCP)	0.00027	<0.0005	1.33	634	4.7	NA	0.141
11-May-21	FR_FRNTP (RG_FOUSH)	0.0003	<0.0005	1.58	86.7	11.28	NA	0.147
11-May-21	FR_MULTIPLATE (RG_MP1)	0.00029	<0.0005	1.51	86.4	11.45	NA	0.145
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	88.4	10.9	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.0003	0.00061	1.59	78	10.41	NA	0.139
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	90.7	11.52	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	87.4	11.35	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00032	<0.0005	1.64	87.2	10.89	NA	0.15
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.58	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.49	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	82.8	10.68	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	76.8	10.17	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00025	0.00082	2.38	84.2	10.52	NA	0.135
18-May-21	FR_FR2 (RG_FOUKI)	0.00024	0.00088	1.4	NA	11.08	NA	0.148
18-May-21	FR_FR4 (RG_FOBSC)	0.00056	0.00127	1.82	NA	11.08	NA	0.156
18-May-21	FR_FRABCH (RG_FO22)	0.00032	0.00105	2.27	75.9	9.77	NA	0.136
18-May-21	FR_FRCP1 (RG_FOBCP)	0.00025	0.001	2.29	83.5	10.76	NA	0.147
18-May-21	FR_FRRD (RG_FRUPO)	0.00021	0.00092	1.4	NA	10.7	NA	0.143
18-May-21	FR_MULTIPLATE (RG_MP1)	0.00024	0.00065	1.75	NA	10.97	NA	0.148
18-May-21	FR_UFR1 (RG_URF1)	0.00026	0.00052	3.35	81.3	11.05	NA	0.108
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.7	10.86	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.0003	<0.0005	1.87	103.3	11.3	NA	0.18
20-May-21	FR_FRNTP (RG_FOUSH)	0.00024	0.00064	2.26	80.3	10.64	NA	0.146
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.3	10.84	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.00028	<0.0005	2.32	NA	10.58	NA	0.154
25-May-21	FR_FR4 (RG_FOBSC)	0.00026	0.00066	2.41	NA	10.39	NA	0.154
25-May-21	FR_FRABCH (RG_FO22)	0.00022	<0.0005	1.43	79.9	10.37	NA	0.164
25-May-21	FR_FRCP1 (RG_FOBCP)	0.00025	<0.0005	1.14	83.7	10.87	NA	0.179
25-May-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.78	NA	9.74	NA	0.136
25-May-21	FR_MULTIPLATE (RG_MP1)	0.00029	<0.0005	2.44	NA	10.64	NA	0.151
25-May-21	FR_UFR1 (RG_URF1)	0.00027	<0.0005	2.19	83.8	11.3	NA	0.13
26-May-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	2.1	83	10.77	NA	0.201
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.6	10.75	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00029	<0.0005	2.2	85.8	10.69	NA	0.197
27-May-21	FR_FR4 (RG_FOBSC)	0.00032	<0.0005	1.67	108.1	10.78	NA	0.145
27-May-21	FR_FRNTP (RG_FOUSH)	0.00029	<0.0005	2.53	87.3	10.45	NA	0.144
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	78.5	10.49	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	82.7	10.98	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	82.2	10.87	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.86	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.69	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	2.49	87	10.78	NA	0.183
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	82.9	10.66	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	<0.0005	2.9	87.6	10.38	NA	0.174
1-Jun-21	FR_FR2 (RG_FOUKI)	0.00029	0.0005	2.49	NA	10.86	NA	0.18
1-Jun-21	FR_FR4 (RG_FOBSC)	0.00023	0.00058	2.2	NA	10.74	NA	0.174
1-Jun-21	FR_FRABCH (RG_FO22)	0.00021	0.00057	2.15	81	10.39	NA	0.139
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00021	0.00056	2.04	85.6	10.66	NA	0.145
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.00045	<0.0005	2.1	NA	NA	NA	0.145
1-Jun-21	FR_FRRD (RG_FRUPO)	<0.0002	0.00074	2.4	NA	10.39	NA	0.163
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00023	0.00052	2.39	NA	10.77	NA	0.173
1-Jun-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	2.94	82.2	11.02	NA	0.104
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.00061	0.0011	1.83	87.7	10.26	NA	0.138
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00034	0.00064	2.45	NA	9.6	NA	0.163
7-Jun-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.52	83.2	10.71	NA	0.168
7-Jun-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	81	10.65	NA	0.206
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00032	<0.0005	2.24	83.6	10.29	NA	0.184
7-Jun-21	GH_PC2 (RG_FODPO)	0.00024	<0.0005	1.66	80.9	10.29	NA	0.149
8-Jun-21	FR_FR2 (RG_FOUKI)	0.00028	<0.0005	1.97	NA	10.91	NA	0.183
8-Jun-21	FR_FR4 (RG_FOBSC)	0.00029	0.00079	1.96	NA	NA	NA	0.194

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.00042	<0.0005	2.02	69.7	9.12	NA	0.15
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00022	<0.0005	1.98	72.1	9.37	NA	0.169
8-Jun-21	FR_FRRD (RG_FRUPO)	0.00024	0.00111	2.28	NA	10.53	NA	0.185
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00026	<0.0005	2.04	NA	NA	NA	0.178
8-Jun-21	FR_UFR1 (RG_URF1)	0.00032	<0.0005	4.2	77.3	10.48	NA	0.057
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.00027	<0.0005	1.71	83.4	10.76	NA	0.155
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	<0.0005	1.64	NA	10.7	NA	0.158
10-Jun-21	FR_FR4 (RG_FOBSC)	0.00024	<0.0005	1.38	92.7	11.67	NA	0.166
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	80.7	10.4	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.2	10.35	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.0003	<0.0005	2.72	112.63	11.26	NA	0.154
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.0002	<0.0005	1.08	NA	9.99	<0.00001	0.191
14-Jun-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.415	86.6	10.0875	<0.00001	0.197
14-Jun-21	FR_FR3 (RG_FOBKS)	0.00022	<0.0005	1.59	85.3	9.62	NA	0.206
14-Jun-21	FR_FR5	<0.0002	<0.0005	1.35	83	10.33	NA	0.184
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	81.1	10.35	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00024	<0.0005	1.48	NA	9.326666667	<0.00001	0.188
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.81	85.6	9.66	NA	0.196
14-Jun-21	RG_FO26	0.00023	<0.0005	1.21	NA	10.15	<0.00001	0.136
15-Jun-21	FR_FR2 (RG_FOUKI)	0.00027	<0.0005	1.41	NA	NA	NA	0.153
15-Jun-21	FR_FR4 (RG_FOBSC)	0.0002	<0.0005	0.99	NA	NA	NA	0.155
15-Jun-21	FR_FRABCH (RG_FO22)	0.00026	<0.0005	1.71	80.1	9.97	NA	0.182
15-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.59	83	10.24	NA	0.194
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.000235	<0.0005	1.4	82.2	10.22	<0.00001	0.1685
15-Jun-21	FR_FRRD (RG_FRUPO)	0.0002	<0.0005	1.14	NA	NA	NA	0.144
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00027	<0.0005	1.31	NA	NA	NA	0.144
15-Jun-21	FR_UFR1 (RG_URF1)	0.000215	0.00054	1.53	83.55	10.618	<0.00001	0.1395
15-Jun-21	RG_FOUNGD	<0.0002	<0.0005	1.02	NA	9.97	<0.00001	0.181
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	79.5	9.96	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.00022	<0.0005	1.87	NA	9.906666667	<0.00001	0.18
16-Jun-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	4.82	86.1	9.86	NA	0.163
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.0002	<0.0005	1.64	NA	10.15333333	<0.00001	0.185
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	83.15	10.015	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	1.29	NA	11.09333333	<0.00001	0.169
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	83.2	10.07	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.000555	<0.0005	2.96	NA	10.435	<0.00001	0.1665
17-Jun-21	FR_FR2 (RG_FOUKI)	0.00026	<0.0005	1.78	NA	10.67	<0.00001	0.192
17-Jun-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.95	NA	10.02666667	<0.00001	0.194
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	2.02	NA	10.59666667	<0.00001	0.152
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.00026	<0.0005	1.84	NA	10.04	<0.00001	0.19
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.92	NA	NA	NA	0.202
17-Jun-21	GH_PC2 (RG_FODPO)	0.0002	<0.0005	1.86	NA	9.566666667	<0.00001	0.18
18-Jun-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.59	NA	10.45333333	<0.00001	0.187
18-Jun-21	FR_FRRD (RG_FRUPO)	0.0002	<0.0005	1.63	NA	10.07	<0.00001	0.184
18-Jun-21	RG_FOUEW	<0.0002	<0.0005	1.6	NA	10.58666667	<0.00001	0.186
21-Jun-21	FR_FR1 (RG_FODHE)	0.000265	<0.0005	1.355	87.8	10.32	NA	0.169
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	83.3	10.09	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	82.9	9.59	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.7	10.4	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	82.7	9.95	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.74	86.2	10.06	NA	0.158
21-Jun-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.7	84.7	10.19	NA	0.1235
22-Jun-21	FR_FR2 (RG_FOUKI)	0.00023	<0.0005	1.8	83.3	10.09	NA	0.202
22-Jun-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.44	79.3	9.85	NA	0.186
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00022	<0.0005	1.63	83.5	9.88	NA	0.198
22-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.73	NA	NA	NA	0.202
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00021	<0.0005	1.75	NA	NA	NA	0.195
23-Jun-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	0.92	90.8	9.97	NA	0.186
28-Jun-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.79	85.7	9.84	NA	0.218
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	81.6	9.49	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00027	<0.0005	1.63	88	9.72	NA	0.211
29-Jun-21	FR_FR2 (RG_FOUKI)	0.00035	<0.0005	1.9	NA	NA	NA	0.13
29-Jun-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.46	NA	NA	NA	0.16
29-Jun-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.87	80	9.33	NA	0.139
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	0.92	85.1	9.46	NA	0.153
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.00026	<0.0005	1.65	NA	NA	NA	0.167
29-Jun-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.14	NA	NA	NA	0.122
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.6	NA	NA	NA	0.123
29-Jun-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.61	NA	10.14	NA	0.124
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	85.8	9.37	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	84.5	8.86	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.15	89.4	9719	NA	0.149
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	85.2	9.69	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	83.2	9.32	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	85.3	8.78	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	83.2	9.74	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	83.5	9.58	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.42	81	9.32	NA	0.221
2-Jul-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.62	80.9	9.04	NA	0.157
4-Jul-21	FR_FR2 (RG_FOUKI)	0.00035	<0.0005	1.18	84.5	9.45	NA	0.188
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	10.33	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.2	NA	NA	NA	0.19
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.96	NA	10.25	NA	0.068
5-Jul-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	79.8	9.53	NA	0.169
6-Jul-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	<0.5	83.1	9.75	NA	0.208
6-Jul-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	0.94	NA	NA	NA	0.178
6-Jul-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.9	88.3	9.95	NA	0.183
6-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.08	87.5	9.28	NA	0.201
6-Jul-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.13	NA	9.41	NA	0.16
6-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.95	NA	NA	NA	0.177
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	<0.5	88	9.64	NA	0.199
6-Jul-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	0.88	NA	9.67	NA	0.128
7-Jul-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	NA	9.23	NA	0.173

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.31	78.43333333	7.776666667	NA	0.172
7-Jul-21	GH_PC2 (RG_FODPO)	0.00024	<0.0005	1.21	83.7	9.46	NA	0.155
8-Jul-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.66	86.8	9.45	NA	0.216
8-Jul-21	FR_FR5	<0.0002	<0.0005	0.74	82.6	9.68	NA	0.173
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	80.2	9.07	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	80.1	9.25	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	0.85	84.9	9.5	NA	0.241
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	80.9	9.7	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.06	86.5	9.35	NA	0.218
13-Jul-21	FR_FR2 (RG_FOUKI)	0.00049	<0.0005	1.67	NA	8.79	NA	0.182
13-Jul-21	FR_FR4 (RG_FOBSC)	0.00026	<0.0005	2.89	NA	8.77	NA	0.168
13-Jul-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	3.01	83.1	9.55	<0.00001	0.148
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	2.96	85.4	9.1	<0.00001	0.174
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.0002	<0.0005	3.26	83.5	8.82	NA	0.176
13-Jul-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	2.74	NA	9.65	NA	0.14
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	2.79	NA	9.88	NA	0.17
13-Jul-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	2.34	NA	10.11	NA	0.123
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	85.2	9.36	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	83.9	9.2	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	81.1	9.16	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	0.69	91.6	10.33	NA	0.25
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	9.5	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	9.51	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	87.8	9.05	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.95	88.2	8.87	NA	0.174
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	82.8	9.03	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.94	NA	7.81	NA	0.102
20-Jul-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	0.98	NA	8.29	NA	0.068
20-Jul-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.6	NA	8.41	NA	<0.1
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.63	NA	8.48	NA	0.183
20-Jul-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	0.66	NA	9.03	NA	0.034
22-Jul-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	2.52	83	9.54	NA	0.136
26-Jul-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.31	87.6	10.16	NA	0.111
27-Jul-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.232
27-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.48	NA	NA	NA	0.227
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0002	<0.0005	0.56	NA	NA	NA	0.226
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	0.88	NA	NA	NA	0.168
4-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	0.00057	0.62	85.4	9.21	NA	0.216
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	85.4	9.21	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.75	86.6	9.35	NA	0.2
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00027	<0.0005	0.8	84.8	9.3	NA	0.198
5-Aug-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.98	79.3	9.34	NA	0.125
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00022	<0.0005	1.44	86.2	8.9	NA	0.152
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.2	9.12	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	81	9.02	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	76.3	8.57	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.91	84.9	9.24	NA	0.031
10-Aug-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	2.24	83.1	9.43	NA	0.233
10-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	2.37	NA	9.29	NA	0.164
10-Aug-21	FR_FR4 (RG_FOBSC)	0.00028	<0.0005	1.07	NA	9.33	NA	0.157
10-Aug-21	FR_FRABCH (RG_FO22)	0.00177	0.00166	2.42	78.4	9.12	NA	0.172
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	2.36	81.2	8.94	NA	0.21
10-Aug-21	FR_FRRD (RG_FRUPO)	0.00041	<0.0005	1.42	NA	8.91	NA	0.122
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	2.51	NA	9.2	NA	0.157
10-Aug-21	FR_UFR1 (RG_URF1)	0.00038	<0.0005	2.37	79.2	8.99	NA	0.152
11-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.148
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0002	<0.0005	0.64	NA	NA	NA	0.148
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	85.5	9.38	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.92	NA	NA	NA	0.122
12-Aug-21	FR_FR4 (RG_FOBSC)	0.0002	<0.0005	1.14	NA	NA	NA	0.154
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	87	9.35	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	82.3	8.93	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.28	NA	NA	NA	0.124
13-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.93	NA	NA	NA	0.126
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00025	<0.0005	1.11	84.3	9.46	NA	0.131
14-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	1.06	NA	NA	NA	0.207
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00021	<0.0005	1.03	NA	NA	NA	0.192
15-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.83	NA	9.56	NA	0.168
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.03	NA	9.28	NA	<0.1
16-Aug-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.62	NA	NA	NA	0.174
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0002	<0.0005	0.73	NA	NA	NA	0.167
17-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	0.00093	1.39	NA	9.41	NA	0.16
17-Aug-21	FR_FR4 (RG_FOBSC)	0.0003	0.00212	2.67	NA	9.25	NA	0.151
17-Aug-21	FR_FR5	<0.0002	<0.0005	3.56	78.4	9.26	NA	0.156
17-Aug-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	3.83	77.6	9.15	NA	0.14
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00025	0.00105	2.91	81.4	9.32	NA	0.171
17-Aug-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.51	NA	9.74	NA	0.125
17-Aug-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	3.65	78.2	9.68	NA	0.328
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0002	0.00096	1.2	NA	9.27	NA	0.161
17-Aug-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	4.46	81.2	956	NA	0.153
18-Aug-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	0.7	76.4	9.02	NA	0.147
19-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.7	NA	NA	NA	0.17
19-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.59	NA	NA	NA	0.172
19-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.79	NA	NA	NA	0.167
24-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	2.58	NA	9.71	NA	0.213
24-Aug-21	FR_FR4 (RG_FOBSC)	0.00023	0.00099	2.63	NA	9.8	NA	0.22
24-Aug-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.57	84.3	9.63	NA	0.418
24-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.54	83.9	9.67	NA	0.248
24-Aug-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	2.56	NA	9.1	NA	0.171
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.72	NA	9.59	NA	0.216
24-Aug-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.79	83.6	10.05	NA	0.188
25-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	3.27	85.1	9.72	NA	0.222
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.0002	<0.0005	3.55	83.6	9.83	NA	0.221

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	2.11	82.3	9.79	NA	0.228
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	9.44	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	9.51	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.77	NA	9.39	NA	0.192
31-Aug-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.6	NA	NA	NA	0.176
31-Aug-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	2.04	79	9.51	NA	0.133
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	2.04	83.4	9.35	NA	0.169
31-Aug-21	FR_FRRD (RG_FRUPO)	0.00831	<0.0005	0.99	NA	8.71	NA	0.136
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.34	NA	NA	NA	0.176
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	2.24	NA	NA	NA	0.132
31-Aug-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	2.27	79	9.51	NA	0.134
1-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	3.14	NA	NA	NA	0.187
3-Sep-21	FR_FR4 (RG_FOBSC)	0.00021	<0.0005	0.93	NA	9.72	NA	0.202
7-Sep-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.81	NA	9.34	NA	0.207
7-Sep-21	FR_FR4 (RG_FOBSC)	0.00024	0.00619	1.3	NA	NA	NA	0.206
7-Sep-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.36	83	10.43	NA	0.15
7-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.67	84.1	9.52	NA	0.2
7-Sep-21	FR_FRRD (RG_FRUPO)	0.00031	<0.0005	0.55	NA	8.86	NA	0.192
7-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.85	NA	NA	NA	0.191
7-Sep-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.44	80.7	9.99	NA	0.159
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.1	9.47	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	81.9	9.45	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	83.2	9.65	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.59	82	9.48	NA	0.172
9-Sep-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	1.55	NA	NA	<0.00001	0.163
9-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.98	83.1	9.59	NA	0.163
9-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.74	82.4	9.44	NA	0.159
11-Sep-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	1.16	NA	NA	<0.00001	0.173
11-Sep-21	RG_FOUEW	<0.0002	<0.0005	1.17	NA	NA	<0.00001	0.154
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.1	NA	NA	<0.00001	0.154
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.0002	<0.0005	0.82	NA	NA	<0.00001	0.222
13-Sep-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	0.95	NA	NA	<0.00001	0.274
13-Sep-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.24	NA	NA	<0.00001	0.221
13-Sep-21	FR_FR5	<0.0002	<0.0005	1.18	90.7	10.72	NA	0.127
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.00023	<0.0005	1.36	NA	NA	<0.00001	0.22
13-Sep-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.86	63.3	7.59	NA	0.128
13-Sep-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	80.4	9.83	NA	0.309
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00021	<0.0005	1.93	86.4	9.18	NA	0.166
13-Sep-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	1.3	84.6	9.7	NA	0.143
14-Sep-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.05	84	9.84	NA	0.185
14-Sep-21	FR_FR3 (RG_FOBKS)	0.00026	<0.0005	1.06	96.5	1.64	NA	0.196
14-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.07	84.3	9.87	NA	0.183
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00028	<0.0005	1.14	84.7	9.8	NA	0.167
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00045	<0.0005	0.99	NA	NA	<0.00001	0.189
15-Sep-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	0.58	83.8	9.45	NA	0.201
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	77.8	8.93	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<0.0002	<0.0005	1.42	NA	NA	<0.00001	0.245
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	75.5	8.67	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00157	<0.0005	1.34	81.5	9.38	<0.00001	0.196
15-Sep-21	RG_FO26	<0.0002	<0.0005	1.5	NA	NA	<0.00001	0.186
16-Sep-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.9	83	10.43	NA	0.161
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	<0.0002	<0.0005	1.29	NA	NA	NA	0.156
16-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.89	NA	NA	NA	0.156
16-Sep-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	0.91	NA	NA	<0.00001	0.302
16-Sep-21	RG_FOUNGD	<0.0002	<0.0005	0.97	NA	NA	<0.00001	0.154
17-Sep-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.2	83.5	9.75	NA	0.163
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	<0.00001	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	<0.00001	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.76	NA	NA	<0.00001	0.106
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	9.373333333	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	9.7	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.00022	<0.0005	1.22	NA	10.86	<0.00001	0.23
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	10.51666667	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	9.583333333	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	9.946666667	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	9.683333333	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.23	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	0.97	NA	NA	<0.00001	0.169
20-Sep-21	RG_FO26	NA	NA	NA	NA	10.50666667	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.0003	<0.0005	1.15	84.2	10.29	NA	0.158
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	10.19	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	8.87	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	9.673333333	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	9.433333333	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	9.846666667	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.9	85.2	10.065	NA	0.17
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	10.53	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.04	86.8	10.39	NA	0.157
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	11.46	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	9.03	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	8.91	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	8.713333333	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	86.7	10.07	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.93	NA	NA	NA	<0.1
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	75.2	9.01	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	84.9	10.05	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	81.1	9.99	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	9.66	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.00024	<0.0005	0.98	NA	10.04	NA	0.127
28-Sep-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.87	NA	NA	NA	0.197
28-Sep-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.81	83.1	9.85	NA	0.15
28-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.02	NA	NA	NA	0.2
28-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.73	NA	NA	NA	0.182

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.00039	0.00052	0.63	NA	NA	NA	0.159
4-Oct-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	1.95	84.8	9.87	NA	0.19
4-Oct-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	1.01	79.7	10.21	NA	0.312
5-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	0.0133	0.94	85.8	10.16	NA	0.176
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1	83.4	9.99	NA	0.152
6-Oct-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.52	NA	NA	NA	0.225
6-Oct-21	FR_FR5	<0.0002	<0.0005	<0.5	84.8	10.64	NA	0.114
6-Oct-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	<0.5	82.9	10.02	NA	0.158
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	<0.5	75.9	9.41	NA	0.166
7-Oct-21	FR_FR4 (RG_FOBSC)	0.00027	<0.0005	1.11	NA	NA	NA	0.155
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	85.7	10.05	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	86.3	10.19	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	84.9	10.47	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.86	NA	NA	NA	0.145
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.00127	<0.0005	0.88	NA	NA	NA	0.126
10-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.28	NA	NA	NA	0.139
10-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1.64	NA	NA	NA	0.124
11-Oct-21	FR_FR2 (RG_FOUKI)	0.00025	<0.0005	0.97	NA	NA	NA	0.143
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.96	NA	NA	NA	0.133
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.00022	<0.0005	1.48	NA	11.91	NA	0.126
12-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.68	NA	11.17	NA	0.141
12-Oct-21	FR_FR4 (RG_FOBSC)	0.00022	<0.0005	1.11	NA	11.16	NA	0.13
12-Oct-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.74	78.1	10.41	NA	0.109
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	0.83	85.3	11.57	NA	0.189
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.68	NA	9.44	NA	0.112
12-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.61	NA	10.48	NA	0.134
13-Oct-21	FR_FR2 (RG_FOUKI)	0.00036	<0.0005	0.76	NA	NA	NA	0.144
13-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.64	NA	NA	NA	0.14
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	82.1	10.79	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	84.9	10.83	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	84.1	10.76	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.6	NA	10.72	NA	0.164
19-Oct-21	FR_FR4 (RG_FOBSC)	0.00021	<0.0005	0.72	NA	10.89	NA	0.16
19-Oct-21	FR_FRABCH (RG_FO22)	<0.0002	0.00069	2.07	80.9	10.45	NA	0.122
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.76	NA	NA	NA	0.161
19-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	1	86.7	10.75	NA	0.162
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.8675	NA	9.39	NA	0.15075
19-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.66	NA	10.65	NA	0.143
19-Oct-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	0.535	NA	NA	NA	0.115
20-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.75	NA	NA	NA	0.156
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0002	<0.0005	1.11	83.8	11.12	NA	0.147
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.44	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.86	NA	10.27	NA	0.249
26-Oct-21	FR_FR4 (RG_FOBSC)	0.00021	<0.0005	1.62	NA	10.52	NA	0.253
26-Oct-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.86	75	9.62	NA	0.192
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.67	83.8	10.86	NA	0.241
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.00024	<0.0005	1.56	85.8	10.69	NA	0.254
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.13	NA	8.5	NA	0.204
26-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.32	NA	10.27	NA	0.182
26-Oct-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	0.99	78.6	10.59	NA	0.163
27-Oct-21	FR_FOUCL (RG_FOUCL)	<0.0002	<0.0005	<0.5	84.45	10.97	NA	0.135
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	<0.0002	<0.0005	<0.5	85.2	11.05	NA	0.199
28-Oct-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.56	NA	NA	NA	0.168
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.178
29-Oct-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	1.01	NA	NA	NA	0.218
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	0.99	NA	NA	NA	0.222
2-Nov-21	FR_FR2 (RG_FOUKI)	<0.0002	0.00115	1.34	NA	11.33	NA	0.158
2-Nov-21	FR_FR4 (RG_FOBSC)	0.00021	<0.0005	1.69	NA	11.74	NA	0.15
2-Nov-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.25	76.6	10.64	NA	<0.1
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.0002	<0.0005	1.68	84.9	12.27	NA	0.155
2-Nov-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	1.52	NA	9.35	NA	0.122
2-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.13	NA	10.98	NA	0.138
2-Nov-21	FR_UFR1 (RG_URF1)	0.00037	<0.0005	1.35	84.3	12.33	NA	0.123
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.56	83.6	9.89	NA	0.226
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.00026	<0.0005	1.35	NA	NA	NA	0.148
8-Nov-21	FR_FR3 (RG_FOBKS)	<0.0002	<0.0005	0.61	84.3	10.99	NA	0.208
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.00022	<0.0005	0.84	84.5	11.09	NA	0.207
8-Nov-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	<0.5	76.1	9.96	NA	0.174
9-Nov-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.72	NA	NA	NA	0.143
9-Nov-21	FR_FR4 (RG_FOBSC)	0.00021	<0.0005	0.56	NA	NA	NA	0.194
9-Nov-21	FR_FRABCH (RG_FO22)	0.00022	<0.0005	<0.5	77.4	10.71	NA	0.133
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.00022	<0.0005	0.52	NA	NA	NA	0.204
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.111
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00028	<0.0005	0.55	NA	NA	NA	0.143
9-Nov-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.16
10-Nov-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	0.82	NA	11.38	NA	0.152
10-Nov-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	0.97	80.7	11.51	NA	0.381
12-Nov-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.145
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.0002	<0.0005	<0.5	90.8	12.27	NA	0.139
12-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	<0.5	NA	NA	NA	0.133
15-Nov-21	FR_FR5	<0.0002	<0.0005	1.44	82.3	10.87	NA	0.138
15-Nov-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	1.47	77.6	10.06	NA	0.145
16-Nov-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	0.66	82.6	11.71	NA	0.221
17-Nov-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	1.33	84.7	11.87	NA	0.18
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.0002	<0.0005	1.1	83.5	11.68	NA	0.197
17-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.19	81.4	11.39	NA	0.15
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.92	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	11.73	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.52	81.2	10.88	NA	0.149

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Copper (Cu)-Dissolved_mg/L	Copper (Cu)-Total_mg/L	Dissolved Organic Carbon_mg/L	Dissolved Oxygen, Field_%	Dissolved Oxygen, Field_mg/L	DMSeO - Dimethylselenoxide_mg/L	Fluoride_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	82.7	11.22	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.00026	<0.0005	1.64	NA	NA	NA	0.21
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.0002	<0.0005	1.33	NA	NA	NA	0.282
24-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	1.4	NA	NA	NA	0.224
29-Nov-21	FR_FR2 (RG_FOUKI)	<0.0002	<0.0005	0.7	NA	NA	NA	0.16
29-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0002	<0.0005	0.6	NA	NA	NA	0.136
29-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0002	<0.0005	0.57	NA	NA	NA	0.133
1-Dec-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.85	80.6	10.38	NA	0.114
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.92	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00034	0.00053	1.39	NA	11.29	NA	0.138
7-Dec-21	FR_FR2 (RG_FOUKI)	0.00026	<0.0005	0.87	83.5	12.19	NA	0.198
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.00026	<0.0005	0.76	82.4	11.73	NA	0.217
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.00029	<0.0005	0.87	83.4	11.85	NA	0.174
8-Dec-21	FR_FR3 (RG_FOBKS)	0.0002	<0.0005	0.93	71	10.37	NA	0.141
8-Dec-21	FR_FRABCH (RG_FO22)	<0.0002	0.00126	0.8	76.5	10.97	NA	0.142
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.0002	<0.0005	0.69	78.4	9.65	NA	0.143
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00025	<0.0005	1.12	76.3	11.1	NA	0.101
9-Dec-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	0.96	79	11.44	NA	0.191
9-Dec-21	FR_FR4 (RG_FOBSC)	0.00024	<0.0005	1.28	NA	NA	NA	0.176
9-Dec-21	FR_HC3 (RG_HENUP)	<0.0002	<0.0005	<0.5	74.4	10.88	NA	0.309
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	78.8	11.34	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.00024	<0.0005	1.2	77.8	11.37	NA	0.176
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	78.1	10.41	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	0.00044	<0.0005	0.8	NA	NA	NA	0.107
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	<0.00001	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	<0.00001	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	<0.0002	<0.0005	0.64	77.4	10.72	NA	0.194
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<0.0002	<0.0005	0.84	NA	NA	<0.00001	0.177
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	13.25	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	13.37	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	0.00023	<0.0005	1.44	NA	NA	<0.00001	0.144
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.0002	<0.0005	1.02	NA	11.27	<0.00001	0.177
17-Dec-21	FR_FR1 (RG_FODHE)	<0.0002	<0.0005	2.2	NA	12.07	<0.00001	0.256
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	11.72	<0.00001	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	11.93	<0.00001	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	10.52666667	<0.00001	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	11.73	<0.00001	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.0004	<0.0005	0.88	NA	12.45	<0.00001	0.183
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	9.933333333	<0.00001	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.0002	0.00053	0.99	NA	12.04	<0.00001	0.181
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00028	<0.0005	1.32	NA	11.91	<0.00001	0.181
17-Dec-21	FR_UFR1 (RG_URF1)	<0.0002	<0.0005	1.34	76.7	11.21	NA	0.124
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	11.58	<0.00001	NA
17-Dec-21	RG_FOUNGD	<0.0002	<0.0005	0.91	NA	11.82	<0.00001	0.167
20-Dec-21	FR_FRABCH (RG_FO22)	0.00039	<0.0005	1.04	NA	NA	NA	0.106
21-Dec-21	GH_PC2 (RG_FODPO)	<0.0002	<0.0005	0.89	73.5	9.84	NA	<0.1
22-Dec-21	FR_FR5	<0.0002	<0.0005	0.54	84.5	12.25	NA	<0.1
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	72.4	9.96	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	75	9.62	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	0.00023	<0.0005	0.81	70.3	9.94	NA	<0.1
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00024	<0.0005	1.28	NA	11.31	NA	0.127
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	12.81	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	798	798	0.013	0.031	<0.00005	<0.00005
6-Jan-21	FR_FRNTP (RG_FOUSH)	610	NA	<0.01	<0.01	<0.00005	<0.00005
6-Jan-21	FR_MULTIPLATE (RG_MP1)	572	NA	<0.01	0.04	<0.00005	<0.00005
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	178	178	<0.01	<0.01	<0.00005	0.000242
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	809	809	0.015	0.031	<0.00005	<0.00005
12-Jan-21	FR_FR2 (RG_FOUKI)	634	634	0.023	0.045	<0.00005	<0.00005
12-Jan-21	FR_FR3 (RG_FOBKS)	640	NA	0.018	0.04	<0.00005	<0.00005
12-Jan-21	FR_FR5	612	NA	<0.01	<0.01	<0.00005	<0.00005
12-Jan-21	FR_FRNTP (RG_FOUSH)	626	NA	<0.01	0.011	<0.00005	<0.00005
12-Jan-21	FR_HC3 (RG_HENUP)	182	182	<0.01	<0.01	<0.00005	<0.00005
12-Jan-21	FR_MULTIPLATE (RG_MP1)	588	NA	<0.01	0.012	<0.00005	<0.00005
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	869	869	<0.01	<0.01	<0.00005	<0.00005
19-Jan-21	FR_FR2 (RG_FOUKI)	609	609	0.021	0.041	<0.00005	<0.00005
19-Jan-21	FR_FRABCH (RG_FO22)	739	739	<0.01	0.098	<0.00005	0.000092
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	NA	974	0.012	0.038	<0.00005	<0.00005
21-Jan-21	GH_PC2 (RG_FODPO)	NA	759	<0.01	<0.01	<0.00005	<0.00005
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	684	684	<0.01	0.03	<0.00005	<0.00005
27-Jan-21	FR_FRNTP (RG_FOUSH)	NA	680	<0.01	0.014	<0.00005	<0.00005
27-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	650	<0.01	0.011	<0.00005	<0.00005
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	609	609	0.02	0.07	<0.00005	<0.00005
2-Feb-21	FR_FRNTP (RG_FOUSH)	NA	647	<0.01	0.01	<0.00005	<0.00005
2-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	619	<0.01	<0.01	<0.00005	<0.00005
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	194	194	<0.01	<0.01	<0.00005	<0.00005
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	NA	761	<0.01	0.022	<0.00005	<0.00005
8-Feb-21	FR_FR5	NA	735	<0.01	<0.01	<0.00005	<0.00005
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	1020	1020	0.011	0.016	<0.00005	<0.00005
9-Feb-21	FR_FR2 (RG_FOUKI)	693	693	0.012	0.036	<0.00005	<0.00005
9-Feb-21	FR_FRNTP (RG_FOUSH)	NA	686	<0.01	<0.01	<0.00005	<0.00005
9-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	654	<0.01	0.014	<0.00005	<0.00005
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	799	799	0.011	0.034	<0.00005	<0.00005
16-Feb-21	FR_FRNTP (RG_FOUSH)	NA	805	<0.01	<0.01	<0.00005	<0.00005
16-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	780	<0.01	<0.01	<0.00005	<0.00005
16-Feb-21	GH_PC2 (RG_FODPO)	NA	900	<0.01	0.057	<0.00005	0.000079
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	979	979	<0.01	0.017	<0.00005	<0.00005
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	704	704	0.022	0.052	<0.00005	<0.00005
23-Feb-21	FR_FR4 (RG_FOBSC)	NA	985	0.014	0.032	<0.00005	<0.00005
23-Feb-21	FR_FRABCH (RG_FO22)	756	756	<0.01	0.018	0.000068	<0.00005
23-Feb-21	FR_FRCP1 (RG_FOBCP)	1300	1300	<0.01	0.267	<0.00005	0.000276
23-Feb-21	FR_FRRD (RG_FRUPO)	942	942	<0.01	0.043	<0.00005	<0.00005
23-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	677	<0.01	0.012	<0.00005	<0.00005
23-Feb-21	FR_UFR1 (RG_URF1)	197	197	<0.01	<0.01	<0.00005	<0.00005
24-Feb-21	FR_FRNTP (RG_FOUSH)	NA	743	<0.01	0.042	<0.00005	0.000081
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	724	724	0.019	0.059	<0.00005	<0.00005
2-Mar-21	FR_FR4 (RG_FOBSC)	NA	949	0.011	0.047	<0.00005	<0.00005
2-Mar-21	FR_FRABCH (RG_FO22)	763	763	<0.01	0.021	<0.00005	0.000077
2-Mar-21	FR_FRCP1 (RG_FOBCP)	942	942	<0.01	0.058	<0.00005	0.000107
2-Mar-21	FR_FRNTP (RG_FOUSH)	NA	730	<0.01	0.014	<0.00005	<0.00005
2-Mar-21	FR_FRRD (RG_FRUPO)	946	946	<0.01	<0.01	<0.00005	<0.00005
2-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	707	0.011	<0.01	<0.00005	<0.00005
2-Mar-21	FR_UFR1 (RG_URF1)	191	191	<0.01	<0.01	<0.00005	<0.00005
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	NA	657	<0.01	0.169	<0.00005	0.000098
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	26.2	26.2	0.01	0.682	<0.00005	0.000738
5-Mar-21	FR_FR5	NA	676	<0.01	<0.01	<0.00005	<0.00005
5-Mar-21	FR_HC3 (RG_HENUP)	212	212	<0.01	<0.01	<0.00005	<0.00005
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	851	851	<0.01	0.055	<0.00005	<0.00005
8-Mar-21	FR_FRNTP (RG_FOUSH)	NA	729	<0.01	0.022	<0.00005	<0.00005
9-Mar-21	FR_FR2 (RG_FOUKI)	673	673	0.015	0.12	<0.00005	0.000052
9-Mar-21	FR_FR4 (RG_FOBSC)	NA	826	<0.01	0.142	<0.00005	0.000108
9-Mar-21	FR_FRABCH (RG_FO22)	805	805	<0.01	0.015	<0.00005	<0.00005
9-Mar-21	FR_FRCP1 (RG_FOBCP)	928	928	<0.01	0.042	<0.00005	<0.00005
9-Mar-21	FR_FRRD (RG_FRUPO)	969	969	<0.01	<0.01	<0.00005	<0.00005
9-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	670	<0.01	0.024	<0.00005	<0.00005
9-Mar-21	FR_UFR1 (RG_URF1)	165	165	0.012	0.121	<0.00005	0.000108
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	162	162	<0.01	0.096	<0.00005	0.000081
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	NA	761	<0.01	0.019	<0.00005	<0.00005
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	597	597	<0.01	0.22	<0.00005	0.00016
16-Mar-21	FR_FR4 (RG_FOBSC)	NA	702	<0.01	0.197	<0.00005	0.000217
16-Mar-21	FR_FRABCH (RG_FO22)	721	721	<0.01	0.038	<0.00005	0.000062
16-Mar-21	FR_FRCP1 (RG_FOBCP)	631	631	<0.01	0.178	<0.00005	0.000185
16-Mar-21	FR_FRNTP (RG_FOUSH)	NA	526	<0.01	0.118	<0.00005	0.00012
16-Mar-21	FR_FRRD (RG_FRUPO)	921	921	<0.01	0.057	<0.00005	<0.00005
16-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	581	<0.01	0.15	<0.00005	0.000144
16-Mar-21	FR_UFR1 (RG_URF1)	115	115	0.035	0.228	<0.00005	0.000196
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	572	572	<0.01	0.22	<0.00005	0.000176
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	593	593	0.011	0.105	<0.00005	0.000079
23-Mar-21	FR_FR4 (RG_FOBSC)	NA	679	<0.01	0.153	<0.00005	0.000135
23-Mar-21	FR_FRABCH (RG_FO22)	676	676	<0.01	0.036	<0.00005	<0.00005
23-Mar-21	FR_FRCP1 (RG_FOBCP)	617	617	0.01	0.118	<0.00005	0.000097
23-Mar-21	FR_FRNTP (RG_FOUSH)	NA	531	<0.01	0.066	<0.00005	0.00007
23-Mar-21	FR_FRRD (RG_FRUPO)	784	784	<0.01	0.145	<0.00005	0.000117
23-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	578	0.011	0.072	<0.00005	0.000077
23-Mar-21	FR_UFR1 (RG_URF1)	111	111	0.026	0.143	<0.00005	0.000101
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	702	702	0.01	0.067	<0.00005	0.000062
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	645	645	<0.01	0.098	<0.00005	0.000064
30-Mar-21	FR_FR4 (RG_FOBSC)	NA	736	<0.01	0.087	<0.00005	0.000066
30-Mar-21	FR_FRABCH (RG_FO22)	757	757	<0.01	0.033	<0.00005	<0.00005
30-Mar-21	FR_FRCP1 (RG_FOBCP)	796	796	<0.01	0.04	<0.00005	<0.00005
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	781	781	<0.01	0.094	<0.00005	0.000072
30-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	642	<0.01	0.026	<0.00005	0.000456
30-Mar-21	FR_UFR1 (RG_URF1)	143	143	<0.01	0.083	<0.00005	0.000061
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	NA	665	<0.01	0.023	<0.00005	<0.00005
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	762	762	<0.01	0.067	<0.00005	<0.00005
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	709	709	<0.01	0.067	0.000064	0.000052
6-Apr-21	FR_FR1 (RG_FODHE)	359	359	<0.01	<0.01	<0.00005	<0.00005
6-Apr-21	FR_FR2 (RG_FOUKI)	607	607	<0.01	0.06	<0.00005	<0.00005
6-Apr-21	FR_FRNTP (RG_FOUSH)	NA	602	<0.01	0.037	<0.00005	<0.00005
6-Apr-21	FR_HC3 (RG_HENUP)	182	182	<0.01	<0.01	<0.00005	<0.00005
6-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	597	<0.01	0.04	<0.00005	<0.00005
6-Apr-21	FR_UFR1 (RG_URF1)	144	144	<0.01	0.056	<0.00005	<0.00005
7-Apr-21	FR_FR3 (RG_FOBKS)	NA	625	<0.01	0.051	<0.00005	<0.00005
7-Apr-21	FR_FR5	NA	681	<0.01	0.026	<0.00005	<0.00005
7-Apr-21	FR_FRABCH (RG_FO22)	771	771	<0.01	0.049	<0.00005	<0.00005
7-Apr-21	FR_FRCP1 (RG_FOBCP)	673	673	<0.01	0.049	<0.00005	<0.00005
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	702	702	0.013	0.058	0.000098	<0.00005
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	NA	792	<0.01	0.016	<0.00005	<0.00005
9-Apr-21	FR_FR4 (RG_FOBSC)	NA	645	<0.01	0.046	<0.00005	<0.00005
12-Apr-21	FR_FR1 (RG_FODHE)	330	330	<0.01	<0.01	<0.00005	<0.00005
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	621	621	0.014	0.044	<0.00005	<0.00005
13-Apr-21	FR_FR4 (RG_FOBSC)	NA	730	<0.01	0.055	<0.00005	<0.00005
13-Apr-21	FR_FRABCH (RG_FO22)	689	689	0.012	0.11	<0.00005	0.000063
13-Apr-21	FR_FRCP1 (RG_FOBCP)	716	716	0.01	0.036	<0.00005	<0.00005
13-Apr-21	FR_FRRD (RG_FRUPO)	781	781	<0.01	0.013	<0.00005	<0.00005
13-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	660	<0.01	0.022	<0.00005	<0.00005
13-Apr-21	FR_UFR1 (RG_URF1)	145	145	<0.01	0.033	<0.00005	<0.00005
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	NA	610	<0.01	0.018	<0.00005	<0.00005
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	703	0.01	0.036	<0.00005	<0.00005
15-Apr-21	FR_FR4 (RG_FOBSC)	NA	788	0.012	0.038	<0.00005	<0.00005
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	NA	288	<0.01	0.023	<0.00005	<0.00005
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	598	<0.01	0.048	<0.00005	<0.00005
20-Apr-21	FR_FRNTP (RG_FOUSH)	NA	514	<0.01	0.032	<0.00005	<0.00005
20-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	499	<0.01	0.03	<0.00005	<0.00005
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	NA	566	<0.01	0.053	<0.00005	0.000086
21-Apr-21	FR_FRABCH (RG_FO22)	NA	663	<0.01	0.183	<0.00005	0.000114
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	594	<0.01	0.06	<0.00005	<0.00005
22-Apr-21	FR_FR2 (RG_FOUKI)	NA	532	<0.01	0.063	<0.00005	<0.00005
26-Apr-21	FR_FR1 (RG_FODHE)	NA	263	<0.01	<0.01	<0.00005	<0.00005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	NA	597	0.011	0.038	<0.00005	<0.00005
27-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	668	<0.01	0.13	<0.00005	0.00008
27-Apr-21	FR_FRNTP (RG_FOUSH)	NA	569	<0.01	0.02	<0.00005	<0.00005
27-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	563	<0.01	0.018	<0.00005	<0.00005
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	NA	672	0.011	0.045	<0.00005	<0.00005
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	605	<0.01	0.044	<0.00005	<0.00005
30-Apr-21	FR_FR4 (RG_FOBSC)	NA	588	<0.01	0.045	<0.00005	<0.00005
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	494	<0.01	0.047	<0.00005	<0.00005
3-May-21	FR_HC3 (RG_HENUP)	NA	163	<0.01	<0.01	<0.00005	<0.00005
3-May-21	FR_UFR1 (RG_URF1)	NA	139	0.017	0.035	<0.00005	<0.00005
4-May-21	FR_FR1 (RG_FODHE)	NA	243	<0.01	0.016	<0.00005	<0.00005
4-May-21	FR_FR2 (RG_FOUKI)	NA	459	<0.01	0.071	<0.00005	0.00005
4-May-21	FR_FR3 (RG_FOBKS)	NA	472	<0.01	0.072	<0.00005	0.000052
4-May-21	FR_FRNTP (RG_FOUSH)	NA	454	<0.01	0.051	<0.00005	<0.00005
4-May-21	FR_MULTIPLATE (RG_MP1)	NA	382	<0.01	0.043	<0.00005	<0.00005
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	492	<0.01	0.081	<0.00005	0.000059
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	NA	498	<0.01	0.066	<0.00005	<0.00005
5-May-21	FR_FRABCH (RG_FO22)	NA	574	0.01	0.038	<0.00005	<0.00005
5-May-21	FR_FRCP1 (RG_FOBCP)	NA	473	<0.01	0.073	<0.00005	<0.00005
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	NA	592	<0.01	0.103	<0.00005	0.000076
7-May-21	FR_FR4 (RG_FOBSC)	NA	406	<0.01	0.086	<0.00005	0.000078
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	NA	203	<0.01	0.012	<0.00005	<0.00005
11-May-21	FR_FR2 (RG_FOUKI)	NA	380	<0.01	0.039	<0.00005	<0.00005
11-May-21	FR_FRCP1 (RG_FOBCP)	NA	448	<0.01	0.045	<0.00005	<0.00005
11-May-21	FR_FRNTP (RG_FOUSH)	NA	382	<0.01	0.018	<0.00005	<0.00005
11-May-21	FR_MULTIPLATE (RG_MP1)	NA	360	<0.01	0.021	<0.00005	<0.00005
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	NA	555	<0.01	0.044	<0.00005	<0.00005
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	443	<0.01	0.026	<0.00005	<0.00005
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	251	<0.01	0.415	<0.00005	0.000303
18-May-21	FR_FR2 (RG_FOUKI)	NA	200	<0.01	0.459	<0.00005	0.000326
18-May-21	FR_FR4 (RG_FOBSC)	NA	218	<0.01	0.807	<0.00005	0.00055
18-May-21	FR_FRABCH (RG_FO22)	NA	307	<0.01	0.617	<0.00005	0.00052
18-May-21	FR_FRCP1 (RG_FOBCP)	NA	262	<0.01	0.426	<0.00005	0.00048
18-May-21	FR_FRRD (RG_FRUPO)	NA	330	<0.01	0.625	<0.00005	0.000423
18-May-21	FR_MULTIPLATE (RG_MP1)	NA	190	<0.01	0.279	<0.00005	0.000226
18-May-21	FR_UFR1 (RG_URF1)	NA	114	<0.01	0.159	<0.00005	0.000174
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	NA	300	<0.01	0.07	<0.00005	0.000058
20-May-21	FR_FRNTP (RG_FOUSH)	NA	192	<0.01	0.24	<0.00005	0.000268
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	NA	267	<0.01	0.092	<0.00005	0.000082
25-May-21	FR_FR4 (RG_FOBSC)	NA	331	<0.01	0.283	<0.00005	0.000259
25-May-21	FR_FRABCH (RG_FO22)	NA	441	<0.01	0.07	<0.00005	0.000072
25-May-21	FR_FRCP1 (RG_FOBCP)	NA	381	<0.01	0.04	<0.00005	<0.00005
25-May-21	FR_FRRD (RG_FRUPO)	NA	472	<0.01	0.048	<0.00005	0.000052
25-May-21	FR_MULTIPLATE (RG_MP1)	NA	256	<0.01	0.049	<0.00005	0.000053
25-May-21	FR_UFR1 (RG_URF1)	NA	122	<0.01	0.045	<0.00005	<0.00005
26-May-21	FR_FR1 (RG_FODHE)	NA	157	<0.01	0.02	<0.00005	<0.00005
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	286	<0.01	0.062	<0.00005	<0.00005
27-May-21	FR_FR4 (RG_FOBSC)	NA	314	<0.01	0.057	<0.00005	<0.00005
27-May-21	FR_FRNTP (RG_FOUSH)	NA	220	<0.01	0.053	<0.00005	<0.00005
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	NA	145	<0.01	0.411	<0.00005	<0.00005
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	251	<0.01	0.094	<0.00005	0.000061
1-Jun-21	FR_FR2 (RG_FOUKI)	NA	201	<0.01	0.084	<0.00005	0.000126
1-Jun-21	FR_FR4 (RG_FOBSC)	NA	234	<0.01	0.29	<0.00005	0.000232
1-Jun-21	FR_FRABCH (RG_FO22)	NA	347	<0.01	0.337	<0.00005	0.00024
1-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	304	<0.01	0.301	<0.00005	0.000209
1-Jun-21	FR_FRNTP (RG_FOUSH)	NA	210	<0.01	0.132	0.000119	0.00009
1-Jun-21	FR_FRRD (RG_FRUPO)	NA	384	<0.01	0.365	<0.00005	0.000264
1-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	198	<0.01	0.086	<0.00005	0.000138
1-Jun-21	FR_UFR1 (RG_URF1)	NA	115	<0.01	0.168	<0.00005	0.000111
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	NA	239	<0.01	0.781	<0.00005	0.000595
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	203	<0.01	0.228	<0.00005	0.000283
7-Jun-21	FR_FR1 (RG_FODHE)	NA	136	<0.01	0.042	<0.00005	<0.00005
7-Jun-21	FR_HC3 (RG_HENUP)	NA	109	<0.01	0.01	<0.00005	<0.00005
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	259	<0.01	0.139	<0.00005	0.000126
7-Jun-21	GH_PC2 (RG_FODPO)	NA	447	<0.01	0.205	<0.00005	0.00015
8-Jun-21	FR_FR2 (RG_FOUKI)	NA	235	<0.01	0.177	<0.00005	0.00012
8-Jun-21	FR_FR4 (RG_FOBSC)	NA	294	<0.01	0.502	<0.00005	0.000384

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	NA	386	<0.01	0.215	<0.00005	0.000149
8-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	343	<0.01	0.062	<0.00005	<0.00005
8-Jun-21	FR_FRRD (RG_FRUPO)	NA	454	<0.01	0.459	<0.00005	0.000312
8-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	209	<0.01	0.116	<0.00005	0.000077
8-Jun-21	FR_UFR1 (RG_URF1)	NA	111	<0.01	0.03	<0.00005	<0.00005
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	NA	240	<0.01	0.061	<0.00005	0.000068
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	254	<0.01	0.041	<0.00005	<0.00005
10-Jun-21	FR_FR4 (RG_FOBSC)	NA	416	<0.01	0.022	<0.00005	<0.00005
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	NA	455	<0.01	0.03	<0.00005	<0.00005
14-Jun-21	FR_FOUCL (RG_FOUCL)	NA	152	<0.01	0.016	<0.00005	<0.00005
14-Jun-21	FR_FR1 (RG_FODHE)	NA	158	<0.01	0.0165	<0.00005	<0.00005
14-Jun-21	FR_FR3 (RG_FOBKS)	NA	228	<0.01	0.06	<0.00005	0.000053
14-Jun-21	FR_FR5	NA	328	<0.01	0.105	<0.00005	0.000108
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	219	<0.01	0.026	<0.00005	0.000052
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	248	<0.01	0.061	<0.00005	0.00005
14-Jun-21	RG_FO26	NA	128	<0.01	0.025	<0.00005	<0.00005
15-Jun-21	FR_FR2 (RG_FOUKI)	NA	198	<0.01	0.074	<0.00005	0.000063
15-Jun-21	FR_FR4 (RG_FOBSC)	NA	236	<0.01	0.045	<0.00005	<0.00005
15-Jun-21	FR_FRABCH (RG_FO22)	NA	313	<0.01	0.113	<0.00005	0.0001
15-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	274	<0.01	0.09	<0.00005	0.000075
15-Jun-21	FR_FRNTP (RG_FOUSH)	NA	192.5	<0.01	0.072	<0.00005	0.0000675
15-Jun-21	FR_FRRD (RG_FRUPO)	NA	382	<0.01	0.086	<0.00005	0.00008
15-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	173	<0.01	0.077	<0.00005	0.000061
15-Jun-21	FR_UFR1 (RG_URF1)	NA	123	<0.01	0.0885	<0.00005	0.0001185
15-Jun-21	RG_FOUNGD	NA	179	<0.01	0.036	<0.00005	<0.00005
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	NA	204	<0.01	0.036	<0.00005	<0.00005
16-Jun-21	FR_FR4 (RG_FOBSC)	NA	286	<0.01	0.039	<0.00005	<0.00005
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	NA	172	<0.01	0.042	<0.00005	<0.00005
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	NA	90.1	<0.01	0.018	<0.00005	<0.00005
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	233.5	<0.01	0.0425	<0.00005	0.0000545
17-Jun-21	FR_FR2 (RG_FOUKI)	NA	220	<0.01	0.037	<0.00005	<0.00005
17-Jun-21	FR_FR4 (RG_FOBSC)	NA	395	<0.01	0.022	<0.00005	<0.00005
17-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	313	<0.01	0.021	<0.00005	<0.00005
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	NA	317	<0.01	0.034	<0.00005	<0.00005
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	262	<0.01	0.113	<0.00005	0.00009
17-Jun-21	GH_PC2 (RG_FODPO)	NA	389	<0.01	0.108	<0.00005	0.00008
18-Jun-21	FR_FRABCH (RG_FO22)	NA	386	<0.01	0.079	<0.00005	0.000079
18-Jun-21	FR_FRRD (RG_FRUPO)	NA	428	<0.01	0.013	<0.00005	<0.00005
18-Jun-21	RG_FOUEW	NA	350	<0.01	0.035	<0.00005	<0.00005
21-Jun-21	FR_FR1 (RG_FODHE)	NA	147.5	<0.01	0.0115	<0.00005	<0.00005
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	273	<0.01	0.028	<0.00005	<0.00005
21-Jun-21	FR_UFR1 (RG_URF1)	NA	128.5	<0.01	0.026	<0.00005	<0.00005
22-Jun-21	FR_FR2 (RG_FOUKI)	NA	234	<0.01	0.028	<0.00005	<0.00005
22-Jun-21	FR_FRABCH (RG_FO22)	NA	397	<0.01	0.037	<0.00005	<0.00005
22-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	335	<0.01	0.028	<0.00005	<0.00005
22-Jun-21	FR_FRNTP (RG_FOUSH)	NA	225	<0.01	0.069	<0.00005	<0.00005
22-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	207	<0.01	0.019	<0.00005	<0.00005
23-Jun-21	FR_FR4 (RG_FOBSC)	NA	307	<0.01	0.028	<0.00005	<0.00005
28-Jun-21	FR_FR1 (RG_FODHE)	NA	124	<0.01	0.01	<0.00005	<0.00005
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	252	<0.01	0.026	<0.00005	<0.00005
29-Jun-21	FR_FR2 (RG_FOUKI)	NA	240	<0.01	0.014	<0.00005	<0.00005
29-Jun-21	FR_FR4 (RG_FOBSC)	NA	308	<0.01	0.026	<0.00005	<0.00005
29-Jun-21	FR_FRABCH (RG_FO22)	NA	351	<0.01	0.026	<0.00005	<0.00005
29-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	301	<0.01	0.037	<0.00005	<0.00005
29-Jun-21	FR_FRNTP (RG_FOUSH)	NA	210	<0.01	0.027	<0.00005	<0.00005
29-Jun-21	FR_FRRD (RG_FRUPO)	NA	451	<0.01	0.017	<0.00005	<0.00005
29-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	224	<0.01	0.014	<0.00005	<0.00005
29-Jun-21	FR_UFR1 (RG_URF1)	NA	145	<0.01	<0.01	<0.00005	<0.00005
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	NA	296	<0.01	0.017	<0.00005	<0.00005
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	NA	138	<0.01	<0.01	<0.00005	<0.00005
2-Jul-21	FR_UFR1 (RG_URF1)	NA	136	<0.01	<0.01	<0.00005	<0.00005
4-Jul-21	FR_FR2 (RG_FOUKI)	NA	291	<0.01	0.025	<0.00005	<0.00005
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	NA	275	<0.01	0.012	<0.00005	<0.00005
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	324	<0.01	0.026	<0.00005	<0.00005
5-Jul-21	FR_HC3 (RG_HENUP)	NA	104	<0.01	<0.01	<0.00005	<0.00005
6-Jul-21	FR_FR1 (RG_FODHE)	NA	139	<0.01	0.013	<0.00005	<0.00005
6-Jul-21	FR_FR4 (RG_FOBSC)	NA	294	<0.01	0.056	<0.00005	<0.00005
6-Jul-21	FR_FRABCH (RG_FO22)	NA	404	<0.01	0.036	<0.00005	<0.00005
6-Jul-21	FR_FRCP1 (RG_FOBCP)	NA	332	<0.01	0.038	<0.00005	<0.00005
6-Jul-21	FR_FRRD (RG_FRUPO)	NA	435	<0.01	0.044	<0.00005	<0.00005
6-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	234	<0.01	0.025	<0.00005	<0.00005
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	286	<0.01	0.047	<0.00005	<0.00005
6-Jul-21	FR_UFR1 (RG_URF1)	NA	138	<0.01	0.082	<0.00005	0.000073
7-Jul-21	FR_FR2 (RG_FOUKI)	NA	286	<0.01	0.034	<0.00005	<0.00005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	NA	280	<0.01	0.017	<0.00005	<0.00005
7-Jul-21	GH_PC2 (RG_FODPO)	NA	440	<0.01	0.042	<0.00005	<0.00005
8-Jul-21	FR_FR3 (RG_FOBKS)	NA	304	<0.01	0.025	<0.00005	<0.00005
8-Jul-21	FR_FR5	NA	423	<0.01	0.021	<0.00005	<0.00005
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	NA	170	<0.01	<0.01	<0.00005	<0.00005
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	385	<0.01	0.021	<0.00005	<0.00005
13-Jul-21	FR_FR2 (RG_FOUKI)	NA	324	<0.01	0.062	<0.00005	0.000052
13-Jul-21	FR_FR4 (RG_FOBSC)	NA	394	<0.01	0.017	<0.00005	<0.00005
13-Jul-21	FR_FRABCH (RG_FO22)	NA	508	<0.01	0.012	<0.00005	<0.00005
13-Jul-21	FR_FRCP1 (RG_FOBCP)	NA	413	<0.01	0.013	<0.00005	<0.00005
13-Jul-21	FR_FRNTP (RG_FOUSH)	NA	312	<0.01	<0.01	<0.00005	<0.00005
13-Jul-21	FR_FRRD (RG_FRUPO)	NA	526	<0.01	0.011	<0.00005	<0.00005
13-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	299	<0.01	0.012	<0.00005	<0.00005
13-Jul-21	FR_UFR1 (RG_URF1)	NA	155	<0.01	<0.01	<0.00005	<0.00005
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	NA	394	<0.01	0.019	<0.00005	<0.00005
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	NA	326	<0.01	0.013	<0.00005	<0.00005
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	NA	368	0.012	0.021	<0.00005	<0.00005
20-Jul-21	FR_FR4 (RG_FOBSC)	NA	480	0.014	0.063	<0.00005	<0.00005
20-Jul-21	FR_FRRD (RG_FRUPO)	NA	601	<0.01	0.013	<0.00005	<0.00005
20-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	339	<0.01	<0.01	<0.00005	<0.00005
20-Jul-21	FR_UFR1 (RG_URF1)	NA	164	<0.01	0.046	<0.00005	0.00007
22-Jul-21	FR_FRABCH (RG_FO22)	NA	543	<0.01	0.016	<0.00005	<0.00005
26-Jul-21	FR_FRABCH (RG_FO22)	NA	589	<0.01	0.011	<0.00005	<0.00005
27-Jul-21	FR_FR2 (RG_FOUKI)	NA	439	0.014	0.076	<0.00005	0.000052
27-Jul-21	FR_FRNTP (RG_FOUSH)	NA	431	<0.01	0.034	<0.00005	<0.00005
27-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	414	<0.01	0.013	<0.00005	<0.00005
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	598	<0.01	0.03	<0.00005	<0.00005
4-Aug-21	FR_FR2 (RG_FOUKI)	NA	461	0.015	0.031	<0.00005	<0.00005
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	NA	440	<0.01	0.016	<0.00005	<0.00005
4-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	419	<0.01	<0.01	<0.00005	<0.00005
5-Aug-21	FR_FRABCH (RG_FO22)	NA	646	<0.01	0.017	<0.00005	<0.00005
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	621	0.011	0.028	<0.00005	<0.00005
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	NA	414	<0.01	<0.01	<0.00005	<0.00005
10-Aug-21	FR_FR1 (RG_FODHE)	NA	237	<0.01	<0.01	<0.00005	<0.00005
10-Aug-21	FR_FR2 (RG_FOUKI)	NA	434	0.015	0.052	<0.00005	<0.00005
10-Aug-21	FR_FR4 (RG_FOBSC)	NA	589	0.013	0.022	<0.00005	<0.00005
10-Aug-21	FR_FRABCH (RG_FO22)	NA	610	<0.01	0.012	<0.00005	<0.00005
10-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	596	<0.01	0.022	<0.00005	<0.00005
10-Aug-21	FR_FRRD (RG_FRUPO)	NA	640	<0.01	<0.01	<0.00005	<0.00005
10-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	392	<0.01	0.014	<0.00005	<0.00005
10-Aug-21	FR_UFR1 (RG_URF1)	NA	177	<0.01	<0.01	<0.00005	<0.00005
11-Aug-21	FR_FR3 (RG_FOBKS)	NA	433	0.015	0.031	<0.00005	<0.00005
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	535	0.014	0.031	<0.00005	<0.00005
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	NA	419	0.016	0.036	<0.00005	<0.00005
12-Aug-21	FR_FR4 (RG_FOBSC)	NA	625	0.015	0.077	<0.00005	0.000081
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	521	0.015	0.029	<0.00005	<0.00005
13-Aug-21	FR_FR3 (RG_FOBKS)	NA	443	0.027	0.03	<0.00005	<0.00005
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	540	0.016	0.029	<0.00005	<0.00005
14-Aug-21	FR_FR3 (RG_FOBKS)	NA	450	0.015	0.029	<0.00005	<0.00005
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	538	0.015	0.029	<0.00005	<0.00005
15-Aug-21	FR_FR3 (RG_FOBKS)	NA	440	0.016	0.029	<0.00005	<0.00005
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	574	0.015	0.03	<0.00005	<0.00005
16-Aug-21	FR_FR3 (RG_FOBKS)	NA	460	0.015	0.027	<0.00005	<0.00005
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	577	0.015	0.032	<0.00005	<0.00005
17-Aug-21	FR_FR2 (RG_FOUKI)	NA	430	<0.01	0.474	<0.00005	0.000417
17-Aug-21	FR_FR4 (RG_FOBSC)	NA	578	<0.01	1.1	<0.00005	0.00102
17-Aug-21	FR_FR5	NA	509	<0.01	0.027	<0.00005	<0.00005
17-Aug-21	FR_FRABCH (RG_FO22)	NA	584	<0.01	0.126	<0.00005	0.000113
17-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	583	<0.01	0.505	<0.00005	0.000469
17-Aug-21	FR_FRRD (RG_FRUPO)	NA	599	<0.01	0.025	<0.00005	<0.00005
17-Aug-21	FR_HC3 (RG_HENUP)	NA	140	<0.01	0.073	<0.00005	0.000072
17-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	350	<0.01	0.409	<0.00005	0.000382
17-Aug-21	FR_UFR1 (RG_URF1)	NA	166	<0.01	0.148	<0.00005	0.000214
18-Aug-21	GH_PC2 (RG_FODPO)	NA	510	<0.01	0.061	<0.00005	<0.00005
19-Aug-21	FR_FR2 (RG_FOUKI)	NA	340	<0.01	0.026	<0.00005	<0.00005
19-Aug-21	FR_FRNTP (RG_FOUSH)	NA	337	<0.01	0.043	<0.00005	<0.00005
19-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	308	<0.01	0.016	<0.00005	<0.00005
24-Aug-21	FR_FR2 (RG_FOUKI)	NA	369	<0.01	0.031	<0.00005	<0.00005
24-Aug-21	FR_FR4 (RG_FOBSC)	NA	452	<0.01	0.034	<0.00005	0.000078
24-Aug-21	FR_FRABCH (RG_FO22)	NA	535	<0.01	0.171	<0.00005	0.000138
24-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	448	<0.01	0.028	<0.00005	<0.00005
24-Aug-21	FR_FRRD (RG_FRUPO)	NA	595	<0.01	0.01	<0.00005	<0.00005
24-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	318	<0.01	0.01	<0.00005	<0.00005
24-Aug-21	FR_UFR1 (RG_URF1)	NA	168	<0.01	<0.01	<0.00005	<0.00005
25-Aug-21	FR_FR2 (RG_FOUKI)	NA	382	<0.01	0.042	<0.00005	<0.00005
25-Aug-21	FR_FRNTP (RG_FOUSH)	NA	384	<0.01	0.023	<0.00005	<0.00005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	326	<0.01	0.012	<0.00005	<0.00005
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	NA	455	0.012	0.059	<0.00005	<0.00005
31-Aug-21	FR_FR4 (RG_FOBSC)	NA	586	0.01	0.034	<0.00005	<0.00005
31-Aug-21	FR_FRABCH (RG_FO22)	NA	600	<0.01	0.014	<0.00005	<0.00005
31-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	558	0.015	0.026	<0.00005	<0.00005
31-Aug-21	FR_FRRD (RG_FRUPO)	NA	646	<0.01	<0.01	0.000235	<0.00005
31-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	397	<0.01	<0.01	<0.00005	<0.00005
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	589	0.01	0.032	<0.00005	<0.00005
31-Aug-21	FR_UFR1 (RG_URF1)	NA	175	<0.01	<0.01	<0.00005	<0.00005
1-Sep-21	FR_FRNTP (RG_FOUSH)	NA	507	<0.01	0.035	<0.00005	<0.00005
3-Sep-21	FR_FR4 (RG_FOBSC)	NA	601	0.011	0.05	<0.00005	<0.00005
7-Sep-21	FR_FR2 (RG_FOUKI)	NA	473	0.017	0.046	<0.00005	<0.00005
7-Sep-21	FR_FR4 (RG_FOBSC)	NA	611	0.016	0.037	<0.00005	0.000175
7-Sep-21	FR_FRABCH (RG_FO22)	NA	596	<0.01	0.012	<0.00005	<0.00005
7-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	592	<0.01	0.037	<0.00005	<0.00005
7-Sep-21	FR_FRRD (RG_FRUPO)	NA	629	<0.01	<0.01	<0.00005	<0.00005
7-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	414	<0.01	<0.01	<0.00005	<0.00005
7-Sep-21	FR_UFR1 (RG_URF1)	NA	179	<0.01	<0.01	<0.00005	<0.00005
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	NA	489	0.014	0.044	<0.00005	<0.00005
9-Sep-21	FR_FR3 (RG_FOBKS)	NA	486	0.016	0.036	<0.00005	<0.00005
9-Sep-21	FR_FRNTP (RG_FOUSH)	NA	479	<0.01	0.027	<0.00005	<0.00005
9-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	436	<0.01	0.036	<0.00005	<0.00005
11-Sep-21	GH_PC2 (RG_FODPO)	617	617	<0.01	0.011	<0.00005	<0.00005
11-Sep-21	RG_FOUEW	572	572	<0.01	0.048	<0.00005	<0.00005
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	614	614	<0.01	0.019	<0.00005	<0.00005
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	NA	257	<0.01	<0.01	<0.00005	<0.00005
13-Sep-21	FR_FR1 (RG_FODHE)	NA	240	<0.01	<0.01	<0.00005	<0.00005
13-Sep-21	FR_FR4 (RG_FOBSC)	NA	653	0.012	0.052	<0.00005	<0.00005
13-Sep-21	FR_FR5	NA	510	<0.01	<0.01	<0.00005	<0.00005
13-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	651	<0.01	0.035	<0.00005	<0.00005
13-Sep-21	FR_FRRD (RG_FRUPO)	NA	618	<0.01	0.013	<0.00005	<0.00005
13-Sep-21	FR_HC3 (RG_HENUP)	NA	153	<0.01	<0.01	<0.00005	<0.00005
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	624	0.012	0.046	<0.00005	<0.00005
13-Sep-21	GH_PC2 (RG_FODPO)	NA	602	<0.01	0.015	<0.00005	<0.00005
14-Sep-21	FR_FR2 (RG_FOUKI)	NA	493	0.015	0.056	<0.00005	<0.00005
14-Sep-21	FR_FR3 (RG_FOBKS)	NA	486	0.016	0.051	<0.00005	<0.00005
14-Sep-21	FR_FRNTP (RG_FOUSH)	NA	491	<0.01	0.052	<0.00005	<0.00005
14-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	419	<0.01	<0.01	<0.00005	<0.00005
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	633	0.016	0.047	<0.00005	<0.00005
15-Sep-21	FR_FR1 (RG_FODHE)	NA	232	<0.01	<0.01	<0.00005	<0.00005
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	636	636	0.013	0.032	<0.00005	<0.00005
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	428	428	<0.01	<0.01	<0.00005	<0.00005
15-Sep-21	RG_FO26	172	172	<0.01	<0.01	<0.00005	<0.00005
16-Sep-21	FR_FRABCH (RG_FO22)	NA	643	<0.01	0.014	<0.00005	<0.00005
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	402	<0.01	0.016	<0.00005	<0.00005
16-Sep-21	FR_FRNTP (RG_FOUSH)	NA	458	0.03	0.047	<0.00005	<0.00005
16-Sep-21	FR_HC3 (RG_HENUP)	NA	158	<0.01	<0.01	<0.00005	<0.00005
16-Sep-21	RG_FOUNGD	NA	374	<0.01	<0.01	<0.00005	<0.00005
17-Sep-21	FR_FR4 (RG_FOBSC)	NA	651	0.015	0.052	<0.00005	<0.00005
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	NA	660	<0.01	0.018	<0.00005	<0.00005
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	NA	518	0.016	0.052	<0.00005	<0.00005
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	NA	184	<0.01	<0.01	<0.00005	<0.00005
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	NA	514	0.019	0.048	<0.00005	<0.00005
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	NA	496	<0.01	0.024	<0.00005	<0.00005
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	469	<0.01	<0.01	<0.00005	<0.00005
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	NA	622	<0.01	0.012	<0.00005	<0.00005
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	682	0.018	0.039	<0.00005	<0.00005
28-Sep-21	FR_FR2 (RG_FOUKI)	NA	520	0.018	0.05	<0.00005	<0.00005
28-Sep-21	FR_FRABCH (RG_FO22)	NA	646	<0.01	0.011	<0.00005	<0.00005
28-Sep-21	FR_FRNTP (RG_FOUSH)	NA	523	<0.01	0.023	<0.00005	<0.00005
28-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	484	<0.01	0.018	<0.00005	<0.00005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	466	466	<0.01	0.012	<0.00005	<0.00005
4-Oct-21	FR_FR1 (RG_FODHE)	NA	258	<0.01	<0.01	<0.00005	<0.00005
4-Oct-21	FR_HC3 (RG_HENUP)	NA	176	<0.01	<0.01	<0.00005	<0.00005
5-Oct-21	FR_FR2 (RG_FOUKI)	NA	515	<0.01	0.016	<0.00005	0.000378
5-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	474	<0.01	<0.01	<0.00005	<0.00005
6-Oct-21	FR_FR3 (RG_FOBKS)	NA	525	0.016	0.053	<0.00005	<0.00005
6-Oct-21	FR_FR5	NA	462	<0.01	0.016	<0.00005	<0.00005
6-Oct-21	FR_FRABCH (RG_FO22)	NA	670	<0.01	0.011	<0.00005	<0.00005
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	NA	656	<0.01	<0.01	<0.00005	<0.00005
7-Oct-21	FR_FR4 (RG_FOBSC)	NA	718	0.02	0.033	<0.00005	<0.00005
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	NA	522	0.042	0.042	<0.00005	<0.00005
9-Oct-21	FR_FRNTP (RG_FOUSH)	NA	494	<0.01	<0.01	0.000051	<0.00005
10-Oct-21	FR_FR2 (RG_FOUKI)	NA	510	0.03	0.04	<0.00005	<0.00005
10-Oct-21	FR_FRNTP (RG_FOUSH)	NA	498	<0.01	<0.01	<0.00005	<0.00005
11-Oct-21	FR_FR2 (RG_FOUKI)	NA	504	0.037	0.019	<0.00005	<0.00005
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	NA	505	<0.01	0.012	<0.00005	<0.00005
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	714	NA	0.021	0.03	<0.00005	<0.00005
12-Oct-21	FR_FR2 (RG_FOUKI)	NA	510	0.023	0.038	<0.00005	<0.00005
12-Oct-21	FR_FR4 (RG_FOBSC)	NA	742	0.019	0.03	<0.00005	<0.00005
12-Oct-21	FR_FRABCH (RG_FO22)	NA	659	<0.01	0.03	<0.00005	<0.00005
12-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	701	0.019	0.029	<0.00005	<0.00005
12-Oct-21	FR_FRRD (RG_FRUPO)	NA	715	<0.01	0.017	<0.00005	<0.00005
12-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	505	<0.01	0.07	<0.00005	0.000052
13-Oct-21	FR_FR2 (RG_FOUKI)	NA	521	0.023	0.044	<0.00005	<0.00005
13-Oct-21	FR_FRNTP (RG_FOUSH)	NA	527	<0.01	0.01	<0.00005	<0.00005
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	NA	562	0.025	0.042	<0.00005	<0.00005
19-Oct-21	FR_FR4 (RG_FOBSC)	NA	780	0.017	0.149	<0.00005	0.000108
19-Oct-21	FR_FRABCH (RG_FO22)	NA	684	<0.01	0.06	<0.00005	0.000104
19-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	760	0.017	0.028	<0.00005	<0.00005
19-Oct-21	FR_FRNTP (RG_FOUSH)	NA	573	<0.01	<0.01	<0.00005	<0.00005
19-Oct-21	FR_FRRD (RG_FRUPO)	NA	725	<0.01	<0.01	<0.00005	<0.00005
19-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	537	<0.01	<0.01	<0.00005	<0.00005
19-Oct-21	FR_UFR1 (RG_URF1)	NA	190.5	<0.01	<0.01	<0.00005	<0.00005
20-Oct-21	FR_FR2 (RG_FOUKI)	538	NA	0.022	0.039	<0.00005	<0.00005
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	777	0.018	0.047	<0.00005	<0.00005
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	NA	555	0.03	0.044	<0.00005	<0.00005
26-Oct-21	FR_FR4 (RG_FOBSC)	NA	725	0.02	0.167	<0.00005	0.000168
26-Oct-21	FR_FRABCH (RG_FO22)	NA	659	0.062	0.036	0.00005	<0.00005
26-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	706	0.017	0.029	<0.00005	<0.00005
26-Oct-21	FR_FRNTP (RG_FOUSH)	NA	538	<0.01	0.022	<0.00005	<0.00005
26-Oct-21	FR_FRRD (RG_FRUPO)	NA	759	<0.01	<0.01	<0.00005	<0.00005
26-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	520	<0.01	0.015	<0.00005	<0.00005
26-Oct-21	FR_UFR1 (RG_URF1)	NA	180	<0.01	<0.01	<0.00005	<0.00005
27-Oct-21	FR_FOUCL (RG_FOUCL)	NA	341	<0.01	<0.01	<0.00005	<0.00005
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	NA	553	<0.01	<0.01	<0.00005	<0.00005
28-Oct-21	FR_FRABCH (RG_FO22)	682	715	<0.01	<0.01	<0.00005	<0.00005
28-Oct-21	FR_FRRD (RG_FRUPO)	742	752	<0.01	<0.01	<0.00005	<0.00005
29-Oct-21	FR_FR4 (RG_FOBSC)	776	800	<0.01	<0.01	<0.00005	<0.00005
29-Oct-21	FR_FRCP1 (RG_FOBCP)	756	787	<0.01	<0.01	<0.00005	<0.00005
2-Nov-21	FR_FR2 (RG_FOUKI)	NA	586	0.023	0.047	<0.00005	<0.00005
2-Nov-21	FR_FR4 (RG_FOBSC)	NA	816	0.019	0.033	<0.00005	<0.00005
2-Nov-21	FR_FRABCH (RG_FO22)	NA	662	<0.01	0.013	<0.00005	<0.00005
2-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	752	0.015	0.031	<0.00005	<0.00005
2-Nov-21	FR_FRRD (RG_FRUPO)	NA	697	<0.01	<0.01	<0.00005	<0.00005
2-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	555	<0.01	0.019	<0.00005	<0.00005
2-Nov-21	FR_UFR1 (RG_URF1)	NA	182	<0.01	<0.01	<0.00005	<0.00005
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	NA	580	<0.01	0.023	<0.00005	<0.00005
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	817	0.016	0.052	<0.00005	<0.00005
8-Nov-21	FR_FR3 (RG_FOBKS)	581	NA	0.017	0.039	<0.00005	<0.00005
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	748	NA	0.014	0.172	<0.00005	0.000105
8-Nov-21	GH_PC2 (RG_FODPO)	670	NA	<0.01	0.109	<0.00005	0.000077
9-Nov-21	FR_FR2 (RG_FOUKI)	585	NA	0.026	0.049	<0.00005	<0.00005
9-Nov-21	FR_FR4 (RG_FOBSC)	773	NA	0.022	0.035	<0.00005	<0.00005
9-Nov-21	FR_FRABCH (RG_FO22)	677	NA	<0.01	0.026	<0.00005	<0.00005
9-Nov-21	FR_FRCP1 (RG_FOBCP)	823	NA	0.016	0.048	<0.00005	<0.00005
9-Nov-21	FR_FRRD (RG_FRUPO)	730	NA	<0.01	0.011	<0.00005	<0.00005
9-Nov-21	FR_MULTIPLATE (RG_MP1)	568	NA	<0.01	<0.01	<0.00005	<0.00005
9-Nov-21	FR_UFR1 (RG_URF1)	185	NA	<0.01	<0.01	<0.00005	<0.00005
10-Nov-21	FR_FR4 (RG_FOBSC)	756	NA	0.015	0.037	<0.00005	<0.00005
10-Nov-21	FR_HC3 (RG_HENUP)	173	NA	<0.01	0.03	<0.00005	<0.00005
12-Nov-21	FR_FR2 (RG_FOUKI)	577	NA	0.023	0.044	<0.00005	<0.00005
12-Nov-21	FR_FR4 (RG_FOBSC)	149	NA	<0.01	0.013	<0.00005	<0.00005
12-Nov-21	FR_FRNTP (RG_FOUSH)	573	NA	<0.01	<0.01	<0.00005	<0.00005
15-Nov-21	FR_FR5	533	NA	<0.01	0.021	<0.00005	<0.00005
15-Nov-21	FR_FRABCH (RG_FO22)	631	NA	0.018	0.037	<0.00005	<0.00005
16-Nov-21	FR_FR1 (RG_FODHE)	252	NA	<0.01	0.014	<0.00005	<0.00005
17-Nov-21	FR_FR2 (RG_FOUKI)	513	NA	0.011	0.059	<0.00005	<0.00005
17-Nov-21	FR_FRNTP (RG_FOUSH)	524	NA	<0.01	0.022	<0.00005	<0.00005
17-Nov-21	FR_MULTIPLATE (RG_MP1)	533	NA	<0.01	0.063	<0.00005	0.000059
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	668	NA	0.01	0.021	<0.00005	<0.00005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Hardness - Dissolved (as CaCO3)_mg/L	Hardness (as CaCO3)_mg/L	Iron (Fe)-Dissolved_mg/L	Iron (Fe)-Total_mg/L	Lead (Pb)-Dissolved_mg/L	Lead (Pb)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	612	NA	0.015	0.046	<0.00005	<0.00005
24-Nov-21	FR_FRNTP (RG_FOUSH)	606	NA	<0.01	0.016	<0.00005	<0.00005
24-Nov-21	FR_MULTIPLATE (RG_MP1)	586	NA	<0.01	<0.01	<0.00005	<0.00005
29-Nov-21	FR_FR2 (RG_FOUKI)	556	NA	0.015	0.098	<0.00005	0.000056
29-Nov-21	FR_FRNTP (RG_FOUSH)	554	NA	<0.01	0.018	<0.00005	<0.00005
29-Nov-21	FR_MULTIPLATE (RG_MP1)	559	NA	<0.01	<0.01	<0.00005	<0.00005
1-Dec-21	FR_FRABCH (RG_FO22)	648	NA	0.016	0.046	<0.00005	<0.00005
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	594	NA	<0.01	0.124	<0.00005	0.000111
7-Dec-21	FR_FR2 (RG_FOUKI)	602	NA	0.014	0.079	<0.00005	<0.00005
7-Dec-21	FR_FRNTP (RG_FOUSH)	580	NA	<0.01	0.015	<0.00005	<0.00005
7-Dec-21	FR_MULTIPLATE (RG_MP1)	591	NA	<0.01	0.014	<0.00005	<0.00005
8-Dec-21	FR_FR3 (RG_FOBKS)	572	NA	0.012	0.057	<0.00005	<0.00005
8-Dec-21	FR_FRABCH (RG_FO22)	682	NA	0.027	0.077	<0.00005	0.000094
8-Dec-21	FR_FRRD (RG_FRUPO)	733	NA	<0.01	<0.01	<0.00005	<0.00005
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	683	NA	0.011	0.048	<0.00005	<0.00005
9-Dec-21	FR_FR1 (RG_FODHE)	379	NA	<0.01	0.012	<0.00005	<0.00005
9-Dec-21	FR_FR4 (RG_FOBSC)	654	NA	0.014	0.051	<0.00005	<0.00005
9-Dec-21	FR_HC3 (RG_HENUP)	182	NA	<0.01	<0.01	<0.00005	<0.00005
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	755	NA	<0.01	0.09	<0.00005	<0.00005
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	NA	671	0.017	0.016	<0.00005	<0.00005
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	749	NA	0.011	0.023	NA	<0.00005
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	609	NA	<0.01	<0.01	<0.00005	<0.00005
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	167	NA	<0.01	0.03	<0.00005	<0.00005
17-Dec-21	FR_FOUCL (RG_FOUCL)	366	NA	<0.01	<0.01	<0.00005	<0.00005
17-Dec-21	FR_FR1 (RG_FODHE)	388	NA	<0.01	<0.01	<0.00005	<0.00005
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	610	NA	<0.01	0.052	<0.00005	<0.00005
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	601	NA	<0.01	0.014	<0.00005	0.000074
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	667	NA	0.012	0.032	<0.00005	<0.00005
17-Dec-21	FR_UFR1 (RG_URF1)	169	NA	<0.01	0.021	<0.00005	<0.00005
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	549	NA	<0.01	<0.01	<0.00005	<0.00005
20-Dec-21	FR_FRABCH (RG_FO22)	652	NA	<0.01	0.068	NA	0.000256
21-Dec-21	GH_PC2 (RG_FODPO)	668	NA	<0.01	<0.01	NA	<0.00005
22-Dec-21	FR_FR5	578	NA	<0.01	0.023	<0.00005	<0.00005
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	688	NA	<0.01	0.044	NA	<0.00005
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	951	NA	<0.01	0.013	NA	<0.00005
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	0.0573	0.0632	88.3	104	0.0134	0.0161
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.0611	0.0627	65.1	68.5	0.012	0.0136
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0588	0.0587	58.3	61.7	0.00247	0.0038
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	0.0015	0.0016	13.8	14.1	0.00029	0.00033
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	0.0648	0.06	91.3	94.4	0.0163	0.0169
12-Jan-21	FR_FR2 (RG_FOUKI)	0.0659	0.0659	64.2	69.1	0.023	0.0231
12-Jan-21	FR_FR3 (RG_FOBKS)	0.0646	0.0624	65.6	68.9	0.0171	0.0186
12-Jan-21	FR_FR5	0.029	0.0291	62.5	64.1	0.00156	0.00172
12-Jan-21	FR_FRNTP (RG_FOUSH)	0.0624	0.0667	62.8	66.8	0.0123	0.0127
12-Jan-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	13.2	14	<0.0001	<0.0001
12-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0602	0.064	58	61	0.00324	0.00337
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	0.0516	0.0508	87.9	73	0.00315	0.00036
19-Jan-21	FR_FR2 (RG_FOUKI)	0.0601	0.064	65.4	70	0.0209	0.0261
19-Jan-21	FR_FRABCH (RG_FO22)	0.0378	0.0377	77	73.7	0.00474	0.00928
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.0705	0.082	108	126	0.0178	0.0223
21-Jan-21	GH_PC2 (RG_FODPO)	0.0403	0.0429	75.8	81.1	0.00048	0.00047
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	0.0751	0.0742	69.8	69	0.0229	0.0249
27-Jan-21	FR_FRNTP (RG_FOUSH)	0.0773	0.0798	69.4	68.7	0.0134	0.0147
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0757	0.0697	64	59.3	0.00321	0.00353
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	0.0665	0.0865	64.2	77.2	0.0227	0.0276
2-Feb-21	FR_FRNTP (RG_FOUSH)	0.0735	0.0795	67.9	71.9	0.015	0.0163
2-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0716	0.0821	62.5	67.9	0.0026	0.00301
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	14.3	15.3	<0.0001	<0.0001
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	0.0778	0.0787	76.2	82	0.0163	0.0177
8-Feb-21	FR_FR5	0.0319	0.0322	74.1	75.1	0.0014	0.00154
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	0.072	0.0788	126	146	0.0146	0.0144
9-Feb-21	FR_FR2 (RG_FOUKI)	0.0726	0.0787	71.8	73.1	0.0206	0.0226
9-Feb-21	FR_FRNTP (RG_FOUSH)	0.0781	0.083	72.5	81.9	0.00754	0.00786
9-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0755	0.0838	64.9	64.1	0.00301	0.00362
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	0.0769	0.0727	80.1	72.8	0.0212	0.0216
16-Feb-21	FR_FRNTP (RG_FOUSH)	0.0838	0.0764	80.9	72.2	0.0102	0.00987
16-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0842	0.0808	76.1	65.8	0.00219	0.00223
16-Feb-21	GH_PC2 (RG_FODPO)	0.0402	0.0373	93.1	86.8	0.00046	0.00425
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	0.0557	0.0525	100	96.7	0.00056	0.00162
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.0804	0.0804	75.3	75.3	0.0297	0.0301
23-Feb-21	FR_FR4 (RG_FOBSC)	0.0823	0.079	117	118	0.02	0.0203
23-Feb-21	FR_FRABCH (RG_FO22)	0.036	0.0362	76.9	77.2	0.006	0.00609
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.114	0.103	161	172	0.0197	0.0496
23-Feb-21	FR_FRRD (RG_FRUPO)	0.0541	0.0542	102	99.1	0.00056	0.0028
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0877	0.0856	68.3	70.1	0.0023	0.00248
23-Feb-21	FR_UFR1 (RG_URF1)	0.0017	0.0016	15.4	15.2	0.00018	0.00031
24-Feb-21	FR_FRNTP (RG_FOUSH)	0.083	0.0946	74.9	74	0.0149	0.0171
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	0.0944	0.0836	72.2	81.3	0.0276	0.0308
2-Mar-21	FR_FR4 (RG_FOBSC)	0.0779	0.0807	108	115	0.0193	0.0217
2-Mar-21	FR_FRABCH (RG_FO22)	0.0407	0.0376	77.4	80.2	0.0056	0.00624
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0858	0.0804	105	118	0.0166	0.0188
2-Mar-21	FR_FRNTP (RG_FOUSH)	0.0765	0.0819	74.2	78.2	0.0148	0.0156
2-Mar-21	FR_FRRD (RG_FRUPO)	0.0524	0.0541	95.6	105	0.00045	0.00047
2-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0974	0.0926	70.5	70	0.00312	0.00276
2-Mar-21	FR_UFR1 (RG_URF1)	0.0017	0.0017	14.3	14.7	0.00019	0.0003
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.0816	0.0805	68.6	70.6	0.0263	0.0394
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	<0.001	0.0012	1.46	1.68	0.00627	0.0164
5-Mar-21	FR_FR5	0.0309	0.0302	65.2	62.7	0.00166	0.00188
5-Mar-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	14.1	14.4	<0.0001	<0.0001
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0744	0.0774	95.8	97.7	0.0234	0.0248
8-Mar-21	FR_FRNTP (RG_FOUSH)	0.0848	0.0792	70.4	71.8	0.0155	0.0176
9-Mar-21	FR_FR2 (RG_FOUKI)	0.071	0.0803	70.3	76.7	0.027	0.0505
9-Mar-21	FR_FR4 (RG_FOBSC)	0.0722	0.0767	92.7	104	0.0213	0.0316
9-Mar-21	FR_FRABCH (RG_FO22)	0.0415	0.0398	77.9	79.1	0.00448	0.00521
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0848	0.0795	99.2	107	0.0192	0.022
9-Mar-21	FR_FRRD (RG_FRUPO)	0.0572	0.0589	102	108	0.00087	0.00099
9-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0744	0.0846	68.7	75	0.00334	0.00412
9-Mar-21	FR_UFR1 (RG_URF1)	0.0015	0.0021	11.6	12.1	0.00082	0.00189
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	0.0015	0.0012	11.8	12.5	0.00062	0.00161
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	0.0396	0.0409	84.8	79.9	0.00049	0.00117
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.0595	0.0608	60.5	61.9	0.0185	0.0442
16-Mar-21	FR_FR4 (RG_FOBSC)	0.0603	0.0611	76.2	77.6	0.0156	0.0247
16-Mar-21	FR_FRABCH (RG_FO22)	0.0429	0.0375	78.6	81.5	0.00608	0.00656
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0596	0.0593	72	76.1	0.0161	0.0274
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.0602	0.0633	56.8	59	0.0129	0.0164
16-Mar-21	FR_FRRD (RG_FRUPO)	0.0519	0.0546	97	97.6	0.00138	0.00351
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0582	0.0599	55.6	58.2	0.00356	0.00573
16-Mar-21	FR_UFR1 (RG_URF1)	<0.001	0.0014	8.89	9.03	0.00131	0.00322
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0508	0.052	63.8	65.1	0.0149	0.0258
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.0572	0.0605	62.9	61.5	0.0206	0.0266
23-Mar-21	FR_FR4 (RG_FOBSC)	0.0589	0.064	76.1	75.6	0.0178	0.0288
23-Mar-21	FR_FRABCH (RG_FO22)	0.0432	0.0465	71.9	78	0.00739	0.00814
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0587	0.0597	67.4	75.4	0.0172	0.0234
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.0602	0.0663	55.6	65.6	0.0166	0.0208
23-Mar-21	FR_FRRD (RG_FRUPO)	0.0534	0.0585	87.2	87.7	0.00674	0.0139
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0588	0.0619	59.6	59.1	0.00413	0.00481
23-Mar-21	FR_UFR1 (RG_URF1)	0.0012	0.0013	8.28	8.86	0.00059	0.00159
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0604	0.0615	72.9	71.4	0.0151	0.0189
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.0774	0.076	63.9	62.9	0.0125	0.0183
30-Mar-21	FR_FR4 (RG_FOBSC)	0.0766	0.0782	79.4	81.2	0.0105	0.0176
30-Mar-21	FR_FRABCH (RG_FO22)	0.0468	0.0482	78.4	75.9	0.00675	0.00721
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0736	0.0778	84.1	84.4	0.0107	0.0123
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	0.0642	0.0679	79.3	85.5	0.00461	0.00926
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0847	0.0791	61.4	62.8	0.00349	0.0038
30-Mar-21	FR_UFR1 (RG_URF1)	0.0013	0.0016	10.5	10.4	0.00044	0.00132
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.0798	0.0862	66.3	68.1	0.00346	0.00439
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0834	0.0818	80.2	80.8	0.0108	0.0145
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0704	0.0596	78.2	74.5	0.00942	0.0108
6-Apr-21	FR_FR1 (RG_FODHE)	0.0109	0.0113	32.9	33.9	0.00046	0.00076
6-Apr-21	FR_FR2 (RG_FOUKI)	0.0613	0.0659	66.8	61.6	0.0135	0.0148
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.0609	0.0668	66.7	62.9	0.00699	0.00865
6-Apr-21	FR_HC3 (RG_HENUP)	<0.001	0.001	12.2	13.4	<0.0001	<0.0001
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0623	0.0668	63.8	57.9	0.00346	0.00405
6-Apr-21	FR_UFR1 (RG_URF1)	0.0013	0.0015	10.8	11	0.0003	0.00143
7-Apr-21	FR_FR3 (RG_FOBKS)	0.0708	0.0639	61.5	63.1	0.0108	0.0121
7-Apr-21	FR_FR5	0.0429	0.0395	66.5	69.8	0.00366	0.00424
7-Apr-21	FR_FRABCH (RG_FO22)	0.0514	0.0493	78.8	76.4	0.00792	0.00841
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0644	0.0642	73.8	75.8	0.00918	0.0112
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0678	0.0646	75.3	71.8	0.0104	0.0115
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	0.0515	0.0516	79.6	78.6	0.00253	0.00297
9-Apr-21	FR_FR4 (RG_FOBSC)	0.0548	0.0549	73	72.1	0.0102	0.0112
12-Apr-21	FR_FR1 (RG_FODHE)	0.0105	0.0107	33.2	33.3	0.00036	0.00049
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.0606	0.0672	64.8	65	0.0134	0.0146
13-Apr-21	FR_FR4 (RG_FOBSC)	0.0644	0.0663	77.9	82	0.0116	0.0149
13-Apr-21	FR_FRABCH (RG_FO22)	0.0458	0.0452	75.8	73.9	0.0075	0.0103
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.063	0.0646	79.9	74.9	0.0113	0.0122
13-Apr-21	FR_FRRD (RG_FRUPO)	0.054	0.0577	80.5	79.8	0.00423	0.0045
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0661	0.0647	65.6	63.1	0.00332	0.0035
13-Apr-21	FR_UFR1 (RG_URF1)	0.0014	0.0014	11.2	10.8	0.00014	0.00066
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.069	0.0728	64.4	68.5	0.00632	0.00797
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0637	0.0729	77.4	82.2	0.0122	0.0138
15-Apr-21	FR_FR4 (RG_FOBSC)	0.0691	0.0614	87.2	81.6	0.0111	0.0122
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	0.0082	0.0097	30.3	30.1	0.00127	0.0021
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.048	0.0486	65.3	66.5	0.0077	0.0102
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.0449	0.0495	53.8	55.7	0.00503	0.00661
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0425	0.0469	50.9	51	0.00309	0.00382
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.046	0.0475	62.3	64.9	0.00747	0.0109
21-Apr-21	FR_FRABCH (RG_FO22)	0.0447	0.0406	69.4	68.9	0.00978	0.0146
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.049	0.0459	63	62.2	0.00824	0.011
22-Apr-21	FR_FR2 (RG_FOUKI)	0.0458	0.0491	56.5	55.1	0.01	0.012
26-Apr-21	FR_FR1 (RG_FODHE)	0.0087	0.0083	24.3	28	0.0008	0.00103

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.0507	0.0539	61.2	61.2	0.0119	0.014
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0538	0.0531	73	73.3	0.00924	0.0147
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.0546	0.0515	57.6	58.4	0.00684	0.00863
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0433	0.0475	55.5	55.8	0.00261	0.00337
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	0.0371	0.0444	69.7	67.3	0.00773	0.0081
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.054	0.0501	62	67.1	0.00938	0.0125
30-Apr-21	FR_FR4 (RG_FOBSC)	0.0457	0.0464	64.6	64.6	0.00885	0.0116
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0312	0.032	48.5	47.3	0.0061	0.00716
3-May-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	11.8	11.5	<0.0001	0.00015
3-May-21	FR_UFR1 (RG_URF1)	0.0012	0.0013	11.4	10.5	0.00119	0.00146
4-May-21	FR_FR1 (RG_FODHE)	0.0064	0.0064	22.6	21.8	0.00144	0.00216
4-May-21	FR_FR2 (RG_FOUKI)	0.0296	0.0314	47.2	42.4	0.0074	0.00983
4-May-21	FR_FR3 (RG_FOBKS)	0.0306	0.0316	47.9	40.7	0.00642	0.00977
4-May-21	FR_FRNTP (RG_FOUSH)	0.0295	0.0304	46.1	40.5	0.00564	0.00716
4-May-21	FR_MULTIPLATE (RG_MP1)	0.0277	0.0292	36.6	39.2	0.00214	0.00339
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0292	0.032	51.1	47.3	0.00606	0.00967
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	0.0278	0.0288	54.2	53.5	0.00306	0.00592
5-May-21	FR_FRABCH (RG_FO22)	0.0379	0.0382	58.2	64.3	0.00526	0.00729
5-May-21	FR_FRCP1 (RG_FOBCP)	0.031	0.0322	51.9	52.1	0.0057	0.00973
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.0392	0.0374	61.4	62.4	0.00269	0.00777
7-May-21	FR_FR4 (RG_FOBSC)	0.0282	0.0318	42.5	44.6	0.00444	0.0154
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	0.0054	0.0057	17.9	18.3	0.00094	0.00154
11-May-21	FR_FR2 (RG_FOUKI)	0.0335	0.034	40.2	38.7	0.00701	0.00859
11-May-21	FR_FRCP1 (RG_FOBCP)	0.0356	0.0369	48.1	48.3	0.0048	0.00741
11-May-21	FR_FRNTP (RG_FOUSH)	0.0334	0.035	40.5	39.3	0.00361	0.00438
11-May-21	FR_MULTIPLATE (RG_MP1)	0.0297	0.0315	37	36.8	0.00146	0.00206
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.0374	0.0395	57.7	59.8	0.00455	0.00697
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0365	0.0368	47	48.1	0.00688	0.00915
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0151	0.0152	25.2	27.2	0.0027	0.0405
18-May-21	FR_FR2 (RG_FOUKI)	0.0112	0.0117	18.5	19.4	0.00256	0.0298
18-May-21	FR_FR4 (RG_FOBSC)	0.0121	0.0126	21.3	22.1	0.00221	0.0443
18-May-21	FR_FRABCH (RG_FO22)	0.017	0.0184	31.2	32.4	0.00536	0.0441
18-May-21	FR_FRCP1 (RG_FOBCP)	0.0148	0.0161	26	26.9	0.00211	0.0594
18-May-21	FR_FRRD (RG_FRUPO)	0.0218	0.0218	34	35.2	0.00175	0.0342
18-May-21	FR_MULTIPLATE (RG_MP1)	0.0099	0.0105	17.6	18	0.0015	0.0154
18-May-21	FR_UFR1 (RG_URF1)	<0.001	0.0012	8.5	8.6	0.00032	0.0129
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.0184	0.0203	29.8	29.6	0.00254	0.00642
20-May-21	FR_FRNTP (RG_FOUSH)	0.0099	0.0102	17.7	18.1	0.00162	0.0205
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.0186	0.0191	25.6	25	0.00363	0.0091
25-May-21	FR_FR4 (RG_FOBSC)	0.0245	0.0254	33.9	34	0.0025	0.0207
25-May-21	FR_FRABCH (RG_FO22)	0.0318	0.033	45.9	45.8	0.00259	0.00723
25-May-21	FR_FRCP1 (RG_FOBCP)	0.031	0.0318	40	39.2	0.00195	0.00485
25-May-21	FR_FRRD (RG_FRUPO)	0.0353	0.0353	50.4	49	0.00139	0.0053
25-May-21	FR_MULTIPLATE (RG_MP1)	0.0169	0.0172	24.3	23.2	0.00136	0.0028
25-May-21	FR_UFR1 (RG_URF1)	0.0012	0.0015	9.61	9.58	0.00028	0.00219
26-May-21	FR_FR1 (RG_FODHE)	0.0033	0.0035	13.8	14.7	0.00059	0.00157
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0183	0.0213	30.7	32.9	0.00273	0.00603
27-May-21	FR_FR4 (RG_FOBSC)	0.0239	0.0226	32.1	32.8	0.00265	0.00502
27-May-21	FR_FRNTP (RG_FOUSH)	0.0133	0.0151	22.1	22.9	0.00121	0.00405
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	0.0032	0.0035	12	13.3	0.00034	0.00568
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0172	0.0161	26.1	27.9	0.00269	0.0117
1-Jun-21	FR_FR2 (RG_FOUKI)	0.0105	0.0105	18.8	17.7	0.0032	0.0139
1-Jun-21	FR_FR4 (RG_FOBSC)	0.0139	0.0137	23.1	22.8	0.00219	0.0182
1-Jun-21	FR_FRABCH (RG_FO22)	0.0244	0.0231	35.2	30.4	0.0038	0.0174
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0256	0.0232	30	25.4	0.0023	0.0185
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.0131	0.0133	19.3	17.3	0.00211	0.00821
1-Jun-21	FR_FRRD (RG_FRUPO)	0.0274	0.0247	39.6	35.2	0.00169	0.0204
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0124	0.0123	18.2	17.5	0.0008	0.0107
1-Jun-21	FR_UFR1 (RG_URF1)	0.001	0.0016	8.76	7.69	0.00018	0.00611
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.0179	0.0182	23	24.8	0.00222	0.0444
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0102	0.0103	19.7	19.8	0.00278	0.0278
7-Jun-21	FR_FR1 (RG_FODHE)	0.0035	0.0041	11.4	12.5	0.00081	0.00287
7-Jun-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	6.53	7.19	<0.0001	0.0006
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0177	0.0167	25.8	25.3	0.00404	0.0128
7-Jun-21	GH_PC2 (RG_FODPO)	0.0433	0.0386	46	43.4	0.00219	0.0113
8-Jun-21	FR_FR2 (RG_FOUKI)	0.0169	0.0175	23.2	22.7	0.00709	0.0139
8-Jun-21	FR_FR4 (RG_FOBSC)	0.0271	0.0284	30.2	30.9	0.00387	0.0335

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.0373	0.0415	41.3	46.5	0.00264	0.0123
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0393	0.0429	35.8	41.9	0.00319	0.00673
8-Jun-21	FR_FRRD (RG_FRUPO)	0.0404	0.0406	49.1	48.6	0.00209	0.0221
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0142	0.0142	19.8	19.2	0.0008	0.00456
8-Jun-21	FR_UFR1 (RG_URF1)	0.0012	0.0012	8.81	9.72	0.00028	0.00302
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.021	0.0204	23.2	23.7	0.00603	0.0108
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0189	0.0201	25.4	27.1	0.00577	0.00768
10-Jun-21	FR_FR4 (RG_FOBSC)	0.0482	0.0445	43	42.2	0.00431	0.00566
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.0355	0.034	48.1	47.5	0.00678	0.00896
14-Jun-21	FR_FOUCL (RG_FOUCL)	0.0036	0.0035	12	11.5	0.001	0.00219
14-Jun-21	FR_FR1 (RG_FODHE)	0.0042	0.00405	13	12.6	0.000755	0.00176
14-Jun-21	FR_FR3 (RG_FOBKS)	0.0175	0.0174	21.4	22	0.0039	0.0082
14-Jun-21	FR_FR5	0.0254	0.0274	33.8	35	0.00168	0.00936
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0147	0.0151	19.6	18.7	0.00101	0.00232
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0178	0.0179	24.8	25.7	0.00371	0.00771
14-Jun-21	RG_FO26	0.0012	0.0012	9.71	9.14	0.00064	0.00206
15-Jun-21	FR_FR2 (RG_FOUKI)	0.0139	0.0138	18	19	0.0035	0.00845
15-Jun-21	FR_FR4 (RG_FOBSC)	0.018	0.0184	23.1	24.7	0.00258	0.00706
15-Jun-21	FR_FRABCH (RG_FO22)	0.0248	0.0263	31.9	32.6	0.00191	0.00819
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0244	0.0253	27.7	29.6	0.00231	0.00802
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.01325	0.0132	17.8	17.9	0.00346	0.008115
15-Jun-21	FR_FRRD (RG_FRUPO)	0.0328	0.0324	39.5	41.5	0.00144	0.00702
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.011	0.0111	15.1	16.6	0.00064	0.00541
15-Jun-21	FR_UFR1 (RG_URF1)	0.00125	0.00125	8.995	9.3	0.000235	0.00811
15-Jun-21	RG_FOUNGD	0.0114	0.0115	15.3	14.7	0.00072	0.00286
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.017	0.0165	20.1	19.9	0.00394	0.00596
16-Jun-21	FR_FR4 (RG_FOBSC)	0.0269	0.0272	29.5	30.7	0.00334	0.00658
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	0.0124	0.0129	15.5	15.5	0.0007	0.00376
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	5.2	5.2	<0.0001	0.00089
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.01655	0.0162	23.3	22.45	0.003805	0.0073
17-Jun-21	FR_FR2 (RG_FOUKI)	0.0186	0.0188	21.9	22.2	0.0048	0.00691
17-Jun-21	FR_FR4 (RG_FOBSC)	0.0414	0.039	42.3	38.1	0.00261	0.00342
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.031	0.0291	33.4	31.7	0.00259	0.00376
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.0302	0.03	34.2	31.5	0.00294	0.00518
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0201	0.0186	27.5	24.9	0.00415	0.0122
17-Jun-21	GH_PC2 (RG_FODPO)	0.033	0.0301	41.4	41.8	0.00224	0.00842
18-Jun-21	FR_FRABCH (RG_FO22)	0.0312	0.0303	39.4	41	0.00243	0.00731
18-Jun-21	FR_FRRD (RG_FRUPO)	0.0362	0.037	43.6	44.8	0.00208	0.00295
18-Jun-21	RG_FOUEW	0.0276	0.0267	35.9	36.1	0.00202	0.0042
21-Jun-21	FR_FR1 (RG_FODHE)	0.00345	0.00345	11.85	11	0.00093	0.00153
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0201	0.0207	26.7	27.5	0.00402	0.00578
21-Jun-21	FR_UFR1 (RG_URF1)	0.0012	0.00125	9.63	9.5	0.00017	0.0018
22-Jun-21	FR_FR2 (RG_FOUKI)	0.0197	0.0169	23.5	22.9	0.00568	0.00703
22-Jun-21	FR_FRABCH (RG_FO22)	0.0334	0.03	41.3	40.6	0.00262	0.00328
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0309	0.0299	35.6	35.1	0.0029	0.00451
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.0192	0.0157	22.1	20.8	0.00419	0.0066
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0144	0.0134	19.4	18.1	0.00086	0.00182
23-Jun-21	FR_FR4 (RG_FOBSC)	0.0255	0.0242	32.9	30.8	0.00394	0.00586
28-Jun-21	FR_FR1 (RG_FODHE)	0.0027	0.0029	9.67	10.6	0.00066	0.00128
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.02	0.0196	26	28.1	0.0041	0.00565
29-Jun-21	FR_FR2 (RG_FOUKI)	0.0191	0.0199	23.8	23.2	0.00532	0.00594
29-Jun-21	FR_FR4 (RG_FOBSC)	0.0225	0.0222	32.8	30.5	0.00389	0.00482
29-Jun-21	FR_FRABCH (RG_FO22)	0.0277	0.0297	36.7	38.2	0.00241	0.00375
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0271	0.0303	31	34	0.00238	0.00447
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.0176	0.0183	19.6	21.1	0.00286	0.00405
29-Jun-21	FR_FRRD (RG_FRUPO)	0.0357	0.0371	49.3	47.6	0.00145	0.00302
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0166	0.0166	21.1	20.3	0.00078	0.00172
29-Jun-21	FR_UFR1 (RG_URF1)	0.0014	0.0013	10.9	10	0.00031	0.00081
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.0257	0.026	31	31.4	0.00371	0.00525
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	0.0035	0.0035	10.7	10.9	0.00072	0.00134
2-Jul-21	FR_UFR1 (RG_URF1)	0.0014	0.0015	9.93	10.2	0.00032	0.00076
4-Jul-21	FR_FR2 (RG_FOUKI)	0.0289	0.0302	28.9	31.1	0.00636	0.00842
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.0269	0.0275	26.5	28.6	0.00348	0.00508
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0284	0.0287	33.7	33.7	0.00511	0.00703
5-Jul-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	6.13	6.35	<0.0001	0.00012
6-Jul-21	FR_FR1 (RG_FODHE)	0.0031	0.0033	10.4	11.2	0.00083	0.00147
6-Jul-21	FR_FR4 (RG_FOBSC)	0.0225	0.0231	30.4	31.6	0.00462	0.00803
6-Jul-21	FR_FRABCH (RG_FO22)	0.0338	0.0376	40.6	46.5	0.00375	0.00528
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0312	0.032	34.2	38.8	0.00407	0.00707
6-Jul-21	FR_FRRD (RG_FRUPO)	0.0367	0.036	46.2	46.5	0.00203	0.00476
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0192	0.0174	21.7	20.8	0.00076	0.00188
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0233	0.0244	28.5	31	0.00511	0.00798
6-Jul-21	FR_UFR1 (RG_URF1)	0.0012	0.0015	10.3	10.7	0.00025	0.00354
7-Jul-21	FR_FR2 (RG_FOUKI)	0.0242	0.0261	28.1	27.1	0.00642	0.00815

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.0232	0.0238	26.9	27.3	0.00378	0.00508
7-Jul-21	GH_PC2 (RG_FODPO)	0.0373	0.0339	45.7	45.6	0.00213	0.00384
8-Jul-21	FR_FR3 (RG_FOBKS)	0.0263	0.0274	30.2	30.4	0.00563	0.0081
8-Jul-21	FR_FR5	0.0281	0.0298	43.2	40.8	0.00168	0.00267
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	0.0042	0.0043	14.9	13.7	0.00081	0.00111
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.032	0.0327	42.7	41	0.00608	0.00752
13-Jul-21	FR_FR2 (RG_FOUKI)	0.0333	0.0322	33.1	33.8	0.00803	0.0144
13-Jul-21	FR_FR4 (RG_FOBSC)	0.0339	0.0346	43.8	43.5	0.00553	0.0071
13-Jul-21	FR_FRABCH (RG_FO22)	0.0428	0.0417	54.2	51.8	0.00489	0.00495
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0396	0.0411	43.7	45.4	0.00367	0.00484
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.0337	0.0303	30.3	30.9	0.00342	0.00447
13-Jul-21	FR_FRRD (RG_FRUPO)	0.0476	0.0432	56.7	56.4	0.00162	0.0024
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0284	0.0267	29.3	29.5	0.00076	0.00135
13-Jul-21	FR_UFR1 (RG_URF1)	0.0016	0.0016	11.6	11.6	0.00032	0.0006
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.0329	0.034	42.8	45.1	0.00411	0.00526
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.037	0.0315	33.7	31.2	0.00095	0.00218
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.0408	0.0409	38.9	38.8	0.00754	0.0086
20-Jul-21	FR_FR4 (RG_FOBSC)	0.0436	0.0413	54.8	55.2	0.0057	0.00878
20-Jul-21	FR_FRRD (RG_FRUPO)	0.0531	0.0516	64.8	66.5	0.00101	0.00178
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0366	0.0361	33.8	33.8	0.00092	0.00121
20-Jul-21	FR_UFR1 (RG_URF1)	0.0017	0.0018	12.5	12.3	0.00031	0.00285
22-Jul-21	FR_FRABCH (RG_FO22)	0.039	0.0437	59	59.5	0.00468	0.00563
26-Jul-21	FR_FRABCH (RG_FO22)	0.045	0.039	65.4	60.9	0.00557	0.00547
27-Jul-21	FR_FR2 (RG_FOUKI)	0.0474	0.039	46.6	43.1	0.0102	0.0164
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.0462	0.0405	45.9	42.9	0.00471	0.00621
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0426	0.0341	42.4	39.7	0.00123	0.00177
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.052	0.0464	67.6	63.4	0.00829	0.00932
4-Aug-21	FR_FR2 (RG_FOUKI)	0.0509	0.0431	48.2	46.6	0.0121	0.0138
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.051	0.0442	45	43.8	0.00727	0.00842
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.044	0.0396	42.2	39.1	0.00127	0.00161
5-Aug-21	FR_FRABCH (RG_FO22)	0.0428	0.0426	69.6	64.9	0.00522	0.00544
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0436	0.0458	72.7	67.4	0.0105	0.012
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.0417	0.0434	40.5	41.7	0.00167	0.00245
10-Aug-21	FR_FR1 (RG_FODHE)	0.0074	0.0073	20.6	20.6	0.00075	0.00126
10-Aug-21	FR_FR2 (RG_FOUKI)	0.0461	0.0425	44.8	45.3	0.0113	0.0165
10-Aug-21	FR_FR4 (RG_FOBSC)	0.0496	0.0466	66.7	67.6	0.00743	0.00825
10-Aug-21	FR_FRABCH (RG_FO22)	0.0438	0.0434	63.9	64.7	0.00454	0.00503
10-Aug-21	FR_FRCP1 (RG_FOBCP)	0.05	0.0462	65.9	66	0.00481	0.00619
10-Aug-21	FR_FRRD (RG_FRUPO)	0.0556	0.0538	67	67.7	0.00048	0.00074
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0401	0.0376	38	38.5	0.00101	0.00156
10-Aug-21	FR_UFR1 (RG_URF1)	0.0019	0.0019	12.9	13.3	0.0003	0.00054
11-Aug-21	FR_FR3 (RG_FOBKS)	0.0448	0.0458	46.2	47.8	0.00893	0.0105
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0464	0.048	59.7	62.8	0.0087	0.0105
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	0.0418	0.0429	43	45.7	0.00831	0.0107
12-Aug-21	FR_FR4 (RG_FOBSC)	0.048	0.0533	70.5	74.2	0.00672	0.0166
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0433	0.0457	57.4	59.2	0.00804	0.00963
13-Aug-21	FR_FR3 (RG_FOBKS)	0.0473	0.0482	47.3	45.8	0.0124	0.0138
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0488	0.0494	61.9	59.7	0.00928	0.00979
14-Aug-21	FR_FR3 (RG_FOBKS)	0.0476	0.048	49.4	48.2	0.0098	0.0106
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0464	0.0512	61	61.9	0.00923	0.0106
15-Aug-21	FR_FR3 (RG_FOBKS)	0.0474	0.052	47.6	50.7	0.0101	0.011
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0487	0.0559	67.8	72.3	0.00957	0.011
16-Aug-21	FR_FR3 (RG_FOBKS)	0.0497	0.0523	48.6	48.2	0.00959	0.0099
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.052	0.0534	64.9	66.2	0.00948	0.0108
17-Aug-21	FR_FR2 (RG_FOUKI)	0.0449	0.0454	46	44.8	0.0147	0.0286
17-Aug-21	FR_FR4 (RG_FOBSC)	0.047	0.051	68.8	73.2	0.0127	0.0414
17-Aug-21	FR_FR5	0.0339	0.0332	53.2	51.4	0.00306	0.00464
17-Aug-21	FR_FRABCH (RG_FO22)	0.0404	0.043	62.3	61.6	0.00829	0.0146
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0455	0.0461	68.3	68.6	0.0108	0.0281
17-Aug-21	FR_FRRD (RG_FRUPO)	0.0507	0.0527	66.7	63.9	0.00162	0.00289
17-Aug-21	FR_HC3 (RG_HENUP)	<0.001	0.0011	9.15	9.62	0.0002	0.00245
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0305	0.0308	34.5	33.1	0.0017	0.0125
17-Aug-21	FR_UFR1 (RG_URF1)	0.0016	0.0017	12.5	12.4	0.00138	0.0183
18-Aug-21	GH_PC2 (RG_FODPO)	0.0356	0.0367	54	57	0.00302	0.00624
19-Aug-21	FR_FR2 (RG_FOUKI)	0.0296	0.0278	32	33.2	0.00767	0.0092
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.0282	0.0267	31.2	30.7	0.00445	0.00907
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.023	0.0231	27.6	27.7	0.00164	0.00157
24-Aug-21	FR_FR2 (RG_FOUKI)	0.0345	0.0338	38.3	39.2	0.0149	0.0166
24-Aug-21	FR_FR4 (RG_FOBSC)	0.035	0.0347	51	51.9	0.0113	0.0134
24-Aug-21	FR_FRABCH (RG_FO22)	0.0401	0.0434	57.7	56.9	0.00463	0.0116
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0364	0.039	49.2	49.5	0.00882	0.0111
24-Aug-21	FR_FRRD (RG_FRUPO)	0.0535	0.0512	65	65.8	0.00192	0.00235
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0251	0.024	30.8	30.8	0.00071	0.0011
24-Aug-21	FR_UFR1 (RG_URF1)	0.0017	0.002	12.6	12.1	0.00024	0.00064
25-Aug-21	FR_FR2 (RG_FOUKI)	0.0387	0.0371	39.6	37.8	0.0151	0.0181
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.038	0.0354	39.3	38.8	0.0139	0.0142

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0266	0.0271	30.9	30.4	0.00079	0.00126
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	0.0485	0.051	48	46.6	0.0202	0.0246
31-Aug-21	FR_FR4 (RG_FOBSC)	0.0499	0.0533	67	64.5	0.0145	0.016
31-Aug-21	FR_FRABCH (RG_FO22)	0.0472	0.0493	65	67.8	0.00443	0.0042
31-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0512	0.0544	62.8	64.2	0.0106	0.0109
31-Aug-21	FR_FRRD (RG_FRUPO)	0.0571	0.0603	71.3	67.1	0.00129	0.00158
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.038	0.0394	39.5	38.3	0.00102	0.00133
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0527	0.0486	66	58.4	0.0149	0.0157
31-Aug-21	FR_UFR1 (RG_URF1)	0.0017	0.0018	13.3	13.8	0.0002	0.00039
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.0554	0.0452	53.4	44.8	0.0225	0.0239
3-Sep-21	FR_FR4 (RG_FOBSC)	0.0508	0.0537	72.5	70.2	0.0206	0.0216
7-Sep-21	FR_FR2 (RG_FOUKI)	0.0503	0.0549	51.9	53.8	0.022	0.023
7-Sep-21	FR_FR4 (RG_FOBSC)	0.0525	0.0571	73.3	74.4	0.0158	0.0165
7-Sep-21	FR_FRABCH (RG_FO22)	0.0457	0.0464	64.6	65.3	0.00352	0.00393
7-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0521	0.0484	68.7	71.8	0.0103	0.012
7-Sep-21	FR_FRRD (RG_FRUPO)	0.0548	0.0607	69.7	69.3	0.0007	0.00102
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0404	0.0459	43.5	42.7	0.00116	0.00136
7-Sep-21	FR_UFR1 (RG_URF1)	0.0017	0.0016	13.3	12.2	0.00048	0.0007
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	0.0543	0.0519	50.3	49	0.0158	0.0179
9-Sep-21	FR_FR3 (RG_FOBKS)	0.0522	0.0479	50.8	51.5	0.0125	0.0137
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.055	0.0545	49.7	50	0.0115	0.0131
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0458	0.046	42.9	42.7	0.00113	0.00276
11-Sep-21	GH_PC2 (RG_FODPO)	0.0484	0.0485	68	67.8	0.00266	0.0031
11-Sep-21	RG_FOUEW	0.0437	0.0445	61.8	60.9	0.00332	0.00543
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	0.0479	0.0491	66.1	65.2	0.00428	0.00486
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	0.0076	0.0076	22	21.2	0.00052	0.00069
13-Sep-21	FR_FR1 (RG_FODHE)	0.0063	0.0064	21	21.1	0.00085	0.00128
13-Sep-21	FR_FR4 (RG_FOBSC)	0.0654	0.0611	74.2	72.7	0.0215	0.0226
13-Sep-21	FR_FR5	0.0368	0.0401	53.6	56.5	0.00148	0.00205
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0635	0.0623	73.2	73.4	0.0126	0.0134
13-Sep-21	FR_FRRD (RG_FRUPO)	0.0562	0.0619	67	67	0.00065	0.0013
13-Sep-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	10.5	10.4	<0.0001	<0.0001
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.056	0.0587	73.3	71.1	0.0196	0.0207
13-Sep-21	GH_PC2 (RG_FODPO)	0.0449	0.0496	67.5	68.1	0.00311	0.00368
14-Sep-21	FR_FR2 (RG_FOUKI)	0.0536	0.0601	53.6	52.1	0.0267	0.0283
14-Sep-21	FR_FR3 (RG_FOBKS)	0.0555	0.0567	54.9	51.2	0.02	0.0227
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.0539	0.059	53.2	52.9	0.0258	0.0283
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.042	0.0458	42.4	41.6	0.00151	0.00185
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0557	0.0559	74.3	71.5	0.0196	0.0229
15-Sep-21	FR_FR1 (RG_FODHE)	0.0063	0.0069	21	20.8	0.00067	0.0012
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	0.0586	0.0582	76.8	78	0.0097	0.0103
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.043	0.0482	45.1	49.4	0.00175	0.0021
15-Sep-21	RG_FO26	0.0013	0.0014	13.6	14.4	0.00012	0.00042
16-Sep-21	FR_FRABCH (RG_FO22)	0.0465	0.0479	68.9	66.4	0.00385	0.00415
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.0498	0.0499	40.2	38.2	0.00026	0.00118
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.0489	0.0497	48.7	44.6	0.0145	0.0143
16-Sep-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	11.2	10.6	<0.0001	<0.0001
16-Sep-21	RG_FOUNGD	0.0426	0.0435	36.9	35	0.00066	0.00058
17-Sep-21	FR_FR4 (RG_FOBSC)	0.0593	0.0549	78.6	72.1	0.0146	0.0173
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	0.0635	0.0602	69.3	64.2	0.00084	0.00175
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.0608	0.0611	56.2	58.9	0.0245	0.0264
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	0.0022	0.0018	13.3	13.8	0.00014	0.00034
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.0571	0.0574	56.8	57.2	0.0212	0.0218
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.0575	0.0581	53.8	55.6	0.0161	0.017
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.047	0.048	47.7	48	0.00161	0.00203
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	0.0475	0.0513	68	71.4	0.00495	0.00474
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0609	0.0616	77.8	78.2	0.0121	0.0138
28-Sep-21	FR_FR2 (RG_FOUKI)	0.0569	0.0592	53.6	56.7	0.0161	0.0187
28-Sep-21	FR_FRABCH (RG_FO22)	0.0469	0.0482	67.1	68.6	0.00438	0.00459
28-Sep-21	FR_FRNTP (RG_FOUSH)	0.0589	0.0622	53.7	55.1	0.0115	0.0137
28-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0474	0.0472	46.6	47.6	0.00208	0.00358

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.05	0.0562	48.9	50.4	0.0056	0.0066
4-Oct-21	FR_FR1 (RG_FODHE)	0.0078	0.0075	22.8	22.2	0.00066	0.00096
4-Oct-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	12.4	12.4	<0.0001	<0.0001
5-Oct-21	FR_FR2 (RG_FOUKI)	0.0582	0.0684	57.1	61.6	0.0105	0.0129
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0443	0.0507	49.6	53.3	0.00196	0.00218
6-Oct-21	FR_FR3 (RG_FOBKS)	0.072	0.0692	55.4	63.4	0.0153	0.0188
6-Oct-21	FR_FR5	0.0188	0.0185	41.9	45.9	0.00071	0.00099
6-Oct-21	FR_FRABCH (RG_FO22)	0.0512	0.0494	68.7	73.5	0.00556	0.00438
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	0.0514	0.0543	70.9	79.9	0.0016	0.00204
7-Oct-21	FR_FR4 (RG_FOBSC)	0.0537	0.0558	85.1	82.3	0.0106	0.0108
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	0.0529	0.0499	55.7	53.4	0.0148	0.0149
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.0518	0.048	50.2	50.4	0.00227	0.00229
10-Oct-21	FR_FR2 (RG_FOUKI)	0.0498	0.0506	54.2	52.4	0.0133	0.0137
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.0517	0.0486	51.3	50.1	0.00165	0.00216
11-Oct-21	FR_FR2 (RG_FOUKI)	0.0515	0.0486	53.8	52.2	0.0143	0.0137
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.0525	0.0492	52.2	52.8	0.00168	0.00279
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.053	0.0536	81.2	88.8	0.00947	0.00982
12-Oct-21	FR_FR2 (RG_FOUKI)	0.0538	0.056	52.9	49.8	0.0146	0.0149
12-Oct-21	FR_FR4 (RG_FOBSC)	0.0596	0.0592	88	77.8	0.0101	0.0103
12-Oct-21	FR_FRABCH (RG_FO22)	0.0465	0.0454	70.3	80.7	0.00462	0.00508
12-Oct-21	FR_FRCP1 (RG_FOBCP)	0.056	0.0556	81.2	95.2	0.0078	0.00869
12-Oct-21	FR_FRRD (RG_FRUPO)	0.0673	0.0703	76.6	73	0.00045	0.00096
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0514	0.0549	51.8	50.5	0.00201	0.00471
13-Oct-21	FR_FR2 (RG_FOUKI)	0.059	0.0575	55.5	57.4	0.0133	0.0154
13-Oct-21	FR_FRNTP (RG_FOUSH)	0.0585	0.0635	56.4	54.4	0.00349	0.00484
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	0.0587	0.0633	59	61.5	0.0172	0.0181
19-Oct-21	FR_FR4 (RG_FOBSC)	0.0624	0.0649	90	90.6	0.0111	0.0368
19-Oct-21	FR_FRABCH (RG_FO22)	0.044	0.0485	67.8	78.6	0.0049	0.00769
19-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0586	0.0676	86.3	88.2	0.00859	0.00935
19-Oct-21	FR_FRNTP (RG_FOUSH)	0.0651	0.0677	56.6	59.7	0.0109	0.0128
19-Oct-21	FR_FRRD (RG_FRUPO)	0.059575	0.065875	73.625	77.575	0.00042	0.0007175
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0522	0.0517	51	52.9	0.00168	0.0021
19-Oct-21	FR_UFR1 (RG_URF1)	0.0018	0.00175	13.85	14.7	0.00023	0.000365
20-Oct-21	FR_FR2 (RG_FOUKI)	0.0655	0.0673	56	60	0.0165	0.0192
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.0719	0.0661	91.6	85.2	0.0135	0.0156
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	0.0624	0.0609	58.9	59	0.0184	0.0188
26-Oct-21	FR_FR4 (RG_FOBSC)	0.0595	0.0649	82	87	0.0106	0.0268
26-Oct-21	FR_FRABCH (RG_FO22)	0.0443	0.0498	71.5	73.8	0.00575	0.00595
26-Oct-21	FR_FRCP1 (RG_FOBCP)	0.066	0.0704	82.3	87.1	0.00863	0.00955
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.0732	0.0701	56	58.3	0.00991	0.012
26-Oct-21	FR_FRRD (RG_FRUPO)	0.0655	0.0682	81.3	77.2	0.00041	0.00073
26-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0507	0.0525	52.4	51.9	0.0017	0.00246
26-Oct-21	FR_UFR1 (RG_URF1)	0.0016	0.0017	13.6	14.5	0.0002	0.00032
27-Oct-21	FR_FOUCL (RG_FOUCL)	0.0102	0.0115	31.7	33	0.00044	0.00049
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	0.0573	0.056	53.6	50.5	0.00092	0.00148
28-Oct-21	FR_FRABCH (RG_FO22)	0.0434	0.047	74.1	75.4	0.00429	0.0021
28-Oct-21	FR_FRRD (RG_FRUPO)	0.064	0.0677	78.9	81.4	0.00029	0.0002
29-Oct-21	FR_FR4 (RG_FOBSC)	0.0677	0.0774	91.4	92.4	0.0117	0.0115
29-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0699	0.074	88.3	94.8	0.0098	0.00902
2-Nov-21	FR_FR2 (RG_FOUKI)	0.0747	0.0759	61.8	66.6	0.0192	0.0218
2-Nov-21	FR_FR4 (RG_FOBSC)	0.0852	0.0775	94.6	91.3	0.014	0.015
2-Nov-21	FR_FRABCH (RG_FO22)	0.0482	0.0472	68.1	74.4	0.00487	0.00468
2-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0732	0.0739	86.1	93.4	0.0116	0.013
2-Nov-21	FR_FRRD (RG_FRUPO)	0.0666	0.0672	74.7	81.8	0.00081	0.00105
2-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0617	0.0656	55.9	58	0.00364	0.00463
2-Nov-21	FR_UFR1 (RG_URF1)	0.0018	0.0015	13.3	14.4	0.00018	0.00067
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	0.0734	0.077	60.2	61	0.0127	0.0142
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0786	0.0747	92.9	86.1	0.015	0.0164
8-Nov-21	FR_FR3 (RG_FOBKS)	0.0719	0.0773	64.8	66.5	0.0169	0.0169
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0739	0.0753	88.8	90	0.0153	0.0295
8-Nov-21	GH_PC2 (RG_FODPO)	0.0495	0.0553	75.3	78.9	0.00206	0.00812
9-Nov-21	FR_FR2 (RG_FOUKI)	0.064	0.0641	61.5	62.7	0.0175	0.0178
9-Nov-21	FR_FR4 (RG_FOBSC)	0.0665	0.0664	88.3	90.3	0.0122	0.0128
9-Nov-21	FR_FRABCH (RG_FO22)	0.0479	0.0507	72.9	74.7	0.00486	0.0056
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0681	0.0698	101	87	0.0116	0.013
9-Nov-21	FR_FRRD (RG_FRUPO)	0.0645	0.0638	76.6	78.8	0.00042	0.00063
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0633	0.0646	57.8	59.4	0.00316	0.00342
9-Nov-21	FR_UFR1 (RG_URF1)	0.0014	0.0016	14.8	13.6	0.00017	0.00057
10-Nov-21	FR_FR4 (RG_FOBSC)	0.0838	0.078	82.3	94	0.0143	0.0159
10-Nov-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	12.3	11.4	<0.0001	0.00074
12-Nov-21	FR_FR2 (RG_FOUKI)	0.072	0.0738	58.8	57.5	0.0164	0.0172
12-Nov-21	FR_FR4 (RG_FOBSC)	0.004	0.0043	11.4	10.3	0.0001	0.00127
12-Nov-21	FR_FRNTP (RG_FOUSH)	0.0761	0.0749	58.5	55.6	0.00473	0.00561
15-Nov-21	FR_FR5	0.038	0.0389	56.7	59.7	0.00306	0.00345
15-Nov-21	FR_FRABCH (RG_FO22)	0.0485	0.048	66.5	71.7	0.0103	0.0101
16-Nov-21	FR_FR1 (RG_FODHE)	0.0068	0.0075	23.4	24.6	0.00081	0.00117
17-Nov-21	FR_FR2 (RG_FOUKI)	0.062	0.0687	54.8	54.4	0.0146	0.0172
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.0681	0.0721	54.6	54.2	0.00374	0.00467
17-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0569	0.059	55.5	54.9	0.0031	0.00517
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	0.0534	0.0504	70.1	71.7	0.00809	0.00693

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Lithium (Li)-Dissolved_mg/L	Lithium (Li)-Total_mg/L	Magnesium (Mg)-Dissolved_mg/L	Magnesium (Mg)-Total_mg/L	Manganese (Mn)-Dissolved_mg/L	Manganese (Mn)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.0804	0.0806	68.5	62.7	0.0258	0.0271
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.0831	0.0812	66.6	57.2	0.0211	0.0212
24-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0643	0.062	63.6	58.3	0.00235	0.00227
29-Nov-21	FR_FR2 (RG_FOUKI)	0.0592	0.0601	57.9	58.4	0.0136	0.0171
29-Nov-21	FR_FRNTP (RG_FOUSH)	0.0617	0.0609	57	58.3	0.00274	0.0035
29-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0597	0.0584	56.4	55.5	0.00229	0.00222
1-Dec-21	FR_FRABCH (RG_FO22)	0.0463	0.0505	71.8	72.9	0.00885	0.00934
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0506	0.0501	66.7	65.3	0.00824	0.0117
7-Dec-21	FR_FR2 (RG_FOUKI)	0.0646	0.059	61.3	59.6	0.0124	0.019
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.0603	0.0586	59.7	58.4	0.00258	0.00348
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0703	0.0612	60.4	59.4	0.00308	0.0036
8-Dec-21	FR_FR3 (RG_FOBKS)	0.0604	0.0604	59	58.6	0.0108	0.0129
8-Dec-21	FR_FRABCH (RG_FO22)	0.0464	0.047	71.1	70.4	0.00812	0.00866
8-Dec-21	FR_FRRD (RG_FRUPO)	0.0662	0.0656	76.8	77.5	0.00048	0.00075
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0593	0.0582	78.6	77.6	0.00961	0.0115
9-Dec-21	FR_FR1 (RG_FODHE)	0.0135	0.0134	37.8	36.4	0.00104	0.00156
9-Dec-21	FR_FR4 (RG_FOBSC)	0.0571	0.0622	72.2	76.2	0.00904	0.0144
9-Dec-21	FR_HC3 (RG_HENUP)	<0.001	<0.001	13	12.1	<0.0001	<0.0001
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.0679	0.0652	83.4	81.4	0.00971	0.011
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	0.0488	0.0492	69.5	65.9	0.00518	0.00573
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	0.0584	0.0497	76.4	71	0.00762	0.00627
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	0.0714	0.0747	60.5	57.3	0.00188	0.00196
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	0.0016	0.0014	12.7	12	0.00036	0.00086
17-Dec-21	FR_FOUCL (RG_FOUCL)	0.0088	0.0088	32.4	31.3	0.00068	0.00077
17-Dec-21	FR_FR1 (RG_FODHE)	0.0149	0.0154	38.2	38.7	0.00145	0.0015
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.075	0.0717	60.1	58.1	0.00243	0.015
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0724	0.0722	58.7	55.9	0.00181	0.0029
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0594	0.0635	72.8	76.6	0.00968	0.0112
17-Dec-21	FR_UFR1 (RG_URF1)	0.0025	0.0019	12.7	12.5	0.00078	0.00098
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	0.0782	0.0792	53.8	52.8	0.00061	0.00064
20-Dec-21	FR_FRABCH (RG_FO22)	0.0446	0.0458	68.6	71.4	0.00714	0.00906
21-Dec-21	GH_PC2 (RG_FODPO)	0.0412	0.0472	71.3	70.8	0.00035	0.0008
22-Dec-21	FR_FR5	0.0366	0.0353	61.6	59.2	0.00333	0.00359
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	0.0461	0.0428	74.4	71	0.00699	0.00779
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0694	0.0664	112	113	0.00685	0.00731
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00366	0.0038
6-Jan-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.002	0.00215
6-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00191	0.002
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000621	0.00058
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00354	0.00379
12-Jan-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00192	0.00207
12-Jan-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00234	0.00224
12-Jan-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.000638	0.000649
12-Jan-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00213	0.00235
12-Jan-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000567	0.000614
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00208	0.00224
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.0007	0.000629
19-Jan-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00179	0.00194
19-Jan-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000662	0.00075
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.0059	0.00586
21-Jan-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.000738	0.000776
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00301	0.00324
27-Jan-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00349	0.00367
27-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00299	0.00288
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00229	0.00213
2-Feb-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.0022	0.0024
2-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00221	0.00234
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000603	0.000665
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.0017	0.00174
8-Feb-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.000671	0.000652
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00512	0.00532
9-Feb-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00218	0.00231
9-Feb-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00252	0.00264
9-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00221	0.00236
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00156	0.0016
16-Feb-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00164	0.00167
16-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00152	0.00159
16-Feb-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.000879	0.000749
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000576	0.000554
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00178	0.00185
23-Feb-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00424	0.00444
23-Feb-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	<0.00001	<0.00001	0.000656	0.000711
23-Feb-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.000002	0.000017	<0.00001	0.00609	0.00597
23-Feb-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000652	0.000589
23-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.0019	0.00194
23-Feb-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000606	0.000589
24-Feb-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000071	NA	NA	0.00241	0.00236
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00205	0.00183
2-Mar-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00407	0.00398
2-Mar-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000717	0.000687
2-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000051	NA	NA	0.00417	0.00394
2-Mar-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00195	0.00198
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000672	0.000578
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00216	0.00198
2-Mar-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000622	0.00057
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	<0.000005	0.0000007	NA	NA	0.00169	0.00169
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	<0.000005	<0.000008	NA	NA	0.00036	0.000523
5-Mar-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.000634	0.000636
5-Mar-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000558	0.000556
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.000001	NA	NA	0.00378	0.00382
8-Mar-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000055	NA	NA	0.0023	0.00245
9-Mar-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000064	NA	NA	0.00194	0.00211
9-Mar-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000081	NA	NA	0.00326	0.00374
9-Mar-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00065	0.000668
9-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00416	0.00455
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000629	0.000681
9-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00207	0.00219
9-Mar-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000171	NA	NA	0.000516	0.00056
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	0.000516	0.00058
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.000734	0.00081
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000114	NA	NA	0.00172	0.00181
16-Mar-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000124	NA	NA	0.00279	0.00279
16-Mar-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000728	0.000781
16-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000199	NA	NA	0.00271	0.00296
16-Mar-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000161	NA	NA	0.00181	0.00204
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000627	0.000672
16-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.0000017	NA	NA	0.00179	0.00184
16-Mar-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000476	NA	NA	0.000441	0.000523
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.0000022	NA	NA	0.00256	0.00262
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000111	NA	NA	0.002	0.00201
23-Mar-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000133	NA	NA	0.00281	0.00286
23-Mar-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00119	0.00122
23-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000105	NA	NA	0.00272	0.00297
23-Mar-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000117	NA	NA	0.00213	0.00231
23-Mar-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000097	NA	NA	0.00153	0.00155
23-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000113	NA	NA	0.00178	0.00174
23-Mar-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000362	NA	NA	0.000436	0.000477
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000106	NA	NA	0.00288	0.00303
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000099	NA	NA	0.00204	0.00216
30-Mar-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000113	NA	NA	0.00311	0.00325
30-Mar-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00113	0.00131
30-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000068	NA	NA	0.00326	0.00355
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000103	NA	NA	0.00195	0.00212
30-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.0000009	NA	NA	0.00203	0.0021
30-Mar-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000226	NA	NA	0.000502	0.000593
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000067	NA	NA	0.00208	0.00234
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000067	NA	NA	0.00295	0.00333
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000098	NA	NA	0.00296	0.00271
6-Apr-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000072	NA	NA	0.000758	0.000846
6-Apr-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000108	NA	NA	0.00197	0.00216
6-Apr-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000101	NA	NA	0.00206	0.00222
6-Apr-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000544	0.000692
6-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000096	NA	NA	0.00179	0.00199
6-Apr-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000163	NA	NA	0.000518	0.000574
7-Apr-21	FR_FR3 (RG_FOBKS)	<0.000005	0.00000078	NA	NA	0.00197	0.00203
7-Apr-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.00111	0.00109
7-Apr-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00127	0.00134
7-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000072	NA	NA	0.00288	0.00293
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000075	NA	NA	0.00284	0.00295
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.00138	0.00142
9-Apr-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000086	NA	NA	0.00287	0.00281
12-Apr-21	FR_FR1 (RG_FODHE)	<0.000005	0.0000006	NA	NA	0.000854	0.000889
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000056	NA	NA	0.002	0.00219
13-Apr-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000056	NA	NA	0.00317	0.00333
13-Apr-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	<0.00001	<0.00001	0.00125	0.00129
13-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000068	0.000017	<0.00001	0.0032	0.00316
13-Apr-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00169	0.00175
13-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000056	NA	NA	0.00211	0.00207
13-Apr-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000146	NA	NA	0.00055	0.000584
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000054	NA	NA	0.002	0.00221
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000052	NA	NA	0.00295	0.00317
15-Apr-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000075	NA	NA	0.00339	0.00348
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000093	NA	NA	0.000681	0.000844
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.000001	NA	NA	0.0025	0.0026
20-Apr-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000075	NA	NA	0.00166	0.00181
20-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000074	NA	NA	0.00156	0.00162
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000083	NA	NA	0.00234	0.0025
21-Apr-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000104	NA	NA	0.00144	0.00134
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000094	NA	NA	0.00242	0.00246
22-Apr-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000083	NA	NA	0.00171	0.00176
26-Apr-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000076	NA	NA	0.000802	0.000809

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000067	NA	NA	0.00181	0.00187
27-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000089	NA	NA	0.0028	0.00278
27-Apr-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000074	NA	NA	0.00177	0.00179
27-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000072	NA	NA	0.00174	0.00175
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000053	NA	NA	0.00128	0.00134
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.0000005	NA	NA	0.00262	0.00284
30-Apr-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000101	NA	NA	0.00245	0.00256
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000157	NA	NA	0.00192	0.00192
3-May-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.00057	0.000575
3-May-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000128	NA	NA	0.000596	0.000594
4-May-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000075	NA	NA	0.000816	0.000763
4-May-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000126	NA	NA	0.00147	0.00155
4-May-21	FR_FR3 (RG_FOBKS)	<0.000005	0.00000128	NA	NA	0.00144	0.0015
4-May-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000133	NA	NA	0.00147	0.00148
4-May-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000126	NA	NA	0.00136	0.00146
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000126	NA	NA	0.00185	0.00205
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	<0.000005	0.00000059	NA	NA	0.0012	0.00125
5-May-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000074	NA	NA	0.00146	0.00146
5-May-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000085	NA	NA	0.00208	0.00211
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	<0.000005	0.00000215	NA	NA	0.00159	0.0015
7-May-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000151	NA	NA	0.00176	0.0016
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000073	NA	NA	0.00069	0.00076
11-May-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000095	NA	NA	0.00131	0.00138
11-May-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000114	NA	NA	0.0019	0.00199
11-May-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.0000008	NA	NA	0.00136	0.00137
11-May-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000074	NA	NA	0.00128	0.00121
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	<0.000005	0.0000006	NA	NA	0.00142	0.0014
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000084	NA	NA	0.00198	0.00192
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000286	NA	NA	0.00113	0.00108
18-May-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000251	NA	NA	0.000872	0.000855
18-May-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000358	NA	NA	0.00104	0.00116
18-May-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000579	NA	NA	0.00105	0.000965
18-May-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000362	NA	NA	0.00119	0.000919
18-May-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000327	NA	NA	0.00102	0.00108
18-May-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000235	NA	NA	0.000799	0.000805
18-May-21	FR_UFR1 (RG_URF1)	<0.000005	0.000003	NA	NA	0.000532	0.000489
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000127	NA	NA	0.00132	0.00131
20-May-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000287	NA	NA	0.000807	0.000758
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000137	NA	NA	0.00107	0.00106
25-May-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000248	NA	NA	0.00127	0.00129
25-May-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000121	NA	NA	0.00115	0.00116
25-May-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000136	NA	NA	0.00132	0.00135
25-May-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000102	NA	NA	0.00114	0.00118
25-May-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.0000011	NA	NA	0.0011	0.0011
25-May-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000132	NA	NA	0.000558	0.000603
26-May-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000086	NA	NA	0.00059	0.000602
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000103	NA	NA	0.00104	0.00112
27-May-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000121	NA	NA	0.0011	0.00118
27-May-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000125	NA	NA	0.00089	0.000961
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000085	NA	NA	0.00065	0.000656
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000107	NA	NA	0.000996	0.00104
1-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000128	NA	NA	0.000752	0.000758
1-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.0000013	NA	NA	0.000915	0.000899
1-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000205	NA	NA	0.00101	0.00102
1-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000184	NA	NA	0.00105	0.00107
1-Jun-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000151	NA	NA	0.000858	0.000796
1-Jun-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000138	NA	NA	0.00095	0.00098
1-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.0000015	NA	NA	0.00082	0.000746
1-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000182	NA	NA	0.000555	0.000524
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000354	NA	NA	0.00107	0.00108
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000267	NA	NA	0.00122	0.001
7-Jun-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000122	NA	NA	0.000634	0.000627
7-Jun-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000419	0.000419
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000158	NA	NA	0.00127	0.00141
7-Jun-21	GH_PC2 (RG_FODPO)	<0.000005	0.00000147	NA	NA	0.00156	0.00169
8-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.000914	0.00102
8-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000118	NA	NA	0.00136	0.00143

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000081	NA	NA	0.00154	0.00152
8-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.000001	NA	NA	0.00179	0.00172
8-Jun-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000059	NA	NA	0.00145	0.00156
8-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.000882	0.00102
8-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000106	NA	NA	0.000591	0.000608
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000121	NA	NA	0.0011	0.000973
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000086	NA	NA	0.00129	0.00133
10-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000078	NA	NA	0.00211	0.00216
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000094	NA	NA	0.002	0.00214
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.000005	0.00000073	<0.00001	NA	0.00058	0.000591
14-Jun-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000068	<0.00001	NA	0.000618	0.000666
14-Jun-21	FR_FR3 (RG_FOBKS)	<0.000005	0.00000084	NA	NA	0.000961	0.000959
14-Jun-21	FR_FR5	<0.000005	0.00000104	NA	NA	0.00117	0.0011
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000069	<0.00001	NA	0.000839	0.000885
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000094	NA	NA	0.00118	0.00121
14-Jun-21	RG_FO26	<0.000005	0.00000079	<0.00001	NA	0.000587	0.000664
15-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000096	NA	NA	0.000857	0.00081
15-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000113	NA	NA	0.00113	0.00111
15-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000089	NA	NA	0.00109	0.00112
15-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000105	NA	NA	0.00128	0.00126
15-Jun-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000085	<0.00001	NA	0.000864	0.000858
15-Jun-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00118	0.00118
15-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000095	NA	NA	0.000701	0.000735
15-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.000000935	<0.00001	NA	0.0005965	0.0005865
15-Jun-21	RG_FOUNGD	<0.000005	0.0000007	<0.00001	NA	0.000671	0.000674
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	<0.000005	0.00000067	<0.00001	NA	0.00091	0.000959
16-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000078	NA	NA	0.00134	0.00134
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.000005	0.00000073	<0.00001	NA	0.000698	0.000735
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	<0.00001	NA	0.000326	0.000375
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.000000795	<0.00001	NA	0.00113	0.0011
17-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000071	<0.00001	NA	0.000946	0.00101
17-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000076	<0.00001	NA	0.00166	0.00158
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	NA	<0.00001	NA	0.00141	0.00148
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	<0.000005	0.00000075	<0.00001	NA	0.00141	0.0014
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	NA	NA	NA	0.00121	0.00119
17-Jun-21	GH_PC2 (RG_FODPO)	<0.000005	0.00000106	<0.00001	NA	0.00136	0.0013
18-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000068	<0.00001	NA	0.00123	0.00128
18-Jun-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000111	<0.00001	NA	0.00129	0.0014
18-Jun-21	RG_FOUEW	<0.000005	0.00000067	<0.00001	NA	0.0012	0.00116
21-Jun-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000085	NA	NA	0.000633	0.000631
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000059	NA	NA	0.00122	0.00126
21-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000099	NA	NA	0.0006225	0.000639
22-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	0.0000006	NA	NA	0.000999	0.000976
22-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000069	NA	NA	0.00134	0.00127
22-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000054	NA	NA	0.00148	0.00146
22-Jun-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000238	NA	NA	0.000981	0.000936
22-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000063	NA	NA	0.000974	0.000926
23-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000066	NA	NA	0.00133	0.0013
28-Jun-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000196	NA	NA	0.000646	0.000628
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00127	0.00125
29-Jun-21	FR_FR2 (RG_FOUKI)	<0.000005	0.0000005	NA	NA	0.000891	0.000998
29-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000053	NA	NA	0.00128	0.00135
29-Jun-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000071	NA	NA	0.00126	0.00131
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000391	NA	NA	0.00142	0.00146
29-Jun-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.000956	0.00101
29-Jun-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00118	0.00125
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000064	NA	NA	0.000874	0.000934
29-Jun-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000051	NA	NA	0.00063	0.000656
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00142	0.00142
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.000005	NA	NA	NA	0.000607	0.000642
2-Jul-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000066	NA	NA	0.000667	0.000712
4-Jul-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000068	NA	NA	0.00103	0.00118
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000051	NA	NA	0.00108	0.00118
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00157	0.00144
5-Jul-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000444	0.000442
6-Jul-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000055	NA	NA	0.000645	0.000675
6-Jul-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000091	NA	NA	0.00135	0.0013
6-Jul-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000075	NA	NA	0.00124	0.00137
6-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.00000064	NA	NA	0.00127	0.00128
6-Jul-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000071	NA	NA	0.00122	0.00122
6-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000052	NA	NA	0.000915	0.000859
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000062	NA	NA	0.0013	0.00129
6-Jul-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000057	NA	NA	0.000648	0.000663
7-Jul-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000054	NA	NA	0.00106	0.00112

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00105	0.00118
7-Jul-21	GH_PC2 (RG_FODPO)	<0.000005	0.00000107	NA	NA	0.00137	0.00154
8-Jul-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00121	0.00125
8-Jul-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.00118	0.00116
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.000766	0.000761
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00173	0.0018
13-Jul-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00126	0.00124
13-Jul-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00196	0.00186
13-Jul-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	0.000013	<0.00001	0.0014	0.0014
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	<0.00001	<0.00001	0.00173	0.00186
13-Jul-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.000001	NA	NA	0.00122	0.00125
13-Jul-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00138	0.00138
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000051	NA	NA	0.00116	0.00115
13-Jul-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000739	0.00072
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00189	0.00187
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000061	NA	NA	0.00116	0.00117
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00133	0.00139
20-Jul-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000087	NA	NA	0.0022	0.00225
20-Jul-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00118	0.00118
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000066	NA	NA	0.00118	0.00116
20-Jul-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000055	NA	NA	0.000703	0.000678
22-Jul-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00138	0.00149
26-Jul-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00132	0.00131
27-Jul-21	FR_FR2 (RG_FOUKI)	<0.000005	0.0000017	NA	NA	0.00167	0.00152
27-Jul-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00168	0.00161
27-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00159	0.00162
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00276	0.00287
4-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00159	0.0015
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00153	0.00156
4-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00145	0.00141
5-Aug-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00125	0.00123
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00282	0.00275
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00133	0.00126
10-Aug-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.00101	0.000869
10-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000059	NA	NA	0.00141	0.00138
10-Aug-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000063	NA	NA	0.0028	0.00273
10-Aug-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00117	0.00122
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00265	0.00258
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00092	0.000891
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00134	0.00127
10-Aug-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000682	0.000673
11-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00137	0.00144
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00218	0.00224
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00128	0.0013
12-Aug-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00274	0.0029
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000059	NA	NA	0.00208	0.00218
13-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00131	0.00131
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00208	0.00208
14-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00134	0.0014
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00213	0.00221
15-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.0013	0.00128
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00248	0.00245
16-Aug-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00139	0.00128
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.0022	0.00212
17-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000166	NA	NA	0.00151	0.00152
17-Aug-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000185	NA	NA	0.00302	0.00324
17-Aug-21	FR_FR5	<0.000005	0.00000131	NA	NA	0.000891	0.000866
17-Aug-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000156	NA	NA	0.000995	0.000965
17-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.000005	0.0000033	NA	NA	0.00285	0.00284
17-Aug-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000053	NA	NA	0.00101	0.000996
17-Aug-21	FR_HC3 (RG_HENUP)	<0.000005	0.00000092	NA	NA	0.000646	0.00065
17-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	0.00000125	NA	NA	0.00221	0.0012
17-Aug-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000208	NA	NA	0.000667	0.000699
18-Aug-21	GH_PC2 (RG_FODPO)	<0.000005	0.0000006	NA	NA	0.00145	0.00146
19-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00116	0.00112
19-Aug-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000065	NA	NA	0.00117	0.00106
19-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00112	0.00108
24-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00137	0.00131
24-Aug-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000058	NA	NA	0.00199	0.00206
24-Aug-21	FR_FRABCH (RG_FO22)	<0.000005	0.0000015	NA	NA	0.00124	0.00134
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0000077	0.00000067	NA	NA	0.00188	0.00216
24-Aug-21	FR_FRRD (RG_FRUPO)	<0.000005	0.00000052	NA	NA	0.00122	0.00124
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00112	0.00112
24-Aug-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000057	NA	NA	0.000636	0.000698
25-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	0.00000063	NA	NA	0.00146	0.00144
25-Aug-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00149	0.00152

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00113	0.00119
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.0017	0.00176
31-Aug-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00272	0.00289
31-Aug-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.0014	0.0014
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00259	0.0026
31-Aug-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.00115	0.00119
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00134	0.0014
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00274	0.00283
31-Aug-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000658	0.000679
1-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00174	0.00177
3-Sep-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.000005	NA	NA	0.00258	0.00283
7-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00146	0.00149
7-Sep-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00265	0.00277
7-Sep-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00116	0.00136
7-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00237	0.00247
7-Sep-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.001	0.00103
7-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00126	0.00132
7-Sep-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000629	0.000691
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00141	0.00144
9-Sep-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	<0.00001	NA	0.00142	0.00145
9-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.0014	0.00151
9-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00128	0.00132
11-Sep-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	<0.00001	NA	0.00165	0.00183
11-Sep-21	RG_FOUEW	<0.000005	<0.0000005	<0.00001	NA	0.001	0.00112
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	0.000012	NA	0.00121	0.0014
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.000005	<0.0000005	<0.00001	NA	0.000806	0.000831
13-Sep-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	<0.00001	NA	0.000781	0.000854
13-Sep-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	0.000014	NA	0.00296	0.00301
13-Sep-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.00108	0.0012
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	0.000016	NA	0.00271	0.00276
13-Sep-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000893	0.00105
13-Sep-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000602	0.000639
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00289	0.00325
13-Sep-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.00165	0.00184
14-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00188	0.00188
14-Sep-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00177	0.00204
14-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00189	0.00201
14-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00181	0.00188
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	0.000012	NA	0.00312	0.00322
15-Sep-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.000829	0.000866
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<0.000005	<0.0000005	0.000015	NA	0.0029	0.00296
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	<0.00001	NA	0.00172	0.00192
15-Sep-21	RG_FO26	<0.000005	<0.0000005	<0.00001	NA	0.000678	0.000724
16-Sep-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.0012	0.00125
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	<0.000005	<0.0000005	NA	NA	0.00112	0.00107
16-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00178	0.00176
16-Sep-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	<0.00001	NA	0.000621	0.00059
16-Sep-21	RG_FOUNGD	<0.000005	<0.0000005	<0.00001	NA	0.000999	0.000971
17-Sep-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.0029	0.0028
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	<0.00001	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	<0.00001	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	<0.00001	NA	0.000861	0.000905
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	<0.00001	NA	0.00191	0.00201
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	<0.00001	NA	0.00064	0.000624
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00188	0.00194
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00201	0.00208
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00179	0.00188
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00114	0.00116
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00336	0.00335
28-Sep-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00237	0.00236
28-Sep-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.0012	0.0012
28-Sep-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00246	0.00255
28-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00196	0.00199

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	0.00196	0.00209
4-Oct-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.000817	0.000905
4-Oct-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000627	0.000624
5-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00246	0.00257
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00158	0.00159
6-Oct-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00277	0.0031
6-Oct-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.000528	0.000554
6-Oct-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00118	0.00121
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.00169	0.00186
7-Oct-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00316	0.00339
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00161	0.00162
9-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00158	0.00158
10-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00151	0.00148
10-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00157	0.00152
11-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00149	0.00153
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00152	0.00155
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00301	0.00324
12-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.0015	0.00152
12-Oct-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00298	0.00307
12-Oct-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000055	NA	NA	0.000997	0.00106
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00301	0.00317
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000745	0.000772
12-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.0015	0.00152
13-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00194	0.00209
13-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00201	0.00212
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00205	0.00231
19-Oct-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00331	0.00353
19-Oct-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000893	0.000973
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00322	0.00373
19-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00218	0.00251
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000741	0.000759
19-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.0013	0.00138
19-Oct-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.0006275	0.000666
20-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.000005	NA	NA	0.00227	0.00238
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00372	0.00369
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00205	0.00201
26-Oct-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00317	0.00309
26-Oct-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.0011	0.0011
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00305	0.00324
26-Oct-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000051	NA	NA	0.00211	0.00225
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000827	0.00075
26-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.0013	0.00131
26-Oct-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000602	0.000643
27-Oct-21	FR_FOUCL (RG_FOUCL)	<0.000005	<0.0000005	NA	NA	0.000711	0.000724
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	<0.000005	<0.0000005	NA	NA	0.00142	0.00135
28-Oct-21	FR_FRABCH (RG_FO22)	<0.000005	<0.000005	NA	NA	0.00104	0.00125
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.000005	NA	NA	0.000748	0.000817
29-Oct-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.000005	NA	NA	0.00377	0.0043
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.000005	NA	NA	0.00381	0.00412
2-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00355	0.00364
2-Nov-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00467	0.00487
2-Nov-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00122	0.00122
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00475	0.00468
2-Nov-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000979	0.00101
2-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00337	0.00338
2-Nov-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000582	0.000607
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00351	0.00378
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000079	NA	NA	0.00435	0.00453
8-Nov-21	FR_FR3 (RG_FOBKS)	<0.000005	<0.0000005	NA	NA	0.00311	0.00332
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00443	0.00419
8-Nov-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.00185	0.00197
9-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00238	0.00247
9-Nov-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00373	0.00379
9-Nov-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00128	0.00132
9-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.000005	<0.0000005	NA	NA	0.00365	0.00374
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000796	0.000741
9-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00243	0.0024
9-Nov-21	FR_UFR1 (RG_URF1)	<0.000005	<0.0000005	NA	NA	0.000634	0.000553
10-Nov-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.000005	NA	NA	0.00426	0.00445
10-Nov-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.000565	0.000591
12-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00212	0.00212
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.000005	0.00000054	NA	NA	0.000609	0.000562
12-Nov-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00224	0.00242
15-Nov-21	FR_FR5	<0.000005	0.00000072	NA	NA	0.00114	0.00117
15-Nov-21	FR_FRABCH (RG_FO22)	<0.000005	0.00000085	NA	NA	0.00146	0.00147
16-Nov-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.000756	0.000777
17-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00346	0.00362
17-Nov-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00393	0.00416
17-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00202	0.00215
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00183	0.00176

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Mercury (Hg)-Dissolved_mg/L	Mercury (Hg)-Total_mg/L	MeSe(IV) - Methylseleninic Acid_mg/L	MeSe(VI) - Methaneselenonic Acid_mg/L	Molybdenum (Mo)-Dissolved_mg/L	Molybdenum (Mo)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00476	0.00463
24-Nov-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00494	0.00488
24-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00167	0.0017
29-Nov-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00174	0.00177
29-Nov-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	NA	NA	0.00174	0.00176
29-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00149	0.00149
1-Dec-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00121	0.00121
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000078	NA	NA	0.00245	0.00256
7-Dec-21	FR_FR2 (RG_FOUKI)	<0.000005	<0.0000005	NA	NA	0.00201	0.002
7-Dec-21	FR_FRNTP (RG_FOUSH)	<0.000005	0.00000101	NA	NA	0.00219	0.00225
7-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	NA	NA	0.00214	0.00218
8-Dec-21	FR_FR3 (RG_FOBKS)	<0.000005	0.00000054	NA	NA	0.003	0.00294
8-Dec-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000955	0.000837
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.000005	<0.0000005	NA	NA	0.000771	0.000807
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	0.00000057	NA	NA	0.00409	0.00394
9-Dec-21	FR_FR1 (RG_FODHE)	<0.000005	<0.0000005	NA	NA	0.000863	0.000929
9-Dec-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00442	0.00446
9-Dec-21	FR_HC3 (RG_HENUP)	<0.000005	<0.0000005	NA	NA	0.00057	0.000622
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	<0.000005	<0.0000005	NA	NA	0.00313	0.00321
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	<0.000005	<0.0000005	NA	NA	0.000929	0.00121
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	<0.00001	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	<0.00001	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	<0.000005	NA	NA	NA	0.00102	0.00095
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<0.000005	<0.0000005	<0.00001	NA	0.00168	0.00193
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000093	<0.00001	NA	0.000569	0.000618
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.000005	<0.0000005	<0.00001	NA	0.000702	0.00072
17-Dec-21	FR_FR1 (RG_FODHE)	<0.000005	0.00000156	<0.00001	NA	0.000918	0.000944
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	<0.000005	<0.0000005	<0.00001	NA	0.00157	0.00195
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.000005	<0.0000005	<0.00001	NA	0.00182	0.00159
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	<0.00001	NA	0.00436	0.00464
17-Dec-21	FR_UFR1 (RG_URF1)	<0.000005	0.00000068	NA	NA	0.00056	0.00062
17-Dec-21	RG_FOUEW	NA	NA	<0.00001	NA	NA	NA
17-Dec-21	RG_FOUNGD	<0.000005	<0.0000005	<0.00001	NA	0.001	0.00123
20-Dec-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.000744	0.00076
21-Dec-21	GH_PC2 (RG_FODPO)	<0.000005	<0.0000005	NA	NA	0.000897	0.00093
22-Dec-21	FR_FR5	<0.000005	<0.0000005	NA	NA	0.000826	0.000817
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	<0.000005	<0.0000005	NA	NA	0.00075	0.000812
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.000005	<0.0000005	NA	NA	0.00523	0.00548
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	144.8	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	0.0105	0.0111	21.2	0.0331	240.4	342	<0.001
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.00812	0.0084	22.7	0.0427	166.8	324	<0.001
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00625	0.0065	25.8	0.04	163.9	482	<0.001
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	249.4	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	196.3	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	169.8	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.148	<0.001	182.7	412	0.0036
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	0.0104	0.0108	24.5	0.038	104.8	355	<0.001
12-Jan-21	FR_FR2 (RG_FOUKI)	0.00656	0.00656	20.7	0.0366	247.9	432	0.0016
12-Jan-21	FR_FR3 (RG_FOBKS)	0.00666	0.00691	26	0.0633	134.3	271	<0.001
12-Jan-21	FR_FR5	<0.0005	0.00051	21.2	0.0058	180.8	226	<0.001
12-Jan-21	FR_FRNTP (RG_FOUSH)	0.0083	0.00827	23.6	0.0444	235.3	348	0.0014
12-Jan-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.244	0.002	250.7	363	0.0017
12-Jan-21	FR_MULTIPLATE (RG_MP1)	0.00653	0.00667	21.2	0.0361	152.5	228	0.0017
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	83.2	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	155.5	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	207.2	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	208.3	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	0.00052	0.00062	35.8	<0.005	127.8	475	0.0014
19-Jan-21	FR_FR2 (RG_FOUKI)	0.00617	0.00648	21.3	0.0507	204.6	514	<0.001
19-Jan-21	FR_FRABCH (RG_FO22)	<0.0005	0.00087	27.3	<0.005	160.1	502	0.0011
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	150.4	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	184.4	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.0121	0.0138	25.4	0.0499	117.1	330	0.0016
21-Jan-21	GH_PC2 (RG_FODPO)	<0.0005	<0.0005	24.9	<0.005	129.8	383	0.0028
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	134.8	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	101.8	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	151.9	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	0.007	0.00735	24.4	0.056	239.65	370	<0.001
27-Jan-21	FR_FRNTP (RG_FOUSH)	0.0093	0.00985	26.4	0.0538	198.2	312	0.0012
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0067	0.00674	26.9	0.014	111.3	378	0.0016
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	150.5	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	0.00633	0.00675	24.7	0.0269	201	386	<0.001
2-Feb-21	FR_FRNTP (RG_FOUSH)	0.00837	0.00877	26.5	0.0328	204.5	329	<0.001
2-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00698	0.00722	29.6	0.0192	203.9	454	<0.001
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	160.3	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	153.6	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.271	0.0012	145.9	284	<0.001
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	135.5	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	0.00536	0.00577	23.8	0.0149	217.6	274	0.0013
8-Feb-21	FR_FR5	<0.0005	<0.0005	22.2	0.0052	222.9	341	0.0018
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	0.014	0.0148	23.9	0.0142	57.9	301	0.0015
9-Feb-21	FR_FR2 (RG_FOUKI)	0.0057	0.00569	24.8	0.0246	195.6	424	0.0017
9-Feb-21	FR_FRNTP (RG_FOUSH)	0.00783	0.00792	28	0.0267	204.2	336	0.0022
9-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0063	0.00626	28.3	0.0186	190.6	460	0.002
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	155.9	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	167	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	162.8	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	0.00539	0.00534	23.8	0.0171	139.4	288	0.0015
16-Feb-21	FR_FRNTP (RG_FOUSH)	0.00782	0.0073	25.9	0.0179	121.5	327	0.0017
16-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0059	0.00578	28.2	0.015	175.1	304	0.0018
16-Feb-21	GH_PC2 (RG_FODPO)	<0.0005	0.00062	26.6	<0.005	234.1	320	0.0022
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	158.6	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	149.7	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	0.00062	0.00103	44.3	0.0065	177.3	444	0.0023
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	155.2	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	215.4	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.00689	0.0069	24.9	0.0289	102.9	314	0.0015
23-Feb-21	FR_FR4 (RG_FOBSC)	0.0128	0.0131	24.7	0.0281	92.8	354	0.0015
23-Feb-21	FR_FRABCH (RG_FO22)	0.00068	0.00075	25.7	<0.005	169.8	419	0.0016
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.0162	0.0182	34.8	0.0397	162.2	446	0.0056
23-Feb-21	FR_FRRD (RG_FRUPO)	0.00062	0.00065	45.5	0.0064	90.1	344	0.0023
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.00722	0.00742	30.1	0.0248	96.1	307	0.0019
23-Feb-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.166	<0.001	175.3	385	0.0056
24-Feb-21	FR_FRNTP (RG_FOUSH)	0.00928	0.00997	29.7	0.0457	175.1	447	0.0012
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	188.4	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	164.9	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	152.2	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	0.00705	0.00786	26.4	0.0321	90.8	418	0.0014
2-Mar-21	FR_FR4 (RG_FOBSC)	0.0125	0.0133	25.8	0.0319	NA	362	0.0018
2-Mar-21	FR_FRABCH (RG_FO22)	0.00053	0.00067	27.2	0.0123	163.1	405	<0.001
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0118	0.0135	25.9	0.0379	166.9	346	<0.001
2-Mar-21	FR_FRNTP (RG_FOUSH)	0.00996	0.0102	28.9	0.0345	199.2	363	0.0019
2-Mar-21	FR_FRRD (RG_FRUPO)	0.00061	0.00069	48.9	0.0146	81.6	426	0.0026
2-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00797	0.00815	31.8	0.0351	NA	447	0.0017
2-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.167	0.001	129	342	0.0028
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	109.9	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	137.5	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.00644	0.00714	23.1	0.0257	149.4	464	<0.001
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	135.6	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.00122	0.00258	0.328	0.0352	129.2	388	0.008
5-Mar-21	FR_FR5	0.00058	<0.0005	22.2	0.007	142.2	389	<0.001
5-Mar-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.302	<0.001	148.3	487	<0.001
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0103	0.0104	23	0.0259	68.2	342	<0.001
8-Mar-21	FR_FRNTP (RG_FOUSH)	0.00914	0.00909	26.7	0.0453	117.6	433	0.0018
9-Mar-21	FR_FR2 (RG_FOUKI)	0.00677	0.00755	24.5	0.0228	88.6	415	<0.001
9-Mar-21	FR_FR4 (RG_FOBSC)	0.0103	0.0117	22.9	0.0243	77.5	335	<0.001
9-Mar-21	FR_FRABCH (RG_FO22)	0.00064	0.00055	28.5	0.0109	160.5	442	0.0017
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0115	0.0125	22	0.0408	152.8	449	0.0016
9-Mar-21	FR_FRRD (RG_FRUPO)	0.0006	0.00061	44.6	0.0053	81.3	337	0.0023
9-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00813	0.00849	28.6	0.0193	86	385	<0.001
9-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	0.00062	1.03	0.0057	151.1	474	0.012
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	181.3	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	114.9	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	147.8	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	0.00054	0.141	<0.001	NA	290	0.0074
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	164	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	0.00052	0.00062	28.1	0.0065	125.1	382	0.002
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	74.5	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.00838	0.00966	20.1	0.0317	86.6	395	<0.001
16-Mar-21	FR_FR4 (RG_FOBSC)	0.00988	0.0113	20.4	0.0315	79.4	516	0.0012
16-Mar-21	FR_FRABCH (RG_FO22)	0.00079	0.0008	28.9	0.007	110.7	353	0.0011
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0102	0.0112	20.1	0.0265	102.3	386	<0.001
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.00999	0.0109	10.7845	0.0346	104.9	393	0.0017
16-Mar-21	FR_FRRD (RG_FRUPO)	0.00078	0.00102	36.4	0.0065	79.4	495	0.0028
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.00968	0.0108	21.5	0.0265	82.9	517	0.0017
16-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	0.001	0.13	0.0015	137	329	0.014
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	130.6	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	134.4	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	121.2	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0107	0.0119	18.1	0.0358	NA	464	0.0028
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	123.6	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	109	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	203.5	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	208.3	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.011	0.011	21	0.024	86.5	144	<0.001
23-Mar-21	FR_FR4 (RG_FOBSC)	0.0125	0.0127	20.8	0.0267	85.9	348	<0.001
23-Mar-21	FR_FRABCH (RG_FO22)	0.00263	0.00304	26	0.0112	138.9	442	<0.001
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0128	0.0134	21.8	0.0297	144.6	390	<0.001
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.0129	0.0132	22.3	0.0252	98.1	291	0.003
23-Mar-21	FR_FRRD (RG_FRUPO)	0.00523	0.00591	28.1	0.0149	80.3	296	0.0014
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0128	0.0122	23.4	0.0171	85.7	296	0.001
23-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	0.00074	0.0717	<0.001	145	394	0.0107
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0124	0.013	21.2	0.0214	145.7	384	0.0022
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	143.8	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	143.1	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	138.5	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	159.9	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	228.5	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.0101	0.0102	29.7	0.0592	157.3	386	0.001
30-Mar-21	FR_FR4 (RG_FOBSC)	0.0122	0.0125	26.8	0.0293	155.1	421	0.0012
30-Mar-21	FR_FRABCH (RG_FO22)	0.00256	0.00234	31.9	0.0131	155.8	391	0.0022
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.013	0.0136	32.7	0.0373	145.6	388	0.0019
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	111.4	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	0.00609	0.00676	35	0.0277	146.3	415	0.0016
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0129	0.0125	35.9	0.0264	204.6786	378	0.0025
30-Mar-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0749	0.0026	119.2	405	0.0094
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	126.5	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.0116	0.012	29.4	0.0366	148.9	420	<0.001
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	129.3	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0118	0.0127	27	0.0344	157.1	403	0.001
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	109.8	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0127	0.0124	25	0.028	121.3	418	<0.001
6-Apr-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	5.56	0.0031	129.3	450	<0.001
6-Apr-21	FR_FR2 (RG_FOUKI)	0.0113	0.0117	24.6	0.0235	151.3	371	<0.001
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.0132	0.0138	26.1	0.0231	144.7	422	0.0046
6-Apr-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.258	<0.001	138.4	356	<0.001
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0128	0.0128	27.8	0.019	142.9	426	0.0019
6-Apr-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.031	0.0015	141	447	0.0022
7-Apr-21	FR_FR3 (RG_FOBKS)	0.0107	0.0108	24.2	<0.005	181.5	190	0.0017
7-Apr-21	FR_FR5	0.00223	0.00222	22.8	<0.005	126.2	463	0.0011
7-Apr-21	FR_FRABCH (RG_FO22)	0.00342	0.00324	24.8	0.0069	126.3	459	0.0015
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0127	0.0131	24	0.0068	106.8	326	0.0013
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0126	0.0123	24.2	<0.005	133.1	461	0.0015
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	134.9	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	136.4	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	136.7	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	0.0044	0.00416	26.8	0.0095	146.8	352	0.0021
9-Apr-21	FR_FR4 (RG_FOBSC)	0.0128	0.0129	25	0.0216	209	451	0.001
12-Apr-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	5.36	0.0013	196.7	272	0.0018
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	166	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.0104	0.0108	25.8	0.0253	131.4	389	<0.001
13-Apr-21	FR_FR4 (RG_FOBSC)	0.013	0.0138	26	0.0249	149.7	290	<0.001
13-Apr-21	FR_FRABCH (RG_FO22)	0.00334	0.00344	26.6	0.0103	142.6	251	<0.001
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0136	0.013	25.6	0.0242	132.4	260	<0.001
13-Apr-21	FR_FRRD (RG_FRUPO)	0.00567	0.00584	30.2	0.0109	134.1	464	<0.001
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0129	0.0125	29.5	0.0285	114.1	431	0.0012
13-Apr-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0131	<0.001	159.4	273	0.0045
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	149.6	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.0118	0.0128	26.7	0.0264	148	326	0.0021
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0121	0.0128	23	0.0298	146.6	339	0.0018
15-Apr-21	FR_FR4 (RG_FOBSC)	0.0132	0.0132	24.8	0.0404	102.7	448	0.0022
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	134.1	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	132.5	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	251.7	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	260.2	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	0.00068	0.00076	4.29	<0.001	160.5	441	0.002
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	210	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0104	0.011	20.8	<0.005	114.7	261	0.0019
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.0102	0.011	21.1	0.0223	NA	411	0.0018
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00971	0.0101	21.8	0.012	NA	380	0.002
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	120.1	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.0103	0.0109	20.7	<0.001	NA	271	<0.001
21-Apr-21	FR_FRABCH (RG_FO22)	0.00338	0.00396	24.8	0.0054	159.2	432	<0.001
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0106	0.0107	21.6	<0.005	47.3	226	<0.001
22-Apr-21	FR_FR2 (RG_FOUKI)	0.00949	0.00971	20.4	0.0149	136	271	0.0015
26-Apr-21	FR_FR1 (RG_FODHE)	0.0005	0.00061	3.8	0.0022	159.1	257	<0.001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	221.7	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	179.9	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.00908	0.00963	22.4	0.0133	115.8	468	<0.001
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0112	0.012	24.8	<0.005	110	349	<0.001
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.0103	0.0108	23.1	0.0259	102.4	312	<0.001
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.00996	0.0102	25	0.0086	146	324	<0.001
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	107.4	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	0.00339	0.00332	23.1	0.0065	93.3	332	<0.001
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	110.2	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	107.9	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0104	0.0114	23.2	0.0256	105.4	308	<0.001
30-Apr-21	FR_FR4 (RG_FOBSC)	0.00983	0.00983	21.6	0.0212	171.1	299	<0.001
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	233	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00757	0.00712	15.8	0.0114	195.6	281	<0.001
3-May-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.218	<0.001	202.3	282	<0.001
3-May-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.005	<0.001	158.4	291	<0.001
4-May-21	FR_FR1 (RG_FODHE)	0.0007	0.00058	2.42	0.0015	104.6	452	<0.001
4-May-21	FR_FR2 (RG_FOUKI)	0.00712	0.0071	15.2	0.0108	137.4	418	<0.001
4-May-21	FR_FR3 (RG_FOBKS)	0.00691	0.00678	15	0.0111	132.2	382	<0.001
4-May-21	FR_FRNTP (RG_FOUSH)	0.00767	0.00746	15.2	0.0114	140.5	329	<0.001
4-May-21	FR_MULTIPLATE (RG_MP1)	0.00664	0.00724	15.4	0.0106	124.2	336	<0.001
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00746	0.00778	15	0.011	129.4	347	<0.001
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	109.2	NA	NA
5-May-21	FR_FR5	0.00247	0.00284	16.3	0.0054	157.8	375	<0.001
5-May-21	FR_FRABCH (RG_FO22)	0.00387	0.00417	20.3	<0.005	122.4	290	<0.001
5-May-21	FR_FRCP1 (RG_FOBCP)	0.00758	0.00817	15.9	0.0053	108.7	372	<0.001
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	114.2	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	94.3	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.00428	0.00463	21	<0.005	149.4	358	<0.001
7-May-21	FR_FR4 (RG_FOBSC)	0.0056	0.00659	12	0.0069	147	436	<0.001
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	135.5	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	150	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	0.00051	0.00057	1.87	<0.001	149.5	449	<0.001
11-May-21	FR_FR2 (RG_FOUKI)	0.00584	0.00554	13.5	0.0078	111	279	<0.001
11-May-21	FR_FRCP1 (RG_FOBCP)	0.00577	0.00616	15	0.0077	8.39	406	<0.001
11-May-21	FR_FRNTP (RG_FOUSH)	0.00649	0.00633	13.9	0.0082	113	448	<0.001
11-May-21	FR_MULTIPLATE (RG_MP1)	0.00603	0.00575	14.1	0.0069	107.7	260	<0.001
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	265.6	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.00342	0.00361	18.4	<0.001	165.5	310	<0.001
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	285.6	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	1696.75	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00658	0.0068	13.5	0.0044	158.9	263	<0.001
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	276.4	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	275.7	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	171.6	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	185.5	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00309	0.00562	5.58	0.0049	158.2	415	0.0018
18-May-21	FR_FR2 (RG_FOUKI)	0.0022	0.00378	4.82	0.0034	117.6	407	0.0012
18-May-21	FR_FR4 (RG_FOBSC)	0.00244	0.00499	5.05	0.0034	132.6	418	<0.001
18-May-21	FR_FRABCH (RG_FO22)	0.00182	0.00405	9.68	<0.001	135.2	312	<0.001
18-May-21	FR_FRCP1 (RG_FOBCP)	0.00248	0.0057	7.16	0.0059	173.8	411	<0.001
18-May-21	FR_FRRD (RG_FRUPO)	0.00197	0.00417	11.7	0.0027	149.6	523	<0.001
18-May-21	FR_MULTIPLATE (RG_MP1)	0.00213	0.00316	4.83	0.0034	134.8	447	0.002
18-May-21	FR_UFR1 (RG_URF1)	<0.0005	0.00062	0.0859	<0.001	170.1	304	0.0037
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	165.9	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.00366	0.00375	8.31	0.0071	174.7	274	0.0032
20-May-21	FR_FRNTP (RG_FOUSH)	0.00216	0.00339	4.57	0.0049	161.1	252	0.0018
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	157.7	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.00357	0.00373	7.55	0.0089	167.7	420	<0.001
25-May-21	FR_FR4 (RG_FOBSC)	0.00396	0.00475	10.5	0.0069	167.6	446	0.0019
25-May-21	FR_FRABCH (RG_FO22)	0.00243	0.00253	17.1	0.0048	222.3	441	0.0013
25-May-21	FR_FRCP1 (RG_FOBCP)	0.00347	0.00356	14.4	0.0066	181.2	423	0.0017
25-May-21	FR_FRRD (RG_FRUPO)	0.00252	0.00275	19.9	0.0052	164.5	444	0.0015
25-May-21	FR_MULTIPLATE (RG_MP1)	0.00369	0.00371	7.55	0.0082	199.9	418	0.0016
25-May-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0108	<0.001	144.5	406	0.0027
26-May-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	1.1	0.0013	111.4	320	0.0013
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	161	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00403	0.00442	7.63	<0.001	177.4	380	0.0026
27-May-21	FR_FR4 (RG_FOBSC)	0.00312	0.00346	9.56	0.0023	99.3	411	<0.001
27-May-21	FR_FRNTP (RG_FOUSH)	0.00295	0.0031	5.65	0.0061	175.8	442	<0.001
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	170.1	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	170.3	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	147	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	166.5	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	213.6	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.892	<0.001	176.7	440	<0.001
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	240.3	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.00276	0.00335	5.48	0.0062	152.7	420	0.0012
1-Jun-21	FR_FR2 (RG_FOUKI)	0.0019	0.00219	3.69	0.0021	150.9	406	<0.001
1-Jun-21	FR_FR4 (RG_FOBSC)	0.00238	0.00295	5.04	0.0039	132.6	452	<0.001
1-Jun-21	FR_FRABCH (RG_FO22)	0.00165	0.00243	11	0.0029	234.9	398	<0.001
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00231	0.00311	8.83	0.0034	174.3	502	<0.001
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.00231	0.0024	4.41	0.0046	NA	428	<0.001
1-Jun-21	FR_FRRD (RG_FRUPO)	0.00174	0.00269	13.8	0.0027	147.1	501	<0.001
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00219	0.00262	4.47	0.0023	158.2	502	<0.001
1-Jun-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.044	<0.001	232.6	436	0.0018
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.00216	0.00413	6.49	0.0027	279.1	505	0.0037
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00231	0.00313	3.11	<0.001	196.4	484	0.0062
7-Jun-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.775	<0.001	134	430	0.0034
7-Jun-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.169	<0.001	153.9	343	0.0016
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00305	0.00354	4.7	0.0041	132.8	503	0.0042
7-Jun-21	GH_PC2 (RG_FODPO)	0.00365	0.00438	14.8	0.0037	154.3	450	0.0032
8-Jun-21	FR_FR2 (RG_FOUKI)	0.0028	0.00342	5.02	0.0016	214.8	422	0.0033
8-Jun-21	FR_FR4 (RG_FOBSC)	0.00386	0.00558	8.88	<0.001	NA	458	0.0046

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.00301	0.00349	15.9	<0.001	178.9	475	0.0033
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00451	0.00466	13.6	0.0012	176.3	416	0.0034
8-Jun-21	FR_FRRD (RG_FRUPO)	0.003	0.00454	19.6	<0.001	174.6	448	0.003
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00244	0.00287	5.04	0.0014	NA	434	0.004
8-Jun-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0319	<0.001	157.7	467	0.0046
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.00334	0.00362	5.92	0.0058	96.1	459	0.002
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00328	0.00344	5.73	<0.001	139.9	401	0.0029
10-Jun-21	FR_FR4 (RG_FOBSC)	0.00537	0.00526	13.5	0.0066	261.7	408	0.0035
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	180.1	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	152.8	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.00687	0.00733	14	0.0119	153.2	241	<0.001
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.0005	<0.0005	0.819	<0.001	NA	400	<0.001
14-Jun-21	FR_FR1 (RG_FODHE)	<0.0005	0.00052	0.9875	<0.001	163.6	407.5	<0.001
14-Jun-21	FR_FR3 (RG_FOBKS)	0.00216	0.00262	4.7	0.0069	132.4	482	<0.001
14-Jun-21	FR_FR5	0.00149	0.00205	10.8	0.0035	210.2	428	<0.001
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	182.3	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00192	0.00227	4.59	0.0022	NA	383	<0.001
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00268	0.00306	4.97	0.0069	122.4	467	0.0012
14-Jun-21	RG_FO26	<0.0005	<0.0005	0.0442	<0.001	NA	411	0.0038
15-Jun-21	FR_FR2 (RG_FOUKI)	0.00193	0.00228	3.87	0.0046	NA	419	<0.001
15-Jun-21	FR_FR4 (RG_FOBSC)	0.00233	0.00267	5.24	0.0046	NA	463	<0.001
15-Jun-21	FR_FRABCH (RG_FO22)	0.00153	0.002	10.6	0.0022	156.2	414	<0.001
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00208	0.00255	8.03	0.0035	140	444	<0.001
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.00201	0.00243	3.92	0.0044	128.2	425.5	<0.001
15-Jun-21	FR_FRRD (RG_FRUPO)	0.00161	0.0021	14.8	0.0046	NA	408	<0.001
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00161	0.00199	3.76	0.0017	NA	460	<0.001
15-Jun-21	FR_UFR1 (RG_URF1)	<0.0005	0.00051	0.0379	<0.001	152.8	403	0.00185
15-Jun-21	RG_FOUNGD	0.00123	0.00154	2.87	0.0017	NA	463	0.0011
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	167.2	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.0021	0.00225	4.55	0.0072	NA	429	0.0016
16-Jun-21	FR_FR4 (RG_FOBSC)	0.00282	0.00295	7.99	0.0074	266.6	451	0.0013
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	0.00159	0.00175	3.45	0.003	NA	490	<0.001
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	127.3	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.149	<0.001	NA	450	<0.001
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	124.7	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00265	0.00283	4.495	0.0062	91	455	<0.001
17-Jun-21	FR_FR2 (RG_FOUKI)	0.00249	0.00272	5.18	0.0075	NA	249	<0.001
17-Jun-21	FR_FR4 (RG_FOBSC)	0.00326	0.00335	14.4	0.0075	NA	508	<0.001
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00261	0.0027	10.3	0.0068	NA	444	0.0023
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.0027	0.0029	10.2	0.008	NA	439	<0.001
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0031	0.00356	5.6	0.0088	NA	437	<0.001
17-Jun-21	GH_PC2 (RG_FODPO)	0.00202	0.00262	13.8	0.0085	NA	466	0.0013
18-Jun-21	FR_FRABCH (RG_FO22)	0.00172	0.00223	13.2	0.0045	NA	475	<0.001
18-Jun-21	FR_FRRD (RG_FRUPO)	0.00184	0.00217	16.1	0.0073	NA	469	<0.001
18-Jun-21	RG_FOUEW	0.00142	0.00191	11.7	0.0049	NA	479	<0.001
21-Jun-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.702	<0.001	139.1	422.5	0.00115
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	162.2	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	148.1	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	151.3	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	154.6	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.003	0.0033	5.57	0.0088	1582	435	<0.001
21-Jun-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.00835	<0.001	135.7	453.5	0.00215
22-Jun-21	FR_FR2 (RG_FOUKI)	0.00267	0.0025	4.9	0.0063	162.2	370	<0.001
22-Jun-21	FR_FRABCH (RG_FO22)	0.00199	0.00198	12.4	0.0047	181.9	403	<0.001
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00275	0.00277	9.27	0.0057	168.5	300	<0.001
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.00278	0.00269	4.9	0.0087	NA	328	<0.001
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00232	0.00222	5.04	0.0063	NA	402	<0.001
23-Jun-21	FR_FR4 (RG_FOBSC)	0.00322	0.0032	7.28	0.0079	268.7	429	<0.001
28-Jun-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.591	<0.001	178.5	435	<0.001
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	189.2	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.003	0.00321	5.86	0.0061	168.1	422	<0.001
29-Jun-21	FR_FR2 (RG_FOUKI)	0.00261	0.00279	5.74	0.0083	NA	534	<0.001
29-Jun-21	FR_FR4 (RG_FOBSC)	0.0035	0.00345	6.68	0.0083	NA	441	<0.001
29-Jun-21	FR_FRABCH (RG_FO22)	0.00186	0.00202	12.8	0.0054	165.2	471	<0.001
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.00259	0.003	9.34	0.0065	147.8	340	<0.001
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.0027	0.00294	5.73	0.0076	NA	458	<0.001
29-Jun-21	FR_FRRD (RG_FRUPO)	0.00182	0.00188	16.7	0.0063	NA	429	<0.001
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.00246	0.00256	5.86	0.0072	NA	446	<0.001
29-Jun-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0129	<0.001	217.7	482	0.0024
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	184	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	169.5	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.00326	0.0034	6.96	0.0092	225.4	531	0.0022
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	183.5	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	66.3	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	165.1	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	173.1	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	177.5	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.724	0.0016	207.9	476	<0.001
2-Jul-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0306	0.0013	243.9	446	0.0015
4-Jul-21	FR_FR2 (RG_FOUKI)	0.00303	0.00337	7.49	0.0081	153.4	406	<0.001
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	174.5	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.00344	0.00377	7.67	0.0084	NA	485	<0.001
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.00411	0.00394	7.5	0.0098	130.5	448	0.0013
5-Jul-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.0663	<0.001	149.3	432	<0.001
6-Jul-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	0.685	<0.001	156.7	533	0.0011
6-Jul-21	FR_FR4 (RG_FOBSC)	0.00351	0.00392	6.82	0.0076	NA	409	<0.001
6-Jul-21	FR_FRABCH (RG_FO22)	0.0022	0.00238	13.8	0.0068	170.3	472	<0.001
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.00321	0.00344	9.25	0.0083	163.5	472	<0.001
6-Jul-21	FR_FRRD (RG_FRUPO)	0.00208	0.00235	15.7	0.0049	156.8	431	<0.001
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00244	0.00249	6.24	0.0071	NA	443	<0.001
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.00362	0.00383	6.67	0.0084	163	482	<0.001
6-Jul-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0115	<0.001	170.5	452	0.0022
7-Jul-21	FR_FR2 (RG_FOUKI)	0.00292	0.00309	7.05	0.0107	148.5	478	<0.001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.00322	0.00348	7.18	0.0104	322.3	457	<0.001
7-Jul-21	GH_PC2 (RG_FODPO)	0.0021	0.00245	13.7	0.006	165.3	447	<0.001
8-Jul-21	FR_FR3 (RG_FOBKS)	0.0031	0.00326	7.48	0.0101	155.3	463	<0.001
8-Jul-21	FR_FR5	0.00153	0.00155	13.2	0.0032	171.7	442	<0.001
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	154.5	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	152.3	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	1.01	<0.001	183.9	447	<0.001
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	239.9	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0048	0.0048	8.82	0.0117	169.2	466	0.0058
13-Jul-21	FR_FR2 (RG_FOUKI)	0.00378	0.00415	9.2	0.0129	340.7	456	<0.001
13-Jul-21	FR_FR4 (RG_FOBSC)	0.00518	0.00524	10.2	0.0187	379.3	446	0.0013
13-Jul-21	FR_FRABCH (RG_FO22)	0.00224	0.00215	16.8	0.007	154.6	444	0.0015
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.00395	0.00418	11.9	0.0109	141.4	443	0.0021
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.00412	0.00415	9.36	0.0142	110.8	446	0.003
13-Jul-21	FR_FRRD (RG_FRUPO)	0.00199	0.00198	20.8	<0.005	190.4	439	0.002
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0036	0.00372	9.77	0.0103	191.5	437	0.0026
13-Jul-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0162	<0.001	174.9	437	0.0034
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	131.2	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	132.1	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	130	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.00484	0.00506	9.73	0.0108	241.2	430	<0.001
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	254.7	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	256.1	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	154.7	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.00317	0.00328	9.17	0.0081	152.3	445	0.0012
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	156.9	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.0034	0.00343	9.78	0.0089	143.7	486	<0.001
20-Jul-21	FR_FR4 (RG_FOBSC)	0.0058	0.006	8.87	0.0056	141.4	476	0.0025
20-Jul-21	FR_FRRD (RG_FRUPO)	0.0012	0.00124	25	<0.005	138.7	490	<0.001
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00358	0.00364	10.9	0.0027	145.5	525	0.0012
20-Jul-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	<0.005	0.0021	127.8	464	0.0017
22-Jul-21	FR_FRABCH (RG_FO22)	0.00187	0.0018	21	0.0082	151.6	452	<0.001
26-Jul-21	FR_FRABCH (RG_FO22)	0.00189	0.0019	21.9	0.0172	180.3	418	<0.001
27-Jul-21	FR_FR2 (RG_FOUKI)	0.00435	0.00458	13.5	0.0168	NA	427	<0.001
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.00532	0.00567	14.2	0.0209	NA	460	<0.001
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.00549	0.00549	16.2	0.0162	NA	432	<0.001
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0081	0.00862	14.3	0.0218	NA	454	<0.001
4-Aug-21	FR_FR2 (RG_FOUKI)	0.00456	0.00467	13.2	0.0184	1175	494	<0.001
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	1175	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.00551	0.00558	13.9	0.0217	124.4	462	<0.001
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0047	0.00446	14.9	0.0191	146.6	474	<0.001
5-Aug-21	FR_FRABCH (RG_FO22)	0.00187	0.00177	22.8	<0.005	165.9	474	<0.001
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00961	0.00955	18.4	0.03	167.2	472	<0.001
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	156.1	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	160.6	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	139.2	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.00398	0.00425	13.6	0.0031	191	445	<0.001
10-Aug-21	FR_FR1 (RG_FODHE)	0.00052	0.0005	2.11	0.0018	147.3	454	0.0014
10-Aug-21	FR_FR2 (RG_FOUKI)	0.00398	0.0043	12.3	0.0091	134.3	431	<0.001
10-Aug-21	FR_FR4 (RG_FOBSC)	0.0081	0.00857	15.5	0.0101	127.2	365	<0.001
10-Aug-21	FR_FRABCH (RG_FO22)	0.00142	0.00147	22.6	0.0092	129.2	411	<0.001
10-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00681	0.00697	13.9	0.0086	150.5	407	0.0014
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.0005	<0.0005	27.7	<0.005	159.5	485	0.0021
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00391	0.00408	13.6	0.0118	147.3	424	<0.001
10-Aug-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0169	<0.001	150.5	406	0.0032
11-Aug-21	FR_FR3 (RG_FOBKS)	0.00406	0.00417	12.2	0.0173	NA	445	<0.001
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0066	0.007	13.2	0.016	NA	438	<0.001
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	135.1	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	0.00368	0.00408	13	0.0084	NA	441	<0.001
12-Aug-21	FR_FR4 (RG_FOBSC)	0.00824	0.00911	15.1	0.0225	NA	400	<0.001
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	158.2	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	162.9	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00642	0.00672	14.2	0.0102	NA	443	<0.001
13-Aug-21	FR_FR3 (RG_FOBKS)	0.00439	0.00437	12.3	0.0073	NA	514	<0.001
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00678	0.00692	13.4	0.0096	164	517	<0.001
14-Aug-21	FR_FR3 (RG_FOBKS)	0.00458	0.00467	14	0.0111	NA	481	<0.001
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00707	0.00725	14.9	0.0118	NA	410	<0.001
15-Aug-21	FR_FR3 (RG_FOBKS)	0.0044	0.00453	9.72	<0.001	NA	426	0.0012
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00832	0.0086	11.6	<0.005	NA	440	0.0014
16-Aug-21	FR_FR3 (RG_FOBKS)	0.00398	0.00395	13	0.0087	NA	484	0.0012
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00673	0.00706	14.1	0.0105	NA	488	0.0013
17-Aug-21	FR_FR2 (RG_FOUKI)	0.00543	0.00698	12.2	0.0106	172.6	399	<0.001
17-Aug-21	FR_FR4 (RG_FOBSC)	0.0094	0.0126	13.4	0.0127	146.4	385	<0.001
17-Aug-21	FR_FR5	0.00096	0.00108	17.5	0.0057	187.3	435	<0.001
17-Aug-21	FR_FRABCH (RG_FO22)	0.0014	0.00176	21.8	0.0106	184.9	438	<0.001
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00874	0.0106	13.8	0.0129	177.3	405	0.0012
17-Aug-21	FR_FRRD (RG_FRUPO)	0.00084	0.00091	24.4	0.0074	180.1	413	0.0023
17-Aug-21	FR_HC3 (RG_HENUP)	<0.0005	0.00059	0.293	0.0017	204.6	390	0.0011
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00413	0.00556	11.3	0.0115	163	380	<0.001
17-Aug-21	FR_UFR1 (RG_URF1)	<0.0005	0.00067	0.066	<0.001	202.8	372	0.0047
18-Aug-21	GH_PC2 (RG_FODPO)	0.00287	0.00308	16.1	0.0057	210.6	391	0.0014
19-Aug-21	FR_FR2 (RG_FOUKI)	0.0032	0.00328	7.53	0.0065	NA	424	<0.001
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.00355	0.0038	7.5	0.0073	NA	401	<0.001
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00261	0.00277	7.71	0.0075	NA	443	0.0018
24-Aug-21	FR_FR2 (RG_FOUKI)	0.00413	0.00449	8.26	0.0138	131.8	370	0.0029
24-Aug-21	FR_FR4 (RG_FOBSC)	0.0063	0.0068	9.58	0.014	123.9	408	<0.001
24-Aug-21	FR_FRABCH (RG_FO22)	0.00216	0.00285	19.8	<0.005	206.3	390	<0.001
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00558	0.00633	10.6	<0.001	185.2	418	<0.001
24-Aug-21	FR_FRRD (RG_FRUPO)	0.0017	0.00172	21	0.0037	127.4	388	0.0027
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00303	0.00312	8.96	0.0096	136.7	410	<0.001
24-Aug-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0233	<0.001	203.8	371	0.0018
25-Aug-21	FR_FR2 (RG_FOUKI)	0.00468	0.00454	9.1	0.0157	132.6	502	<0.001
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.00544	0.00543	9.21	0.0182	135	469	<0.001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00337	0.00337	9.8	0.0071	119.4	467	<0.001
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	82.4	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	84.5	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	0.00615	0.00624	11.5	0.0179	187.4	477	<0.001
31-Aug-21	FR_FR4 (RG_FOBSC)	0.0094	0.00949	13.6	0.0176	NA	443	<0.001
31-Aug-21	FR_FRABCH (RG_FO22)	0.00208	0.00217	20.8	0.0053	158.6	468	0.0015
31-Aug-21	FR_FRCP1 (RG_FOBCP)	0.00717	0.00729	13.8	0.0169	147	470	<0.001
31-Aug-21	FR_FRRD (RG_FRUPO)	0.00143	0.00136	23.4	<0.005	163.4	466	0.0023
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.00461	0.00476	13.1	0.0173	NA	471	<0.001
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.00903	0.00944	13.8	0.023	NA	381	<0.001
31-Aug-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	<0.005	<0.001	158.6	476	0.0017
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.0082	0.00811	12.4	0.0225	NA	408	<0.001
3-Sep-21	FR_FR4 (RG_FOBSC)	0.0107	0.0104	14	0.0123	213.2	326	<0.001
7-Sep-21	FR_FR2 (RG_FOUKI)	0.00658	0.00677	13.5	0.012	146.4	288	<0.001
7-Sep-21	FR_FR4 (RG_FOBSC)	0.0104	0.0108	16.7	0.0192	NA	366	<0.001
7-Sep-21	FR_FRABCH (RG_FO22)	0.00206	0.0022	22.5	0.006	127.2	356	<0.001
7-Sep-21	FR_FRCP1 (RG_FOBCP)	0.00863	0.00859	15.2	0.0126	170.6	356	<0.001
7-Sep-21	FR_FRRD (RG_FRUPO)	0.00084	0.00097	25.9	<0.005	149.1	343	0.002
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00549	0.00557	16.2	0.0129	NA	323	<0.001
7-Sep-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0136	<0.001	277	344	0.0016
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	290.9	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	300.5	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	277.8	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	0.00604	0.00646	13.9	<0.001	118.2	255	<0.001
9-Sep-21	FR_FR3 (RG_FOBKS)	0.00569	0.00595	14.2	0.0116	NA	487	<0.001
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.0072	0.00791	15.2	<0.001	120.1	445	<0.001
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00528	0.00588	16	0.0029	123.1	239	<0.001
11-Sep-21	GH_PC2 (RG_FODPO)	0.00324	0.00339	20.9	0.0092	NA	435	<0.001
11-Sep-21	RG_FOUEW	0.00176	0.0018	20.7	0.0054	NA	452	<0.001
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	0.00217	0.00203	22.7	0.0095	NA	474	<0.001
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.0005	<0.0005	2.76	0.005	NA	464	<0.001
13-Sep-21	FR_FR1 (RG_FODHE)	0.00052	<0.0005	2.07	0.005	NA	439	<0.001
13-Sep-21	FR_FR4 (RG_FOBSC)	0.0116	0.0118	15.4	0.0311	NA	447	<0.001
13-Sep-21	FR_FR5	0.00141	0.00142	19.7	0.005	192.9	481	<0.001
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0095	0.00976	15.4	0.028	NA	468	<0.001
13-Sep-21	FR_FRRD (RG_FRUPO)	0.0007	0.001	28.4	<0.005	175.6	463	0.0016
13-Sep-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.206	<0.001	144.8	482	<0.001
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0109	0.0112	15.7	0.0282	183.1	481	<0.001
13-Sep-21	GH_PC2 (RG_FODPO)	0.00352	0.0036	20.9	0.0083	190.7	477	<0.001
14-Sep-21	FR_FR2 (RG_FOUKI)	0.00738	0.00784	13.5	0.0243	117.3	427	<0.001
14-Sep-21	FR_FR3 (RG_FOBKS)	0.00748	0.00794	14.9	0.0346	133	479	<0.001
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.00869	0.00955	14.5	0.0273	121.1	430	<0.001
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00546	0.00598	16.2	0.0215	118.9	430	<0.001
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0113	0.0126	16.1	0.0222	NA	445	<0.001
15-Sep-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	2.1	0.0018	111.1	468	<0.001
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	176.4	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	0.00946	0.01	16.3	0.0302	NA	466	<0.001
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	173.6	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00561	0.00628	17.1	0.0256	144.4	427	<0.001
15-Sep-21	RG_FO26	<0.0005	<0.0005	0.018	<0.001	NA	451	<0.001
16-Sep-21	FR_FRABCH (RG_FO22)	0.00188	0.00193	24.4	0.0112	127.2	452	<0.001
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.0047	0.00479	13.5	0.01	NA	465	<0.001
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.00563	0.00534	16	0.0219	NA	468	<0.001
16-Sep-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.223	<0.001	NA	481	<0.001
16-Sep-21	RG_FOUNGD	0.00324	0.00299	11.8	0.0055	NA	461	<0.001
17-Sep-21	FR_FR4 (RG_FOBSC)	0.0108	0.0109	16.3	0.0283	288.1	494	<0.001
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	0.00068	0.00062	28	<0.005	NA	440	<0.001
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.00807	0.00844	14.4	0.0331	NA	454	0.0015
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	<0.005	<0.001	NA	451	<0.001
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.00744	0.00753	15.5	0.0202	193.7	449	<0.001
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.00848	0.00875	16	0.0287	187.5	455	<0.001
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0066	0.00683	18.1	0.0248	178.7	446	<0.001
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	114.7	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	0.00178	0.00187	20.7	0.0104	NA	454	<0.001
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	199.8	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	114.6	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	178.5	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	11.9	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0111	0.0113	17	0.012	115	454	<0.001
28-Sep-21	FR_FR2 (RG_FOUKI)	0.00716	0.00775	17.2	0.0375	NA	448	<0.001
28-Sep-21	FR_FRABCH (RG_FO22)	0.00131	0.00183	25	0.21	128.3	471	<0.001
28-Sep-21	FR_FRNTP (RG_FOUSH)	0.00909	0.00962	18.6	0.0489	NA	463	<0.001
28-Sep-21	FR_MULTIPLATE (RG_MP1)	0.00706	0.00784	20.6	0.0338	NA	445	<0.001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.00697	0.0075	17.2	0.0308	NA	459	<0.001
4-Oct-21	FR_FR1 (RG_FODHE)	0.0005	<0.0005	2.2	0.0012	81.6	448	<0.001
4-Oct-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.265	<0.001	143.8	458	<0.001
5-Oct-21	FR_FR2 (RG_FOUKI)	0.00913	0.0092	17.1	0.0486	120.8	462	<0.001
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00679	0.00662	18.7	0.0216	111.8	444	<0.001
6-Oct-21	FR_FR3 (RG_FOBKS)	0.00776	0.00832	15.1	0.0509	NA	448	<0.001
6-Oct-21	FR_FR5	<0.0005	<0.0005	15.2	0.0013	1664	454	<0.001
6-Oct-21	FR_FRABCH (RG_FO22)	0.00158	0.00169	24.4	0.0124	153	454	<0.001
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	0.00321	0.00337	21.8	0.0146	165.6	464	<0.001
7-Oct-21	FR_FR4 (RG_FOBSC)	0.0115	0.0113	22.4	0.0266	NA	417	<0.001
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	134.1	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	139.7	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	185.7	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	0.0051	0.00504	15.8	0.0144	NA	468	<0.001
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.00578	0.00578	16.8	0.0191	NA	438	<0.001
10-Oct-21	FR_FR2 (RG_FOUKI)	0.0047	0.00467	15.3	0.0115	NA	452	<0.001
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.00571	0.00587	16.5	0.0166	NA	454	<0.001
11-Oct-21	FR_FR2 (RG_FOUKI)	0.00523	0.00511	15.8	0.0132	NA	448	<0.001
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.00628	0.00674	16.9	0.0192	NA	464	<0.001
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.0106	0.0114	19.4	0.0173	218.1	508	0.0022
12-Oct-21	FR_FR2 (RG_FOUKI)	0.00516	0.00532	16.4	0.0133	136.8	450	0.0012
12-Oct-21	FR_FR4 (RG_FOBSC)	0.0112	0.0107	19.4	0.0122	137.3	455	<0.001
12-Oct-21	FR_FRABCH (RG_FO22)	0.00146	0.00168	23.1	<0.005	208.4	461	0.0017
12-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0105	0.0118	22.7	0.023	194.1	457	0.0014
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.0005	<0.0005	28	<0.005	137.3	450	0.0024
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00695	0.00742	17.8	0.0181	158.8	459	0.0018
13-Oct-21	FR_FR2 (RG_FOUKI)	0.00579	0.00644	17.2	0.0218	NA	458	<0.001
13-Oct-21	FR_FRNTP (RG_FOUSH)	0.00752	0.00763	18.1	0.0315	NA	346	0.0012
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	132.8	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	121.8	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	139.6	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	0.00638	0.00644	17.6	0.0325	141.6	449	0.0013
19-Oct-21	FR_FR4 (RG_FOBSC)	0.0116	0.0128	19.3	0.0258	129.4	450	0.0014
19-Oct-21	FR_FRABCH (RG_FO22)	0.00126	0.0016	24.3	<0.005	143	433	0.0011
19-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0112	0.0118	19.4	0.0335	NA	428	<0.001
19-Oct-21	FR_FRNTP (RG_FOUSH)	0.0079	0.0082	18	0.0421	177.9	471	<0.001
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.0005	0.000505	29.95	0.00725	144	447.5	0.003025
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00581	0.00582	20.3	0.0117	133.9	454	<0.001
19-Oct-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0361	<0.001	NA	458	0.00235
20-Oct-21	FR_FR2 (RG_FOUKI)	0.00632	0.0067	16.2	0.217225	NA	448	0.0016
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.0113	0.0116	18.2	0.0334	127.7	447	0.0011
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	4.6	5.26	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	145.6	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	0.00589	0.00626	18.2	0.0347	179.2	479	0.0017
26-Oct-21	FR_FR4 (RG_FOBSC)	0.0117	0.0121	19.6	0.0316	181.1	483	0.0014
26-Oct-21	FR_FRABCH (RG_FO22)	0.00164	0.00167	24.4	0.0111	163.1	433	0.0016
26-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0108	0.011	20	0.0304	152.9	453	0.0013
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.00743	0.00761	18.4	0.0524	158.3	462	0.0011
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.0005	<0.0005	30.2	<0.005	187.3	496	0.003
26-Oct-21	FR_MULTIPLATE (RG_MP1)	0.00547	0.00586	19.9	0.0137	191.9	474	0.0013
26-Oct-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0122	<0.001	166.1	445	0.0019
27-Oct-21	FR_FOUCL (RG_FOUCL)	0.00147	0.00151	6.08	0.0023	217.3	464	0.0018
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	0.00776	0.00758	24.1	0.124	157.8	436	<0.001
28-Oct-21	FR_FRABCH (RG_FO22)	0.0016	0.00146	24.9	0.0054	NA	276	<0.001
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.0005	<0.0005	29.7	<0.005	NA	285	0.0026
29-Oct-21	FR_FR4 (RG_FOBSC)	0.0124	0.0123	20.9	0.0423	NA	246	<0.001
29-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0121	0.0125	20.7	0.0396	NA	255	<0.001
2-Nov-21	FR_FR2 (RG_FOUKI)	0.00837	0.00941	21	0.0634	173.8	467	<0.001
2-Nov-21	FR_FR4 (RG_FOBSC)	0.0138	0.0139	21.7	0.0597	177.1	468	<0.001
2-Nov-21	FR_FRABCH (RG_FO22)	0.00157	0.00174	21.9	0.0072	190.7	455	0.0016
2-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0128	0.0135	22.3	0.0503	169	435	0.0014
2-Nov-21	FR_FRRD (RG_FRUPO)	0.00104	0.0011	29.4	<0.005	174.2	453	0.0032
2-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00922	0.00985	24.8	0.0476	160.8	445	0.001
2-Nov-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0272	<0.001	163.2	486	0.0025
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	0.0103	0.011	22.3	0.0539	118.4	440	<0.001
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0131	0.0128	22.8	0.0558	NA	456	<0.001
8-Nov-21	FR_FR3 (RG_FOBKS)	0.00922	0.00928	21.1	0.0559	134.7	458	<0.001
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0131	0.014	22.8	0.0511	135	461	<0.001
8-Nov-21	GH_PC2 (RG_FODPO)	0.00334	0.00436	22.7	0.0166	173.2	456	<0.001
9-Nov-21	FR_FR2 (RG_FOUKI)	0.00777	0.00789	20.7	0.0065	NA	454	<0.001
9-Nov-21	FR_FR4 (RG_FOBSC)	0.0124	0.0127	22.7	0.0086	NA	450	0.0011
9-Nov-21	FR_FRABCH (RG_FO22)	0.00218	0.00234	24.4	0.0132	150.8	445	0.0015
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.013	0.0124	23.5	0.0358	NA	438	<0.001
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.0005	<0.0005	28.8	<0.005	NA	467	0.0033
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00918	0.00926	24	0.0083	NA	459	<0.001
9-Nov-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.0168	<0.001	NA	443	0.0019
10-Nov-21	FR_FR4 (RG_FOBSC)	0.0128	0.0136	20.9	0.0495	44.6	442	<0.001
10-Nov-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.263	<0.001	156.6	470	<0.001
12-Nov-21	FR_FR2 (RG_FOUKI)	0.00695	0.00702	19.9	0.0307	NA	473	0.0013
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.0005	<0.0005	0.0707	<0.001	202.7	486	0.0032
12-Nov-21	FR_FRNTP (RG_FOUSH)	0.00817	0.00856	21.7	0.0348	NA	482	0.0016
15-Nov-21	FR_FR5	0.00146	0.00164	20.3	0.0104	238.5	446	0.0018
15-Nov-21	FR_FRABCH (RG_FO22)	0.00234	0.0026	23.6	0.0123	232.6	439	0.0022
16-Nov-21	FR_FR1 (RG_FODHE)	<0.0005	<0.0005	2.64	0.001	151.5	443	0.002
17-Nov-21	FR_FR2 (RG_FOUKI)	0.00776	0.00808	23.3	0.0098	197.5	443	0.0025
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.00892	0.00941	25	0.14	194.3	440	0.0026
17-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00917	0.00958	22.3	0.0196	206.6	455	0.0027
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	110.1	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	85.5	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	0.00305	0.00287	25.3	0.023	144.8	471	0.0026

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Nickel (Ni)-Dissolved_mg/L	Nickel (Ni)-Total_mg/L	Nitrate (as N)_mg/L	Nitrite (as N)_mg/L	ORP, Field_mV	ORP_mV	Orthophosphate_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	226.8	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.0109	0.0106	24	0.107	NA	411	<0.001
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.0121	0.012	25.3	0.107	NA	325	0.0012
24-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00956	0.0095	27	0.0257	NA	355	0.0016
29-Nov-21	FR_FR2 (RG_FOUKI)	0.00734	0.00746	23.3	0.0264	NA	435	<0.001
29-Nov-21	FR_FRNTP (RG_FOUSH)	0.00824	0.0082	24.6	0.0282	NA	434	0.0021
29-Nov-21	FR_MULTIPLATE (RG_MP1)	0.00848	0.00823	24.6	0.0202	NA	475	0.0011
1-Dec-21	FR_FRABCH (RG_FO22)	0.00251	0.00258	24.3	<0.005	175.6	445	0.0014
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	62.5	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	24.587	<0.015	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00918	0.0097	19.8	0.0212	70.7	469	<0.001
7-Dec-21	FR_FR2 (RG_FOUKI)	0.00824	0.00832	24.9	0.0253	153.5	462	<0.001
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.00941	0.00992	26.1	0.029	150.1	482	0.0013
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0104	0.0108	27.1	0.0261	137	462	0.0015
8-Dec-21	FR_FR3 (RG_FOBKS)	0.01	0.0102	24.4	0.0448	129.5	291	<0.001
8-Dec-21	FR_FRABCH (RG_FO22)	0.00095	0.00135	25.8	<0.005	192.2	409	0.0013
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.0005	0.00053	31.4	<0.005	179.7	385	0.0028
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0132	0.013	25.9	0.0433	145.6	281	<0.001
9-Dec-21	FR_FR1 (RG_FODHE)	0.00074	0.00089	6.11	0.0013	141.4	421	0.0015
9-Dec-21	FR_FR4 (RG_FOBSC)	0.0124	0.0138	24.8	0.0569	NA	320	<0.001
9-Dec-21	FR_HC3 (RG_HENUP)	<0.0005	<0.0005	0.281	<0.001	142.7	242	0.0014
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	134.8	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.0122	0.0126	25.7	0.0333	300.3	423	<0.001
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	208.4	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	0.0008	0.00091	23	<0.005	NA	470	0.0012
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	0.00111	0.0011	25.8	0.0078	193.7	456	<0.001
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	0.00741	0.0107	30	0.0217	NA	448	0.0012
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	57.3	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	51.4	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.102	0.001	NA	412	0.0047
17-Dec-21	FR_FOUCL (RG_FOUCL)	0.00197	0.00129	6.41	0.0024	NA	435	0.0013
17-Dec-21	FR_FR1 (RG_FODHE)	0.00099	0.00092	6.72	0.0021	NA	460	<0.001
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.00835	0.0078	27.2	0.0152	NA	464	<0.001
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0101	0.0082	27.7	0.0142	NA	455	<0.001
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0128	0.0137	24.7	0.0527	NA	317	<0.001
17-Dec-21	FR_UFR1 (RG_URF1)	<0.0005	<0.0005	0.132	<0.001	200.4	384	0.0039
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	0.00838	0.00903	24.2	0.003	NA	440	<0.001
20-Dec-21	FR_FRABCH (RG_FO22)	<0.0005	0.00056	24.5	0.0058	NA	466	<0.001
21-Dec-21	GH_PC2 (RG_FODPO)	0.0006	0.00063	24.2	<0.005	241.3	424	0.002
22-Dec-21	FR_FR5	0.0012	0.00112	21	0.0052	157.4	307	<0.001
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	171.8	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	163.1	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	0.00068	<0.0005	25.2	0.0091	153.4	255	<0.001
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0124	0.0126	29.4	0.0134	230.4	423	0.0048
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	-10.65	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	8.3	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	8.45	8.31	<0.002	2.7	2.98	NA	NA
6-Jan-21	FR_FRNTP (RG_FOUSH)	8.34	8.18	<0.002	2.81	2.6	NA	NA
6-Jan-21	FR_MULTIPLATE (RG_MP1)	8.3	8.27	<0.002	2.46	2.27	NA	NA
8-Jan-21	FR_FR2 (RG_FOUKI)	8.32	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	8.31	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	8.33	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	8.47	8.25	0.0031	0.381	0.344	NA	NA
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	8.48	8.31	<0.002	3.09	3.15	NA	NA
12-Jan-21	FR_FR2 (RG_FOUKI)	8.33	8.23	0.0025	2.74	2.5	NA	NA
12-Jan-21	FR_FR3 (RG_FOBKS)	8.36	8.21	<0.002	2.9	2.96	NA	NA
12-Jan-21	FR_FR5	8.31	8.31	0.0047	1.6	1.64	NA	NA
12-Jan-21	FR_FRNTP (RG_FOUSH)	8.34	8.18	0.0023	2.77	2.51	NA	NA
12-Jan-21	FR_HC3 (RG_HENUP)	8.2	8.13	<0.002	0.216	0.208	NA	NA
12-Jan-21	FR_MULTIPLATE (RG_MP1)	8.2	8.3	<0.002	2.47	2.27	NA	NA
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	8.5	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	8.33	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	8.23	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	8.18	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	7.82	8.31	0.0034	2.58	2.47	NA	NA
19-Jan-21	FR_FR2 (RG_FOUKI)	8.29	8.18	<0.002	2.74	2.55	NA	NA
19-Jan-21	FR_FRABCH (RG_FO22)	8.09	8.17	0.0044	1.84	1.97	NA	NA
19-Jan-21	FR_FRNTP (RG_FOUSH)	8.28	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	8.22	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	8.29	8.09	<0.002	3.1	3.87	NA	NA
21-Jan-21	GH_PC2 (RG_FODPO)	7.81	7.72	<0.002	1.78	2.07	NA	NA
22-Jan-21	FR_FR2 (RG_FOUKI)	8.19	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	8.22	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	8.08	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	8.1	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	8.19	8.18	<0.002	3.07	3.01	NA	NA
27-Jan-21	FR_FRNTP (RG_FOUSH)	8.165	8.16	<0.002	3.12	3.08	NA	NA
27-Jan-21	FR_MULTIPLATE (RG_MP1)	8.34	8.3	<0.002	2.72	2.42	NA	NA
28-Jan-21	FR_MULTIPLATE (RG_MP1)	8.27	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	8.33	8.11	<0.002	2.73	2.91	NA	NA
2-Feb-21	FR_FRNTP (RG_FOUSH)	8.29	8.03	<0.002	2.82	2.98	NA	NA
2-Feb-21	FR_MULTIPLATE (RG_MP1)	8.2	8.16	<0.002	2.55	2.63	NA	NA
3-Feb-21	FR_FR2 (RG_FOUKI)	8.21	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	8.17	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	8.18	8.12	<0.002	0.227	0.237	NA	NA
5-Feb-21	FR_MULTIPLATE (RG_MP1)	8.15	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	8.01	8.1	<0.002	2.32	2.4	NA	NA
8-Feb-21	FR_FR5	8.06	8.13	<0.002	1.47	1.43	NA	NA
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	8.3	8.14	<0.002	3.09	2.9	NA	NA
9-Feb-21	FR_FR2 (RG_FOUKI)	8.04	8.09	<0.002	2.63	2.72	NA	NA
9-Feb-21	FR_FRNTP (RG_FOUSH)	7.97	8.03	0.0021	2.85	2.58	NA	NA
9-Feb-21	FR_MULTIPLATE (RG_MP1)	8.04	8.06	<0.002	2.33	2.21	NA	NA
11-Feb-21	FR_FR2 (RG_FOUKI)	8.05	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	7.95	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	7.88	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	8.06	8.21	<0.002	2.38	2.42	NA	NA
16-Feb-21	FR_FRNTP (RG_FOUSH)	8.07	8.2	<0.002	2.32	2.4	NA	NA
16-Feb-21	FR_MULTIPLATE (RG_MP1)	7.91	8.17	<0.002	2.04	1.99	NA	NA
16-Feb-21	GH_PC2 (RG_FODPO)	7.71	8.11	0.0169	1.85	1.95	NA	NA
19-Feb-21	FR_FR2 (RG_FOUKI)	8.12	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	8.08	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	7.79	7.97	0.0026	2.49	2.4	NA	NA
19-Feb-21	FR_MULTIPLATE (RG_MP1)	8.06	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	8.51	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	8.39	8.2	<0.002	2.86	2.7	NA	NA
23-Feb-21	FR_FR4 (RG_FOBSC)	8.43	8.23	<0.002	3.22	3.03	NA	NA
23-Feb-21	FR_FRABCH (RG_FO22)	7.92	8.14	<0.002	1.77	1.69	0.000113	0.0919
23-Feb-21	FR_FRCP1 (RG_FOBCP)	8.22	8.14	0.0068	4.46	4.53	0.000463	0.172
23-Feb-21	FR_FRRD (RG_FRUPO)	8.08	8.1	0.0075	2.77	2.6	NA	NA
23-Feb-21	FR_MULTIPLATE (RG_MP1)	8.25	8.15	<0.002	2.56	2.41	NA	NA
23-Feb-21	FR_UFR1 (RG_URF1)	8.17	8.16	0.0186	0.389	0.392	NA	NA
24-Feb-21	FR_FRNTP (RG_FOUSH)	8.07	8.16	<0.002	3.04	3.07	NA	NA
24-Feb-21	FR_MULTIPLATE (RG_MP1)	8.03	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	7.98	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	8.18	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	8.61	8.16	<0.002	2.88	2.92	NA	NA
2-Mar-21	FR_FR4 (RG_FOBSC)	NA	8.42	<0.002	3.23	3.19	NA	NA
2-Mar-21	FR_FRABCH (RG_FO22)	7.99	7.97	<0.002	1.86	1.86	NA	NA
2-Mar-21	FR_FRCP1 (RG_FOBCP)	8.11	8.24	<0.002	3.2	3.49	NA	NA
2-Mar-21	FR_FRNTP (RG_FOUSH)	8.17	8	<0.002	2.9	2.9	NA	NA
2-Mar-21	FR_FRRD (RG_FRUPO)	8.18	8.17	<0.002	2.71	2.71	NA	NA
2-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	8.22	<0.002	2.76	2.64	NA	NA
2-Mar-21	FR_UFR1 (RG_URF1)	8.26	8.26	0.003	0.402	0.389	NA	NA
3-Mar-21	FR_FRNTP (RG_FOUSH)	8.06	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	8.22	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	8.2	8.08	0.0067	2.7	2.66	NA	NA
4-Mar-21	FR_MULTIPLATE (RG_MP1)	8.13	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	8.26	7.39	0.0549	1.17	1.42	NA	NA
5-Mar-21	FR_FR5	8.14	8.23	<0.002	1.55	1.47	NA	NA
5-Mar-21	FR_HC3 (RG_HENUP)	8.02	8.13	<0.002	0.22	0.22	NA	NA
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	8.27	8.33	0.0036	3.02	2.9	NA	NA
8-Mar-21	FR_FRNTP (RG_FOUSH)	8.01	7.64	0.0043	2.83	2.91	NA	NA
9-Mar-21	FR_FR2 (RG_FOUKI)	8.7	8.15	0.0044	2.91	2.9	NA	NA
9-Mar-21	FR_FR4 (RG_FOBSC)	8.695	8.21	0.0065	3.14	3.2	NA	NA
9-Mar-21	FR_FRABCH (RG_FO22)	7.99	8.18	0.0031	1.81	1.92	NA	NA
9-Mar-21	FR_FRCP1 (RG_FOBCP)	8.15	8.03	0.0033	2.94	3.27	NA	NA
9-Mar-21	FR_FRRD (RG_FRUPO)	8.25	8.05	0.002	3.09	3	NA	NA
9-Mar-21	FR_MULTIPLATE (RG_MP1)	8.085	8.15	0.0027	2.79	2.76	NA	NA
9-Mar-21	FR_UFR1 (RG_URF1)	8.21	8.14	0.016	0.387	0.474	NA	NA
11-Mar-21	FR_FR2 (RG_FOUKI)	8.26	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	8.22	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	8.18	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	NA	8.19	0.0089	0.374	0.405	NA	NA
15-Mar-21	FR_HC3 (RG_HENUP)	8.18	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	7.64	8.36	0.0025	1.97	2.02	NA	NA
16-Mar-21	FR_FR1 (RG_FODHE)	8.2	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	8.82	8.16	0.0092	2.29	2.47	NA	NA
16-Mar-21	FR_FR4 (RG_FOBSC)	8.88	8.22	0.0085	2.4	2.62	NA	NA
16-Mar-21	FR_FRABCH (RG_FO22)	8.06	8.3	0.0024	2.02	2.03	NA	NA
16-Mar-21	FR_FRCP1 (RG_FOBCP)	8.34	8.46	0.0118	2.5	2.5	NA	NA
16-Mar-21	FR_FRNTP (RG_FOUSH)	8.14	8.45	0.0092	2.4	2.67	NA	NA
16-Mar-21	FR_FRRD (RG_FRUPO)	8.24	7.96	0.0079	2.61	2.79	NA	NA
16-Mar-21	FR_MULTIPLATE (RG_MP1)	8.58	8.07	0.0087	2.13	2.27	NA	NA
16-Mar-21	FR_UFR1 (RG_URF1)	7.94	8.24	0.0263	0.372	0.461	NA	NA
17-Mar-21	FR_FR2 (RG_FOUKI)	8.22	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	8.12	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	8.07	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.07	0.0133	2.41	2.56	NA	NA
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	8.23	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	8.15	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	8.11	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	8.07	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	8.97	8.24	0.0052	2.62	2.35	NA	NA
23-Mar-21	FR_FR4 (RG_FOBSC)	9	8.26	0.0069	2.67	2.5	NA	NA
23-Mar-21	FR_FRABCH (RG_FO22)	8.09	8.29	<0.002	2.18	2.24	NA	NA
23-Mar-21	FR_FRCP1 (RG_FOBCP)	8.29	8.35	0.0049	2.66	2.67	NA	NA
23-Mar-21	FR_FRNTP (RG_FOUSH)	8.22	8.27	0.0048	2.54	2.59	NA	NA
23-Mar-21	FR_FRRD (RG_FRUPO)	8.59	8.16	0.0179	2.79	2.67	NA	NA
23-Mar-21	FR_MULTIPLATE (RG_MP1)	8.75	8.17	0.0052	2.32	2.1	NA	NA
23-Mar-21	FR_UFR1 (RG_URF1)	8.02	8.16	0.0127	0.36	0.433	NA	NA
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	8.26	8.19	0.0024	2.57	2.59	NA	NA
25-Mar-21	FR_FR2 (RG_FOUKI)	8.27	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	8.7	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	8.09	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	8	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	7.9	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	8.06	8.28	0.0053	2.58	2.48	NA	NA
30-Mar-21	FR_FR4 (RG_FOBSC)	8.22	8.31	0.0061	2.74	2.67	NA	NA
30-Mar-21	FR_FRABCH (RG_FO22)	8	8.1	<0.002	2.13	2.14	NA	NA
30-Mar-21	FR_FRCP1 (RG_FOBCP)	8.23	8.23	<0.002	2.88	2.76	NA	NA
30-Mar-21	FR_FRNTP (RG_FOUSH)	8.29	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	7.88	8.25	0.0091	2.6	2.7	NA	NA
30-Mar-21	FR_MULTIPLATE (RG_MP1)	7.831929	8.26	0.0026	2.57	2.45	NA	NA
30-Mar-21	FR_UFR1 (RG_URF1)	8.33	8.15	0.0102	0.374	0.423	NA	NA
31-Mar-21	FR_FR2 (RG_FOUKI)	8.38	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	8.24	8.17	<0.002	2.65	2.69	NA	NA
31-Mar-21	FR_MULTIPLATE (RG_MP1)	8.25	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	8.22	8.25	0.0028	2.77	2.79	NA	NA
4-Apr-21	FR_FR3 (RG_FOBKS)	8.31	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.31	8.26	0.0028	2.59	2.62	NA	NA
6-Apr-21	FR_FR1 (RG_FODHE)	8.25	8.15	<0.002	0.814	0.856	NA	NA
6-Apr-21	FR_FR2 (RG_FOUKI)	8.18	8.21	0.0025	2.64	2.52	NA	NA
6-Apr-21	FR_FRNTP (RG_FOUSH)	8.11	8.22	0.0046	2.62	2.59	NA	NA
6-Apr-21	FR_HC3 (RG_HENUP)	8.22	8.09	<0.002	0.206	0.228	NA	NA
6-Apr-21	FR_MULTIPLATE (RG_MP1)	8.09	8.16	0.0053	2.41	2.28	NA	NA
6-Apr-21	FR_UFR1 (RG_URF1)	8.45	8.17	0.0064	0.314	0.374	NA	NA
7-Apr-21	FR_FR3 (RG_FOBKS)	8.4	8.35	0.003	2.63	2.47	NA	NA
7-Apr-21	FR_FR5	8.07	8.27	<0.002	1.9	1.92	NA	NA
7-Apr-21	FR_FRABCH (RG_FO22)	8.06	8.15	0.0028	2.32	2.08	NA	NA
7-Apr-21	FR_FRCP1 (RG_FOBCP)	8.44	8.33	0.0026	2.56	2.6	NA	NA
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.35	8.34	0.0038	2.77	2.55	NA	NA
8-Apr-21	FR_FR2 (RG_FOUKI)	8.26	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	8.18	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	8.15	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	7.74	8.15	0.0024	2.17	2.17	NA	NA
9-Apr-21	FR_FR4 (RG_FOBSC)	8.58	8.42	0.0025	2.6	2.46	NA	NA
12-Apr-21	FR_FR1 (RG_FODHE)	8.21	8.39	0.002	0.805	0.81	NA	NA
12-Apr-21	FR_HC3 (RG_HENUP)	8.2	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	8.39	8.37	0.008	2.67	2.63	NA	NA
13-Apr-21	FR_FR4 (RG_FOBSC)	8.23	8.43	0.0038	2.77	2.87	NA	NA
13-Apr-21	FR_FRABCH (RG_FO22)	8	8.26	0.0024	2.08	2.11	0.000168	0.0942
13-Apr-21	FR_FRCP1 (RG_FOBCP)	8.32	8.47	0.0021	2.91	2.6	0.000407	0.0912
13-Apr-21	FR_FRRD (RG_FRUPO)	8.05	8.36	<0.002	2.65	2.63	NA	NA
13-Apr-21	FR_MULTIPLATE (RG_MP1)	7.8	8.37	0.0023	2.52	2.42	NA	NA
13-Apr-21	FR_UFR1 (RG_URF1)	8.08	8.37	0.005	0.358	0.356	NA	NA
14-Apr-21	FR_FR2 (RG_FOUKI)	8.23	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	8.15	8.26	0.0021	2.46	2.62	NA	NA
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.22	8.49	<0.002	2.63	2.76	NA	NA
15-Apr-21	FR_FR4 (RG_FOBSC)	8.36	8.44	<0.002	3.13	2.74	NA	NA
15-Apr-21	FR_FRNTP (RG_FOUSH)	8.18	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	8.12	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	8.68	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.6	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	8.23	8.33	0.0025	0.815	0.827	NA	NA
19-Apr-21	FR_HC3 (RG_HENUP)	8.16	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	8.42	8.33	0.003	2.19	2.26	NA	NA
20-Apr-21	FR_FRNTP (RG_FOUSH)	NA	8.22	0.0027	2.06	2.13	NA	NA
20-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	8.18	0.005	1.85	1.87	NA	NA
20-Apr-21	FR_UFR1 (RG_URF1)	8.25	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	NA	8.53	0.0056	2.28	2.29	NA	NA
21-Apr-21	FR_FRABCH (RG_FO22)	7.89	8.46	0.0049	2.03	2.03	NA	NA
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.33	8.53	0.0045	2.23	2.25	NA	NA
22-Apr-21	FR_FR2 (RG_FOUKI)	8.14	8.23	0.003	2.17	2.16	NA	NA
26-Apr-21	FR_FR1 (RG_FODHE)	8.38	8.21	0.0027	0.704	0.801	NA	NA

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Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	8.05	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	8.36	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	8.25	8.26	0.0034	2.43	2.43	NA	NA
27-Apr-21	FR_FRCP1 (RG_FOBCP)	8.39	8.3	0.0066	2.53	2.59	NA	NA
27-Apr-21	FR_FRNTP (RG_FOUSH)	8.18	8.22	0.0047	2.31	2.32	NA	NA
27-Apr-21	FR_MULTIPLATE (RG_MP1)	8.01	8.17	0.004	2.11	2.1	NA	NA
28-Apr-21	FR_FR2 (RG_FOUKI)	8.36	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	8	8.31	0.003	2.08	2.08	NA	NA
28-Apr-21	FR_FRNTP (RG_FOUSH)	8.32	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	8.3	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	8.37	8.37	0.0044	2.44	2.56	NA	NA
30-Apr-21	FR_FR4 (RG_FOBSC)	8.37	8.3	0.002	2.32	2.33	NA	NA
2-May-21	FR_FR3 (RG_FOBKS)	8.1	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.66	8.3	<0.002	1.72	1.67	NA	NA
3-May-21	FR_HC3 (RG_HENUP)	7.9	8.27	<0.002	0.219	0.255	NA	NA
3-May-21	FR_UFR1 (RG_URF1)	8.12	8.3	0.0059	0.366	0.385	NA	NA
4-May-21	FR_FR1 (RG_FODHE)	8.44	8.24	0.0021	0.676	0.647	NA	NA
4-May-21	FR_FR2 (RG_FOUKI)	8.1	8.34	0.0072	1.75	1.78	NA	NA
4-May-21	FR_FR3 (RG_FOBKS)	8.14	8.35	0.0043	1.74	1.69	NA	NA
4-May-21	FR_FRNTP (RG_FOUSH)	8.13	8.34	0.0051	1.63	1.69	NA	NA
4-May-21	FR_MULTIPLATE (RG_MP1)	8.12	8.34	0.0054	1.53	1.59	NA	NA
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.13	8.36	<0.002	1.68	1.78	NA	NA
5-May-21	FR_FR2 (RG_FOUKI)	8.43	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	7.96	8.33	0.0034	1.53	1.56	NA	NA
5-May-21	FR_FRABCH (RG_FO22)	8.12	8.32	0.0048	1.9	2.08	NA	NA
5-May-21	FR_FRCP1 (RG_FOBCP)	8.37	8.3	0.0066	1.79	1.84	NA	NA
5-May-21	FR_FRNTP (RG_FOUSH)	8.39	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	8.32	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	7.87	8.34	0.0381	1.99	1.89	NA	NA
7-May-21	FR_FR4 (RG_FOBSC)	8.32	8.34	0.0202	1.5	1.65	NA	NA
10-May-21	FR_HC3 (RG_HENUP)	7.95	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	8.4	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	8.13	7.93	<0.002	0.571	0.59	NA	NA
11-May-21	FR_FR2 (RG_FOUKI)	8.41	8.33	0.004	1.78	1.63	NA	NA
11-May-21	FR_FRCP1 (RG_FOBCP)	8.19	8.33	0.0028	1.85	1.86	NA	NA
11-May-21	FR_FRNTP (RG_FOUSH)	8.36	8.31	0.0021	1.74	1.61	NA	NA
11-May-21	FR_MULTIPLATE (RG_MP1)	8.3	8.09	<0.002	1.53	1.42	NA	NA
13-May-21	FR_FR2 (RG_FOUKI)	8.33	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	8.01	8.38	0.0026	1.73	1.78	NA	NA
13-May-21	FR_FRNTP (RG_FOUSH)	8.24	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	8.17	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.42	8.22	0.0024	1.66	1.69	NA	NA
15-May-21	FR_FR3 (RG_FOBKS)	8.29	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.61	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	8.19	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	8	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.17	8.24	0.0551	0.972	1.12	NA	NA
18-May-21	FR_FR2 (RG_FOUKI)	8.39	8.29	0.0296	0.836	1	NA	NA
18-May-21	FR_FR4 (RG_FOBSC)	8.36	8.24	0.0446	0.955	1.25	NA	NA
18-May-21	FR_FRABCH (RG_FO22)	7.99	8.19	0.126	1.16	1.38	NA	NA
18-May-21	FR_FRCP1 (RG_FOBCP)	7.98	8.11	0.0308	1.06	1.16	NA	NA
18-May-21	FR_FRRD (RG_FRUPO)	7.62	8.33	0.042	1.25	1.53	NA	NA
18-May-21	FR_MULTIPLATE (RG_MP1)	8.31	8.27	0.023	0.757	0.846	NA	NA
18-May-21	FR_UFR1 (RG_URF1)	8.11	7.87	0.0282	0.33	0.397	NA	NA
20-May-21	FR_FR2 (RG_FOUKI)	8.21	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	7.47	8.12	0.0082	1.26	1.21	NA	NA
20-May-21	FR_FRNTP (RG_FOUSH)	8.2	8.02	0.0376	0.772	0.849	NA	NA
20-May-21	FR_MULTIPLATE (RG_MP1)	8.11	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	8.32	8.29	0.0092	1.15	1.12	NA	NA
25-May-21	FR_FR4 (RG_FOBSC)	8.12	8.26	0.0438	1.43	1.45	NA	NA
25-May-21	FR_FRABCH (RG_FO22)	7.85	8.13	0.0083	1.63	1.64	NA	NA
25-May-21	FR_FRCP1 (RG_FOBCP)	8.16	8.11	0.0051	1.6	1.59	NA	NA
25-May-21	FR_FRRD (RG_FRUPO)	7.81	8.24	0.0061	1.78	1.76	NA	NA
25-May-21	FR_MULTIPLATE (RG_MP1)	8.17	8.25	0.0032	1.04	1.01	NA	NA
25-May-21	FR_UFR1 (RG_URF1)	8.48	7.94	<0.002	0.35	0.36	NA	NA
26-May-21	FR_FR1 (RG_FODHE)	8.49	8.26	0.0041	0.453	0.462	NA	NA
26-May-21	FR_HC3 (RG_HENUP)	8.43	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.21	8.28	0.0058	1.2	1.22	NA	NA
27-May-21	FR_FR4 (RG_FOBSC)	8.46	8.29	0.0039	1.3	1.27	NA	NA
27-May-21	FR_FRNTP (RG_FOUSH)	8.17	8.34	0.0108	0.946	0.912	NA	NA
28-May-21	FR_FR2 (RG_FOUKI)	8.15	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	8.05	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	8.12	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	8.5	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.5	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	8.13	8.16	<0.002	0.395	0.44	NA	NA
31-May-21	FR_HC3 (RG_HENUP)	7.78	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	8.18	8.07	0.0056	1.01	1.07	NA	NA
1-Jun-21	FR_FR2 (RG_FOUKI)	8.37	8.17	0.0122	0.778	0.727	NA	NA
1-Jun-21	FR_FR4 (RG_FOBSC)	8.26	8.15	0.0142	0.908	0.948	NA	NA
1-Jun-21	FR_FRABCH (RG_FO22)	7.88	8.27	0.0173	1.25	1.32	NA	NA
1-Jun-21	FR_FRCP1 (RG_FOBCP)	7.99	8.28	0.0155	1.2	1.24	NA	NA
1-Jun-21	FR_FRNTP (RG_FOUSH)	NA	8.22	0.0101	0.861	0.786	NA	NA
1-Jun-21	FR_FRRD (RG_FRUPO)	8	8.14	0.0131	1.37	1.3	NA	NA
1-Jun-21	FR_MULTIPLATE (RG_MP1)	8.33	8.14	0.0089	0.738	0.682	NA	NA
1-Jun-21	FR_UFR1 (RG_URF1)	8.03	8.21	0.0098	0.309	0.375	NA	NA
3-Jun-21	FR_FR3 (RG_FOBKS)	8.02	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	7.97	8.12	0.0656	1.11	1.18	NA	NA
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.01	7.63	0.0381	0.856	0.824	NA	NA
7-Jun-21	FR_FR1 (RG_FODHE)	8.17	8.15	0.0057	0.449	0.452	NA	NA
7-Jun-21	FR_HC3 (RG_HENUP)	7.88	8.14	<0.002	0.181	0.18	NA	NA
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.19	8.23	0.0157	1.12	1.06	NA	NA
7-Jun-21	GH_PC2 (RG_FODPO)	7.95	8.25	0.0169	1.85	1.77	NA	NA
8-Jun-21	FR_FR2 (RG_FOUKI)	8.53	8.23	0.0208	1.02	1.12	NA	NA
8-Jun-21	FR_FR4 (RG_FOBSC)	NA	8.19	0.0238	1.36	1.56	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	7.94	8.3	0.0232	1.8	1.8	NA	NA
8-Jun-21	FR_FRCP1 (RG_FOBCP)	7.65	8.23	0.0094	1.76	1.8	NA	NA
8-Jun-21	FR_FRRD (RG_FRUPO)	8.2	8.32	0.0104	1.87	2.33	NA	NA
8-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	8.16	0.0093	0.814	0.915	NA	NA
8-Jun-21	FR_UFR1 (RG_URF1)	8.21	8.2	0.0065	0.413	0.354	NA	NA
9-Jun-21	FR_FR3 (RG_FOBKS)	8.03	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	8.18	8.3	0.006	1.07	1.08	NA	NA
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.07	8.35	0.0047	1.22	1.16	NA	NA
10-Jun-21	FR_FR4 (RG_FOBSC)	7.91	8.43	0.0045	2.14	1.96	NA	NA
11-Jun-21	FR_FR2 (RG_FOUKI)	8.17	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	8.11	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	8.42	8.35	0.0068	1.9	1.91	NA	NA
14-Jun-21	FR_FOUCL (RG_FOUCL)	8.076666667	8.37	0.0029	0.437	0.44	0.00005	0.0069
14-Jun-21	FR_FR1 (RG_FODHE)	8.2425	8.295	0.00255	0.4715	0.47	0.000046	0.0042
14-Jun-21	FR_FR3 (RG_FOBKS)	8.16	8.31	0.0081	1.05	1.01	NA	NA
14-Jun-21	FR_FR5	7.92	8.33	0.0165	1.36	1.32	NA	NA
14-Jun-21	FR_HC3 (RG_HENUP)	7.75	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	8.186666667	8.36	0.003	0.81	0.852	0.000111	0.0151
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.18	8.29	0.008	1.09	1.08	NA	NA
14-Jun-21	RG_FO26	8.206666667	8.32	0.003	0.361	0.379	0.000019	0.000424
15-Jun-21	FR_FR2 (RG_FOUKI)	NA	8.36	0.0077	0.915	0.852	NA	NA
15-Jun-21	FR_FR4 (RG_FOBSC)	NA	8.39	0.0062	1.09	1.06	NA	NA
15-Jun-21	FR_FRABCH (RG_FO22)	7.85	8.42	0.0114	1.31	1.28	NA	NA
15-Jun-21	FR_FRCP1 (RG_FOBCP)	7.95	8.41	0.0074	1.29	1.31	NA	NA
15-Jun-21	FR_FRNTP (RG_FOUSH)	8.1575	8.345	0.0046	0.835	0.8615	0.000115	0.0123
15-Jun-21	FR_FRRD (RG_FRUPO)	NA	8.38	0.0093	1.62	1.56	NA	NA
15-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	8.3	0.0124	0.7	0.687	NA	NA
15-Jun-21	FR_UFR1 (RG_URF1)	8.1775	8.345	0.008	0.346	0.3675	0.00004	0.000392
15-Jun-21	RG_FOUNGD	8.12	8.37	0.0034	0.618	0.627	0.000061	0.00852
16-Jun-21	FR_FR2 (RG_FOUKI)	8.07	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	8.184	8.36	<0.002	1.02	0.99	0.000129	0.014
16-Jun-21	FR_FR4 (RG_FOBSC)	7.99	8.44	0.0061	1.48	1.39	NA	NA
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	8.183333333	8.32	0.0056	0.685	0.684	0.000066	0.01
16-Jun-21	FR_FRNTP (RG_FOUSH)	8.095	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	8.166666667	8.19	<0.002	0.161	0.163	0.000021	0.000305
16-Jun-21	FR_MULTIPLATE (RG_MP1)	8.17	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.116	8.395	0.00295	1.075	0.9735	0.000124	0.0187
17-Jun-21	FR_FR2 (RG_FOUKI)	8.243333333	8.36	0.0077	1.1	1.08	0.000127	0.0157
17-Jun-21	FR_FR4 (RG_FOBSC)	8.046666667	8.43	<0.002	2.14	1.87	0.000112	0.0522
17-Jun-21	FR_FRCP1 (RG_FOBCP)	8.096666667	8.41	0.0024	1.57	1.48	0.000111	0.0387
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	8.176666667	8.41	0.0038	1.62	1.48	0.000114	0.0382
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.39	0.0063	1.23	1.14	NA	NA
17-Jun-21	GH_PC2 (RG_FODPO)	8.013333333	8.43	0.0088	1.79	1.76	0.000112	0.0509
18-Jun-21	FR_FRABCH (RG_FO22)	8.016666667	8.28	0.0129	1.52	1.59	0.000107	0.0495
18-Jun-21	FR_FRRD (RG_FRUPO)	8.016666667	8.21	<0.002	1.74	1.77	0.000105	0.0589
18-Jun-21	RG_FOUEW	8.046666667	8.26	0.002	1.37	1.4	0.0001	0.0429
21-Jun-21	FR_FR1 (RG_FODHE)	8.13	8.315	0.00215	0.454	0.4275	NA	NA
21-Jun-21	FR_FR2 (RG_FOUKI)	8.11	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	8.05	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	7.78	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	7.97	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.03	8.32	0.0022	1.13	1.19	NA	NA
21-Jun-21	FR_UFR1 (RG_URF1)	8.16	8.355	0.0046	0.3655	0.3615	NA	NA
22-Jun-21	FR_FR2 (RG_FOUKI)	8.11	8.27	0.0023	1.18	0.977	NA	NA
22-Jun-21	FR_FRABCH (RG_FO22)	7.89	8.25	0.0057	1.64	1.45	NA	NA
22-Jun-21	FR_FRCP1 (RG_FOBCP)	8	8.3	0.0027	1.6	1.45	NA	NA
22-Jun-21	FR_FRNTP (RG_FOUSH)	NA	8.26	0.0043	1.04	0.889	NA	NA
22-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	8.3	0.0025	0.828	0.762	NA	NA
23-Jun-21	FR_FR4 (RG_FOBSC)	8.02	8.2	<0.002	1.43	1.25	NA	NA
28-Jun-21	FR_FR1 (RG_FODHE)	8.07	8.18	0.0021	0.359	0.385	NA	NA
28-Jun-21	FR_FR3 (RG_FOBKS)	8.53	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	8.1	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	8.275	8.23	0.0024	1.09	1.11	NA	NA
29-Jun-21	FR_FR2 (RG_FOUKI)	NA	8.36	0.0029	1.23	1.25	NA	NA
29-Jun-21	FR_FR4 (RG_FOBSC)	NA	8.39	0.0028	1.36	1.4	NA	NA
29-Jun-21	FR_FRABCH (RG_FO22)	7.91	8.25	<0.002	1.54	1.57	NA	NA
29-Jun-21	FR_FRCP1 (RG_FOBCP)	7.98	8.28	<0.002	1.51	1.59	NA	NA
29-Jun-21	FR_FRNTP (RG_FOUSH)	NA	8.29	<0.002	1.03	1.02	NA	NA
29-Jun-21	FR_FRRD (RG_FRUPO)	NA	8.35	0.0026	1.83	1.85	NA	NA
29-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	8.3	0.0038	0.893	0.91	NA	NA
29-Jun-21	FR_UFR1 (RG_URF1)	8.5	8.35	0.0032	0.401	0.389	NA	NA
30-Jun-21	FR_FR1 (RG_FODHE)	8.21	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	8.26	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	8.25	8.33	0.0026	1.42	1.42	NA	NA
30-Jun-21	FR_FRNTP (RG_FOUSH)	8.11	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	8.18	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	8.39	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	8.11	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	8.23	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	8.17	8.08	0.0035	0.469	0.463	NA	NA
2-Jul-21	FR_UFR1 (RG_URF1)	8.23	8.21	0.0041	0.45	0.446	NA	NA
4-Jul-21	FR_FR2 (RG_FOUKI)	8.09	8.27	<0.002	1.35	1.51	NA	NA
4-Jul-21	FR_FR3 (RG_FOBKS)	8.47	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	NA	8.2	<0.002	1.21	1.37	NA	NA
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	8.42	8.26	<0.002	1.46	1.38	NA	NA
5-Jul-21	FR_HC3 (RG_HENUP)	8.14	8.25	<0.002	0.185	0.172	NA	NA
6-Jul-21	FR_FR1 (RG_FODHE)	8.07	8.31	0.0027	0.409	0.413	NA	NA
6-Jul-21	FR_FR4 (RG_FOBSC)	NA	8.28	0.0072	1.24	1.3	NA	NA
6-Jul-21	FR_FRABCH (RG_FO22)	7.91	8.39	0.003	1.69	1.75	NA	NA
6-Jul-21	FR_FRCP1 (RG_FOBCP)	8.03	8.42	0.006	1.64	1.66	NA	NA
6-Jul-21	FR_FRRD (RG_FRUPO)	7.89	8.21	0.0071	1.81	1.86	NA	NA
6-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	8.22	0.0061	0.913	0.898	NA	NA
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	8.12	8.41	0.006	1.27	1.28	NA	NA
6-Jul-21	FR_UFR1 (RG_URF1)	8.41	8.33	0.0074	0.374	0.449	NA	NA
7-Jul-21	FR_FR2 (RG_FOUKI)	8.37	8.33	<0.002	1.27	1.26	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	7.423333333	8.24	<0.002	1.16	1.23	NA	NA
7-Jul-21	GH_PC2 (RG_FODPO)	7.88	8.11	0.002	1.69	1.7	NA	NA
8-Jul-21	FR_FR3 (RG_FOBKS)	8.2	8.3	0.013	1.46	1.49	NA	NA
8-Jul-21	FR_FR5	7.96	8.27	<0.002	1.51	1.57	NA	NA
9-Jul-21	FR_FRNTP (RG_FOUSH)	8.17	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	7.95	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	8.19	8.28	0.0021	0.514	0.492	NA	NA
12-Jul-21	FR_HC3 (RG_HENUP)	8.2	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	8.23	8.29	0.0037	1.59	1.62	NA	NA
13-Jul-21	FR_FR2 (RG_FOUKI)	8.44	8.35	<0.002	1.72	1.5	NA	NA
13-Jul-21	FR_FR4 (RG_FOBSC)	8.44	8.35	<0.002	1.69	1.62	NA	NA
13-Jul-21	FR_FRABCH (RG_FO22)	8.15	8.28	0.0131	2.08	1.83	0.000146	0.0551
13-Jul-21	FR_FRCP1 (RG_FOBCP)	8.18	8.35	0.0026	1.86	1.88	0.000162	0.0415
13-Jul-21	FR_FRNTP (RG_FOUSH)	8.32	8.33	0.0121	1.39	1.35	NA	NA
13-Jul-21	FR_FRRD (RG_FRUPO)	7.94	8.17	<0.002	2.16	2.05	NA	NA
13-Jul-21	FR_MULTIPLATE (RG_MP1)	8.26	8.26	<0.002	1.22	1.21	NA	NA
13-Jul-21	FR_UFR1 (RG_URF1)	8.42	8.3	0.0033	0.43	0.411	NA	NA
14-Jul-21	FR_FR2 (RG_FOUKI)	8.37	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	8.43	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	8.31	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	8.32	8.23	<0.002	1.7	1.66	NA	NA
18-Jul-21	FR_FR3 (RG_FOBKS)	8.49	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	8.45	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	8.35	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	8.4	8.45	<0.002	1.41	1.34	NA	NA
19-Jul-21	FR_MULTIPLATE (RG_MP1)	8.19	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	8.44	8.45	<0.002	1.86	1.82	NA	NA
20-Jul-21	FR_FR4 (RG_FOBSC)	8.4	8.47	0.0096	2.02	1.99	NA	NA
20-Jul-21	FR_FRRD (RG_FRUPO)	7.83	8.33	<0.002	2.41	2.44	NA	NA
20-Jul-21	FR_MULTIPLATE (RG_MP1)	8.27	8.38	0.0236	1.44	1.42	NA	NA
20-Jul-21	FR_UFR1 (RG_URF1)	8.66	8.41	0.0032	0.469	0.482	NA	NA
22-Jul-21	FR_FRABCH (RG_FO22)	8.19	8.35	0.003	1.95	2.07	NA	NA
26-Jul-21	FR_FRABCH (RG_FO22)	8	8.05	<0.002	2.3	2.03	NA	NA
27-Jul-21	FR_FR2 (RG_FOUKI)	NA	8.04	0.0022	2.27	2.02	NA	NA
27-Jul-21	FR_FRNTP (RG_FOUSH)	NA	8.03	<0.002	2.19	1.9	NA	NA
27-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	8.02	<0.002	1.94	1.7	NA	NA
31-Jul-21	FR_FR3 (RG_FOBKS)	8.28	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	8.12	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.2	<0.002	2.45	2.36	NA	NA
4-Aug-21	FR_FR2 (RG_FOUKI)	8.32	8.19	<0.002	2.18	2.18	NA	NA
4-Aug-21	FR_FR3 (RG_FOBKS)	8.32	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	8.29	8.24	0.0059	2.03	2.06	NA	NA
4-Aug-21	FR_MULTIPLATE (RG_MP1)	8.13	8.32	0.002	1.79	1.71	NA	NA
5-Aug-21	FR_FRABCH (RG_FO22)	7.97	8.23	0.0028	2.34	2.17	NA	NA
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	8.29	8.49	<0.002	2.75	2.57	NA	NA
6-Aug-21	FR_FR2 (RG_FOUKI)	8.22	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	8.24	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	8.11	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	8.36	8.14	<0.002	1.65	1.78	NA	NA
10-Aug-21	FR_FR1 (RG_FODHE)	8.29	8.31	0.0023	0.738	0.725	NA	NA
10-Aug-21	FR_FR2 (RG_FOUKI)	8.17	8.27	0.0054	2	2	NA	NA
10-Aug-21	FR_FR4 (RG_FOBSC)	8.19	8.47	0.0028	2.19	2.23	NA	NA
10-Aug-21	FR_FRABCH (RG_FO22)	7.98	8.25	<0.002	2.07	2.04	NA	NA
10-Aug-21	FR_FRCP1 (RG_FOBCP)	8.24	8.43	0.0029	2.3	2.23	NA	NA
10-Aug-21	FR_FRRD (RG_FRUPO)	7.64	8.29	0.0039	2.44	2.49	NA	NA
10-Aug-21	FR_MULTIPLATE (RG_MP1)	8.02	8.35	0.0035	1.58	1.59	NA	NA
10-Aug-21	FR_UFR1 (RG_URF1)	8.28	8.34	0.0044	0.474	0.475	NA	NA
11-Aug-21	FR_FR3 (RG_FOBKS)	NA	8.26	<0.002	2.17	2.23	NA	NA
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.46	<0.002	2.3	2.36	NA	NA
12-Aug-21	FR_FR2 (RG_FOUKI)	8.22	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	NA	8.16	<0.002	1.98	2.04	NA	NA
12-Aug-21	FR_FR4 (RG_FOBSC)	NA	8.34	0.0038	2.25	2.39	NA	NA
12-Aug-21	FR_FRNTP (RG_FOUSH)	8.28	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	8.27	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.21	0.004	2.15	2.2	NA	NA
13-Aug-21	FR_FR3 (RG_FOBKS)	NA	8.22	0.0034	2.08	2.06	NA	NA
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	8.24	8.25	0.0294	2.27	2.21	NA	NA
14-Aug-21	FR_FR3 (RG_FOBKS)	NA	8.24	0.0031	2.14	2.16	NA	NA
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.29	0.0067	2.24	2.33	NA	NA
15-Aug-21	FR_FR3 (RG_FOBKS)	8.2	8.18	<0.002	2.09	2.13	NA	NA
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	8.12	8.36	0.0026	2.26	2.36	NA	NA
16-Aug-21	FR_FR3 (RG_FOBKS)	NA	8.16	0.003	2.1	2.04	NA	NA
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.34	0.0047	2.34	2.28	NA	NA
17-Aug-21	FR_FR2 (RG_FOUKI)	7.53	8.33	0.0388	2.22	2.31	NA	NA
17-Aug-21	FR_FR4 (RG_FOBSC)	7.99	8.37	0.0819	2.51	2.97	NA	NA
17-Aug-21	FR_FR5	8.05	8.34	0.0054	1.85	1.74	NA	NA
17-Aug-21	FR_FRABCH (RG_FO22)	7.91	8.16	0.0156	2.15	2.09	NA	NA
17-Aug-21	FR_FRCP1 (RG_FOBCP)	8.21	8.26	0.052	2.47	2.54	NA	NA
17-Aug-21	FR_FRRD (RG_FRUPO)	7.06	8.33	0.0071	2.7	2.5	NA	NA
17-Aug-21	FR_HC3 (RG_HENUP)	8.25	8.19	0.0136	0.251	0.289	NA	NA
17-Aug-21	FR_MULTIPLATE (RG_MP1)	7.36	8.35	<0.002	1.52	1.57	NA	NA
17-Aug-21	FR_UFR1 (RG_URF1)	8.34	8.27	0.0555	0.507	0.54	NA	NA
18-Aug-21	GH_PC2 (RG_FODPO)	7.98	8.19	0.0095	2.01	1.89	NA	NA
19-Aug-21	FR_FR2 (RG_FOUKI)	NA	8.23	0.0045	1.5	1.48	NA	NA
19-Aug-21	FR_FRNTP (RG_FOUSH)	NA	8.21	0.0067	1.41	1.34	NA	NA
19-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	8.19	0.004	1.16	1.16	NA	NA
24-Aug-21	FR_FR2 (RG_FOUKI)	8.22	8.33	0.004	1.73	1.71	NA	NA
24-Aug-21	FR_FR4 (RG_FOBSC)	8.28	8.35	0.004	1.83	1.86	NA	NA
24-Aug-21	FR_FRABCH (RG_FO22)	7.98	8.25	0.033	1.98	2.07	NA	NA
24-Aug-21	FR_FRCP1 (RG_FOBCP)	8.34	8.32	0.0071	1.84	1.96	NA	NA
24-Aug-21	FR_FRRD (RG_FRUPO)	7.78	8.25	0.005	2.41	2.4	NA	NA
24-Aug-21	FR_MULTIPLATE (RG_MP1)	8.07	8.28	0.0029	1.24	1.21	NA	NA
24-Aug-21	FR_UFR1 (RG_URF1)	8.26	8.29	0.0047	0.412	0.421	NA	NA
25-Aug-21	FR_FR2 (RG_FOUKI)	8.34	8.28	<0.002	1.84	1.67	NA	NA
25-Aug-21	FR_FRNTP (RG_FOUSH)	8.3	8.34	<0.002	1.79	1.64	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	8.19	8.31	<0.002	1.28	1.23	NA	NA
28-Aug-21	FR_FR3 (RG_FOBKS)	8.28	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	8.28	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	8.11	8.27	0.0023	2.22	2.12	NA	NA
31-Aug-21	FR_FR4 (RG_FOBSC)	NA	8.4	0.002	2.42	2.3	NA	NA
31-Aug-21	FR_FRABCH (RG_FO22)	7.95	8.29	0.0021	2.19	2.17	NA	NA
31-Aug-21	FR_FRCP1 (RG_FOBCP)	8.17	8.37	0.003	2.42	2.34	NA	NA
31-Aug-21	FR_FRRD (RG_FRUPO)	7.79	8.19	0.0033	2.64	2.45	NA	NA
31-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	8.33	0.0038	1.6	1.54	NA	NA
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.39	<0.002	2.5	2.33	NA	NA
31-Aug-21	FR_UFR1 (RG_URF1)	7.95	8.4	0.0028	0.411	0.402	NA	NA
1-Sep-21	FR_FRNTP (RG_FOUSH)	NA	8.16	<0.002	2.3	2.19	NA	NA
3-Sep-21	FR_FR4 (RG_FOBSC)	8.41	8.27	<0.002	2.47	2.36	NA	NA
7-Sep-21	FR_FR2 (RG_FOUKI)	9.59	8.18	<0.002	2.29	2.22	NA	NA
7-Sep-21	FR_FR4 (RG_FOBSC)	NA	8.39	<0.002	2.52	2.44	NA	NA
7-Sep-21	FR_FRABCH (RG_FO22)	8.07	8.2	0.0026	2.2	2.09	NA	NA
7-Sep-21	FR_FRCP1 (RG_FOBCP)	8.29	8.33	<0.002	2.54	2.42	NA	NA
7-Sep-21	FR_FRRD (RG_FRUPO)	9.07	8.22	<0.002	2.65	2.53	NA	NA
7-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	8.26	<0.002	1.68	1.61	NA	NA
7-Sep-21	FR_UFR1 (RG_URF1)	8.17	8.31	<0.002	0.428	0.368	NA	NA
8-Sep-21	FR_FR2 (RG_FOUKI)	8.2	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	8.2	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	8.1	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	8.31	8.32	0.0031	2.23	2.17	NA	NA
9-Sep-21	FR_FR3 (RG_FOBKS)	NA	8.32	<0.002	2.34	2.11	0.000267	0.0438
9-Sep-21	FR_FRNTP (RG_FOUSH)	8.24	8.36	0.0041	2.16	2.15	NA	NA
9-Sep-21	FR_MULTIPLATE (RG_MP1)	8.25	8.38	0.0048	1.72	1.71	NA	NA
11-Sep-21	GH_PC2 (RG_FODPO)	NA	8.19	<0.002	2.19	2.22	0.000184	0.0843
11-Sep-21	RG_FOUEW	NA	8.24	0.0024	2.04	2.02	0.000245	0.0792
12-Sep-21	FR_FR3 (RG_FOBKS)	8.44	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	NA	8.25	0.0025	2.19	2.18	0.000194	0.0874
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	8.19	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	NA	8.32	0.0021	0.804	0.787	0.00008	0.0168
13-Sep-21	FR_FR1 (RG_FODHE)	NA	8.39	<0.002	0.709	0.7	0.000075	0.0136
13-Sep-21	FR_FR4 (RG_FOBSC)	NA	8.44	<0.002	2.7	2.71	0.000512	0.0832
13-Sep-21	FR_FR5	8.16	8.37	0.0054	1.78	1.85	NA	NA
13-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	8.45	<0.002	2.65	2.72	0.000383	0.0797
13-Sep-21	FR_FRRD (RG_FRUPO)	7.5	8.25	0.0031	2.62	2.57	NA	NA
13-Sep-21	FR_HC3 (RG_HENUP)	8.14	8.22	<0.002	0.205	0.208	NA	NA
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	8.23	8.41	<0.002	2.73	2.65	NA	NA
13-Sep-21	GH_PC2 (RG_FODPO)	7.9	8.31	<0.002	2.26	2.28	NA	NA
14-Sep-21	FR_FR2 (RG_FOUKI)	8.32	8.27	<0.002	2.44	2.53	NA	NA
14-Sep-21	FR_FR3 (RG_FOBKS)	8.25	8.26	<0.002	2.43	2.43	NA	NA
14-Sep-21	FR_FRNTP (RG_FOUSH)	8.26	8.31	0.0042	2.42	2.55	NA	NA
14-Sep-21	FR_MULTIPLATE (RG_MP1)	8.19	8.36	0.0023	1.73	1.8	NA	NA
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.45	<0.002	2.75	2.62	0.000398	0.0723
15-Sep-21	FR_FR1 (RG_FODHE)	8.56	8.33	0.0026	0.676	0.683	NA	NA
15-Sep-21	FR_FR2 (RG_FOUKI)	8.57	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	8.55	<0.002	2.71	2.66	0.000384	0.0762
15-Sep-21	FR_FRNTP (RG_FOUSH)	8.45	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	8.29	8.47	<0.002	1.76	1.85	0.000235	0.0496
15-Sep-21	RG_FO26	NA	8.48	<0.002	0.367	0.389	<0.00001	0.000411
16-Sep-21	FR_FRABCH (RG_FO22)	8.07	8.21	<0.002	2.17	2.03	NA	NA
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	8.4	<0.002	1.51	1.48	NA	NA
16-Sep-21	FR_FRNTP (RG_FOUSH)	NA	8.38	<0.002	1.96	1.87	NA	NA
16-Sep-21	FR_HC3 (RG_HENUP)	NA	8.33	<0.002	0.197	0.192	<0.00001	0.00118
16-Sep-21	RG_FOUNGD	NA	8.37	0.002	1.37	1.35	0.000116	0.0378
17-Sep-21	FR_FR4 (RG_FOBSC)	8.46	8.47	0.0022	2.72	2.56	NA	NA
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	0.000131	0.0409
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	0.000375	0.0407
19-Sep-21	FR_FRRD (RG_FRUPO)	NA	8.31	0.0023	2.76	2.77	0.000125	0.112
20-Sep-21	FR_FOUCL (RG_FOUCL)	8.143333333	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	8.22	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	8.516666667	8.25	<0.002	2.79	2.99	0.000479	0.04
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	8.606666667	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	8.386666667	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	7.953333333	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	8.36	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	8.41	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	NA	8.44	0.0024	0.444	0.42	0.000025	0.000685
20-Sep-21	RG_FO26	8.443333333	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	8.1	8.21	<0.002	2.59	2.49	NA	NA
21-Sep-21	FR_FR3 (RG_FOBKS)	8.416666667	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	8.413333333	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	7.966666667	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	8.8	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	8.13	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	8.12	8.28	<0.002	2.48	2.46	NA	NA
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	8.09	8.24	0.0029	1.99	1.89	NA	NA
21-Sep-21	FR_UFR1 (RG_URF1)	8.36	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	7.863333333	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	8.173333333	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	8.483333333	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	8.34	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	NA	8.12	<0.002	2.29	2.42	NA	NA
22-Sep-21	FR_FRNTP (RG_FOUSH)	8.2	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	8.24	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	8.03	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	8.3	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	8.25	8.47	<0.002	2.81	2.71	NA	NA
28-Sep-21	FR_FR2 (RG_FOUKI)	NA	8.22	<0.002	2.53	2.67	NA	NA
28-Sep-21	FR_FRABCH (RG_FO22)	8.07	8.22	0.0023	2.17	2.24	NA	NA
28-Sep-21	FR_FRNTP (RG_FOUSH)	NA	8.27	<0.002	2.52	2.6	NA	NA
28-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	8.25	0.0029	1.91	1.96	NA	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	NA	8.16	0.0052	2.19	2.25	NA	NA
4-Oct-21	FR_FR1 (RG_FODHE)	8.53	8.34	<0.002	0.729	0.735	NA	NA
4-Oct-21	FR_HC3 (RG_HENUP)	8.42	8.18	0.0026	0.232	0.256	NA	NA
5-Oct-21	FR_FR2 (RG_FOUKI)	8.38	8.29	0.009	2.84	2.94	NA	NA
5-Oct-21	FR_MULTIPLATE (RG_MP1)	8.33	8.33	<0.002	1.9	1.92	NA	NA
6-Oct-21	FR_FR3 (RG_FOBKS)	8.3	8.16	0.0048	3.23	3.38	NA	NA
6-Oct-21	FR_FR5	8.22	7.88	0.004	0.991	0.963	NA	NA
6-Oct-21	FR_FRABCH (RG_FO22)	8.06	8.09	0.0036	2.21	2.26	NA	NA
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	8.25	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	7.82	7.95	<0.002	2.37	2.54	NA	NA
7-Oct-21	FR_FR4 (RG_FOBSC)	NA	8.39	0.0037	2.68	2.48	NA	NA
8-Oct-21	FR_FR2 (RG_FOUKI)	8.37	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	8.35	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	8.29	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	NA	8.2	0.0023	2.16	2.13	NA	NA
9-Oct-21	FR_FRNTP (RG_FOUSH)	NA	8.25	0.0033	2.01	1.95	NA	NA
10-Oct-21	FR_FR2 (RG_FOUKI)	NA	8.27	0.0025	2.16	2.07	NA	NA
10-Oct-21	FR_FRNTP (RG_FOUSH)	NA	8.26	0.0035	1.95	1.88	NA	NA
11-Oct-21	FR_FR2 (RG_FOUKI)	NA	8.24	<0.002	2.13	2	NA	NA
11-Oct-21	FR_FR3 (RG_FOBKS)	8.19	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	NA	8.25	0.0038	1.96	1.99	NA	NA
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	8.135	8.37	<0.002	2.52	2.53	NA	NA
12-Oct-21	FR_FR2 (RG_FOUKI)	8.29	8.31	0.0024	2.12	2.08	NA	NA
12-Oct-21	FR_FR4 (RG_FOBSC)	8.43	8.37	0.0025	2.54	2.33	NA	NA
12-Oct-21	FR_FRABCH (RG_FO22)	7.84	8.2	0.0055	2.21	2.22	NA	NA
12-Oct-21	FR_FRCP1 (RG_FOBCP)	8.14	8.37	0.0028	2.47	2.56	NA	NA
12-Oct-21	FR_FRRD (RG_FRUPO)	7.96	8.15	0.0032	2.9	2.78	NA	NA
12-Oct-21	FR_MULTIPLATE (RG_MP1)	8.17	8.28	0.0069	2.01	1.99	NA	NA
13-Oct-21	FR_FR2 (RG_FOUKI)	NA	8.22	0.0022	2.47	2.66	NA	NA
13-Oct-21	FR_FRNTP (RG_FOUSH)	NA	8.19	0.0057	2.44	2.6	NA	NA
14-Oct-21	FR_FR2 (RG_FOUKI)	8.3	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	8.31	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	8.22	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	8.59	8.25	<0.002	2.83	2.64	NA	NA
19-Oct-21	FR_FR4 (RG_FOBSC)	8.6	8.36	<0.002	3.04	2.82	NA	NA
19-Oct-21	FR_FRABCH (RG_FO22)	8.06	8.23	0.007	2	2.24	NA	NA
19-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	8.42	<0.002	2.99	3.05	NA	NA
19-Oct-21	FR_FRNTP (RG_FOUSH)	8	8.28	<0.002	2.71	2.8	NA	NA
19-Oct-21	FR_FRRD (RG_FRUPO)	8.09	7.983	0.0039	2.705	2.67	NA	NA
19-Oct-21	FR_MULTIPLATE (RG_MP1)	8.42	8.3	<0.002	1.91	1.73	NA	NA
19-Oct-21	FR_UFR1 (RG_URF1)	NA	8.22	0.00285	0.412	0.405	NA	NA
20-Oct-21	FR_FR2 (RG_FOUKI)	NA	7.89625	0.0025	2.67	2.72	NA	NA
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	8.25	8.43	0.0022	2.99	2.91	NA	NA
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	7.39	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	8.16	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	8.1	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	8.64	8.31	<0.002	2.44	2.78	NA	NA
26-Oct-21	FR_FR4 (RG_FOBSC)	8.48	8.42	<0.002	2.7	2.94	NA	NA
26-Oct-21	FR_FRABCH (RG_FO22)	8.06	8.18	0.0047	1.96	2.24	NA	NA
26-Oct-21	FR_FRCP1 (RG_FOBCP)	8.35	8.36	0.0022	2.79	2.86	NA	NA
26-Oct-21	FR_FRNTP (RG_FOUSH)	8	8.26	0.0036	2.69	2.72	NA	NA
26-Oct-21	FR_FRRD (RG_FRUPO)	7.82	8.3	0.0027	2.68	2.85	NA	NA
26-Oct-21	FR_MULTIPLATE (RG_MP1)	8.44	8.36	0.0051	1.7	1.91	NA	NA
26-Oct-21	FR_UFR1 (RG_URF1)	8.04	8.34	0.0023	0.386	0.39	NA	NA
27-Oct-21	FR_FOUCL (RG_FOUCL)	7.875	8.14	<0.002	0.978	0.935	NA	NA
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	7.81	8.17	<0.002	2.01	1.9	NA	NA
28-Oct-21	FR_FRABCH (RG_FO22)	NA	8.33	<0.002	2.07	2.12	NA	NA
28-Oct-21	FR_FRRD (RG_FRUPO)	NA	8.32	0.0027	2.7	2.76	NA	NA
29-Oct-21	FR_FR4 (RG_FOBSC)	NA	8.39	<0.002	2.98	3.06	NA	NA
29-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	8.41	<0.002	2.99	3.08	NA	NA
2-Nov-21	FR_FR2 (RG_FOUKI)	8.23	8.14	<0.002	3.04	3.18	NA	NA
2-Nov-21	FR_FR4 (RG_FOBSC)	8.23	8.25	<0.002	3.42	3.3	NA	NA
2-Nov-21	FR_FRABCH (RG_FO22)	7.96	8.14	<0.002	2.06	2.13	NA	NA
2-Nov-21	FR_FRCP1 (RG_FOBCP)	8.25	8.3	<0.002	3.16	3.25	NA	NA
2-Nov-21	FR_FRRD (RG_FRUPO)	7.6	7.95	0.0027	2.71	2.8	NA	NA
2-Nov-21	FR_MULTIPLATE (RG_MP1)	8.1	8.19	0.0023	2.25	2.32	NA	NA
2-Nov-21	FR_UFR1 (RG_URF1)	8.22	8.31	0.0033	0.332	0.339	NA	NA
3-Nov-21	FR_FR3 (RG_FOBKS)	7.99	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	8.32	8.19	0.0021	3.01	3.27	NA	NA
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	7.94	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	8.47	<0.002	3.31	3.1	NA	NA
8-Nov-21	FR_FR3 (RG_FOBKS)	8.28	8.25	<0.002	3.16	3.08	NA	NA
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	8.28	8.31	0.0091	3.29	3.23	NA	NA
8-Nov-21	GH_PC2 (RG_FODPO)	7.78	8.12	0.0156	2.29	2.33	NA	NA
9-Nov-21	FR_FR2 (RG_FOUKI)	NA	8.19	<0.002	2.75	2.54	NA	NA
9-Nov-21	FR_FR4 (RG_FOBSC)	NA	8.32	0.0044	2.92	2.78	NA	NA
9-Nov-21	FR_FRABCH (RG_FO22)	8.08	8.11	<0.002	2.12	2.24	NA	NA
9-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	8.27	<0.002	3.08	2.79	NA	NA
9-Nov-21	FR_FRRD (RG_FRUPO)	NA	8.16	0.0031	2.86	2.65	NA	NA
9-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	8.15	<0.002	2.36	2.22	NA	NA
9-Nov-21	FR_UFR1 (RG_URF1)	NA	8.33	0.0054	0.385	0.378	NA	NA
10-Nov-21	FR_FR4 (RG_FOBSC)	8.51	8.27	<0.002	3.27	3.43	NA	NA
10-Nov-21	FR_HC3 (RG_HENUP)	8.13	8.04	<0.002	0.192	0.205	NA	NA
12-Nov-21	FR_FR2 (RG_FOUKI)	NA	8.22	<0.002	2.42	2.43	NA	NA
12-Nov-21	FR_FR4 (RG_FOBSC)	8.54	8.28	0.003	0.308	0.297	NA	NA
12-Nov-21	FR_FRNTP (RG_FOUSH)	NA	8.21	0.0022	2.34	2.4	NA	NA
15-Nov-21	FR_FR5	8.24	8.23	0.0021	1.91	1.94	NA	NA
15-Nov-21	FR_FRABCH (RG_FO22)	8.03	8.13	0.003	2.21	2.36	NA	NA
16-Nov-21	FR_FR1 (RG_FODHE)	8.34	8.22	<0.002	0.692	0.688	NA	NA
17-Nov-21	FR_FR2 (RG_FOUKI)	8.26	8.31	0.0029	2.78	2.84	NA	NA
17-Nov-21	FR_FRNTP (RG_FOUSH)	8.18	8.26	0.0034	2.8	2.9	NA	NA
17-Nov-21	FR_MULTIPLATE (RG_MP1)	8.1	8.21	0.0032	2.09	2.15	NA	NA
18-Nov-21	FR_FR3 (RG_FOBKS)	8.44	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	8.48	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	8.1	8.22	0.0024	2.4	2.17	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	pH, Field_pH	pH, Lab_pH	Phosphorus (P)-Total_mg/L	Potassium (K)-Dissolved_mg/L	Potassium (K)-Total_mg/L	Se(IV) - Selenite_mg/L	Se(VI) - Selenate_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	8	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	NA	8.25	0.0052	3.46	3.25	NA	NA
24-Nov-21	FR_FRNTP (RG_FOUSH)	NA	8.31	0.0037	3.42	3.31	NA	NA
24-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	8.32	0.0025	2.15	2.09	NA	NA
29-Nov-21	FR_FR2 (RG_FOUKI)	NA	8.25	0.0061	2.18	2.21	NA	NA
29-Nov-21	FR_FRNTP (RG_FOUSH)	NA	8.22	0.0034	2.04	2.08	NA	NA
29-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	8.19	<0.002	1.98	1.91	NA	NA
1-Dec-21	FR_FRABCH (RG_FO22)	7.56	8.17	0.0048	2.01	2.17	NA	NA
2-Dec-21	FR_FR3 (RG_FOBKS)	8.56	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.46	8.18	0.007	2.06	2.05	NA	NA
7-Dec-21	FR_FR2 (RG_FOUKI)	8.26	8.14	0.0032	2.36	2.28	NA	NA
7-Dec-21	FR_FRNTP (RG_FOUSH)	8.26	8.13	0.0033	2.23	2.2	NA	NA
7-Dec-21	FR_MULTIPLATE (RG_MP1)	8.17	8.11	0.0022	2.25	2.24	NA	NA
8-Dec-21	FR_FR3 (RG_FOBKS)	8.36	8.18	0.0021	2.35	2.37	NA	NA
8-Dec-21	FR_FRABCH (RG_FO22)	7.51	8.03	<0.002	2.05	2.03	NA	NA
8-Dec-21	FR_FRRD (RG_FRUPO)	7.37	8.01	0.0048	2.94	2.84	NA	NA
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.32	8.16	0.0024	2.47	2.51	NA	NA
9-Dec-21	FR_FR1 (RG_FODHE)	8.36	8.18	<0.002	1.01	1.01	NA	NA
9-Dec-21	FR_FR4 (RG_FOBSC)	NA	8.14	0.0023	2.36	2.59	NA	NA
9-Dec-21	FR_HC3 (RG_HENUP)	8.26	8.17	<0.002	0.205	0.2	NA	NA
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	8.39	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	8.32	8.26	<0.002	2.46	2.54	NA	NA
10-Dec-21	FR_FRABCH (RG_FO22)	7.84	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	NA	8.22	<0.002	2.06	1.89	NA	NA
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	0.00028	0.0626
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	0.000083	0.0883
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	8.05	8.25	0.0025	2.32	2.05	NA	NA
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	NA	8.23	<0.002	2	2.13	0.000387	0.0703
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	8.9	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.34	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	NA	8.04	0.006	0.35	0.358	0.000045	0.000758
17-Dec-21	FR_FOUCL (RG_FOUCL)	7.9	8.11	<0.002	0.75	0.751	0.00005	0.0119
17-Dec-21	FR_FR1 (RG_FODHE)	8.25	8.13	0.0027	0.988	1.05	0.000096	0.0342
17-Dec-21	FR_FR2 (RG_FOUKI)	8.38	NA	NA	NA	NA	0.000289	0.0626
17-Dec-21	FR_FR4 (RG_FOBSC)	7.57	NA	NA	NA	NA	0.000407	0.0779
17-Dec-21	FR_FRABCH (RG_FO22)	7.94	NA	NA	NA	NA	0.000169	0.105
17-Dec-21	FR_FRCP1 (RG_FOBCP)	8.28	NA	NA	NA	NA	0.000369	0.101
17-Dec-21	FR_FRNTP (RG_FOUSH)	8.28	8.23	0.0037	2.02	2	0.000319	0.0671
17-Dec-21	FR_FRRD (RG_FRUPO)	7.743333333	NA	NA	NA	NA	0.000116	0.0956
17-Dec-21	FR_MULTIPLATE (RG_MP1)	8.2	8.19	0.0044	2.12	1.93	0.00028	0.0638
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	7.493333333	8.13	0.002	2.37	2.58	0.000416	0.0749
17-Dec-21	FR_UFR1 (RG_URF1)	8.3	8.33	0.0074	0.383	0.347	NA	NA
17-Dec-21	RG_FOUEW	8.21	NA	NA	NA	NA	0.000181	0.0951
17-Dec-21	RG_FOUNGD	8.01	8.16	<0.002	1.71	1.79	0.000177	0.0572
20-Dec-21	FR_FRABCH (RG_FO22)	NA	8.09	0.0068	2	2.02	NA	NA
21-Dec-21	GH_PC2 (RG_FODPO)	7.77	8.23	0.0032	1.99	2.04	NA	NA
22-Dec-21	FR_FR5	8.26	8.13	0.0021	1.74	1.65	NA	NA
23-Dec-21	FR_FR3 (RG_FOBKS)	8.13	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	8.07	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.34	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	8.06	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	8.1	8	0.0052	2	1.94	NA	NA
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.22	8.07	0.0063	3.26	3.04	NA	NA
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	8.35	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	NA	0.119	0.125	NA	NA	NA	1.88
6-Jan-21	FR_FRNTP (RG_FOUSH)	NA	0.0662	0.0696	NA	NA	NA	1.84
6-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	0.073	0.0763	NA	NA	NA	1.77
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	NA	0.000834	0.000811	NA	NA	NA	1.73
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.137	0.121	NA	NA	NA	2.01
12-Jan-21	FR_FR2 (RG_FOUKI)	NA	0.0758	0.0613	NA	NA	NA	1.95
12-Jan-21	FR_FR3 (RG_FOBKS)	NA	0.0702	0.0674	NA	NA	NA	1.91
12-Jan-21	FR_FR5	NA	0.086	0.0898	NA	NA	NA	2.24
12-Jan-21	FR_FRNTP (RG_FOUSH)	NA	0.087	0.0675	NA	NA	NA	1.99
12-Jan-21	FR_HC3 (RG_HENUP)	NA	0.00133	0.0012	NA	NA	NA	1.27
12-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	0.0915	0.0729	NA	NA	NA	1.79
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	NA	0.139	0.121	NA	NA	NA	2.35
19-Jan-21	FR_FR2 (RG_FOUKI)	NA	0.0623	0.0651	NA	NA	NA	1.98
19-Jan-21	FR_FRABCH (RG_FO22)	NA	0.114	0.106	NA	NA	NA	2.36
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	NA	0.139	0.157	NA	NA	NA	2.04
21-Jan-21	GH_PC2 (RG_FODPO)	NA	0.106	0.111	NA	NA	NA	2.26
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	NA	0.0674	0.067	NA	NA	NA	2.05
27-Jan-21	FR_FRNTP (RG_FOUSH)	NA	0.0722	0.0726	NA	NA	NA	2
27-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	0.0882	0.0626	NA	NA	NA	2.09
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	NA	0.0722	0.0685	NA	NA	NA	2.15
2-Feb-21	FR_FRNTP (RG_FOUSH)	NA	0.072	0.0689	NA	NA	NA	2
2-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	0.0826	0.0781	NA	NA	NA	1.99
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	NA	0.00129	0.00138	NA	NA	NA	1.31
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	NA	0.0673	0.0623	NA	NA	NA	1.96
8-Feb-21	FR_FR5	NA	0.094	0.0874	NA	NA	NA	2.32
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.197	0.171	NA	NA	NA	2.21
9-Feb-21	FR_FR2 (RG_FOUKI)	NA	0.0687	0.0683	NA	NA	NA	2.08
9-Feb-21	FR_FRNTP (RG_FOUSH)	NA	0.0774	0.0684	NA	NA	NA	2.05
9-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	0.0782	0.0756	NA	NA	NA	1.87
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	NA	0.0659	0.063	NA	NA	NA	2.07
16-Feb-21	FR_FRNTP (RG_FOUSH)	NA	0.0707	0.0717	NA	NA	NA	2
16-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	0.0733	0.074	NA	NA	NA	1.92
16-Feb-21	GH_PC2 (RG_FODPO)	NA	0.113	0.117	NA	NA	NA	2.35
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	NA	0.165	0.152	NA	NA	NA	2.44
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	NA	0.0738	0.065	NA	NA	NA	2.14
23-Feb-21	FR_FR4 (RG_FOBSC)	NA	0.162	0.147	NA	NA	NA	2.24
23-Feb-21	FR_FRABCH (RG_FO22)	<0.00001	0.109	0.11	<0.00001	<0.00001	<0.00001	2.36
23-Feb-21	FR_FRCP1 (RG_FOBCP)	<0.00001	0.227	0.208	<0.00001	<0.00001	<0.00001	2.96
23-Feb-21	FR_FRRD (RG_FRUPO)	NA	0.186	0.16	NA	NA	NA	2.51
23-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	0.0851	0.0768	NA	NA	NA	1.94
23-Feb-21	FR_UFR1 (RG_URF1)	NA	0.000921	0.000986	NA	NA	NA	1.93
24-Feb-21	FR_FRNTP (RG_FOUSH)	NA	0.0779	0.081	NA	NA	NA	2.09
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.0772	0.0675	NA	NA	NA	2.11
2-Mar-21	FR_FR4 (RG_FOBSC)	NA	0.165	0.143	NA	NA	NA	2.09
2-Mar-21	FR_FRABCH (RG_FO22)	NA	0.138	0.117	NA	NA	NA	2.31
2-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	0.167	0.149	NA	NA	NA	2.15
2-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.0726	0.0726	NA	NA	NA	1.95
2-Mar-21	FR_FRRD (RG_FRUPO)	NA	0.2	0.167	NA	NA	NA	2.31
2-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.092	0.0812	NA	NA	NA	1.88
2-Mar-21	FR_UFR1 (RG_URF1)	NA	0.000919	0.000892	NA	NA	NA	1.76
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	NA	0.0682	0.0618	NA	NA	NA	2.11
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	NA	0.00103	0.00101	NA	NA	NA	0.185
5-Mar-21	FR_FR5	NA	0.0957	0.0901	NA	NA	NA	2.2
5-Mar-21	FR_HC3 (RG_HENUP)	NA	0.0013	0.00126	NA	NA	NA	1.25
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.128	0.112	NA	NA	NA	2.16
8-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.0821	0.0787	NA	NA	NA	1.91
9-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.078	0.0764	NA	NA	NA	2.17
9-Mar-21	FR_FR4 (RG_FOBSC)	NA	0.129	0.129	NA	NA	NA	2.19
9-Mar-21	FR_FRABCH (RG_FO22)	NA	0.129	0.117	NA	NA	NA	2.33
9-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	0.148	0.14	NA	NA	NA	2.13
9-Mar-21	FR_FRRD (RG_FRUPO)	NA	0.193	0.183	NA	NA	NA	2.57
9-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.0922	0.0897	NA	NA	NA	2.06
9-Mar-21	FR_UFR1 (RG_URF1)	NA	0.00103	0.000914	NA	NA	NA	1.88
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	NA	0.000957	0.000921	NA	NA	NA	1.91
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	NA	0.133	0.129	NA	NA	NA	2.36
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.0642	0.0597	NA	NA	NA	2.04
16-Mar-21	FR_FR4 (RG_FOBSC)	NA	0.0913	0.0883	NA	NA	NA	2
16-Mar-21	FR_FRABCH (RG_FO22)	NA	0.146	0.114	NA	NA	NA	2.33
16-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	0.107	0.0849	NA	NA	NA	2.03
16-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.071	0.0663	NA	NA	NA	2.03
16-Mar-21	FR_FRRD (RG_FRUPO)	NA	0.153	0.147	NA	NA	NA	2.3
16-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.0667	0.0671	NA	NA	NA	1.92
16-Mar-21	FR_UFR1 (RG_URF1)	NA	0.000755	0.000744	NA	NA	NA	1.96
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0841	0.0799	NA	NA	NA	2.13
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.0711	0.0673	NA	NA	NA	2.18
23-Mar-21	FR_FR4 (RG_FOBSC)	NA	0.103	0.0921	NA	NA	NA	2.21
23-Mar-21	FR_FRABCH (RG_FO22)	NA	0.111	0.109	NA	NA	NA	2.36
23-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	0.0991	0.0945	NA	NA	NA	2.09
23-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.0765	0.0715	NA	NA	NA	2.1
23-Mar-21	FR_FRRD (RG_FRUPO)	NA	0.128	0.12	NA	NA	NA	2.31
23-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.0792	0.0743	NA	NA	NA	2.12
23-Mar-21	FR_UFR1 (RG_URF1)	NA	0.000743	0.000776	NA	NA	NA	2.13
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.108	0.0915	NA	NA	NA	2.16
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.0845	0.0762	NA	NA	NA	1.97
30-Mar-21	FR_FR4 (RG_FOBSC)	NA	0.11	0.108	NA	NA	NA	1.78
30-Mar-21	FR_FRABCH (RG_FO22)	NA	0.131	0.105	NA	NA	NA	2.31
30-Mar-21	FR_FRCP1 (RG_FOBCP)	NA	0.133	0.112	NA	NA	NA	2.03
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	NA	0.132	0.12	NA	NA	NA	1.97
30-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.0873	0.0838	NA	NA	NA	1.78
30-Mar-21	FR_UFR1 (RG_URF1)	NA	0.00107	0.000807	NA	NA	NA	1.95
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.094	0.0843	NA	NA	NA	1.93
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.122	0.108	NA	NA	NA	1.99
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.111	0.1	NA	NA	NA	1.79
6-Apr-21	FR_FR1 (RG_FODHE)	NA	0.0358	0.0317	NA	NA	NA	1.66
6-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.0848	0.0715	NA	NA	NA	1.87
6-Apr-21	FR_FRNTP (RG_FOUSH)	NA	0.0868	0.0753	NA	NA	NA	1.89
6-Apr-21	FR_HC3 (RG_HENUP)	NA	0.00126	0.00109	NA	NA	NA	1.38
6-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	0.0924	0.0804	NA	NA	NA	1.83
6-Apr-21	FR_UFR1 (RG_URF1)	NA	0.000865	0.000718	NA	NA	NA	1.82
7-Apr-21	FR_FR3 (RG_FOBKS)	NA	0.0803	0.0717	NA	NA	NA	1.68
7-Apr-21	FR_FR5	NA	0.104	0.0886	NA	NA	NA	2.01
7-Apr-21	FR_FRABCH (RG_FO22)	NA	0.112	0.101	NA	NA	NA	2.09
7-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	0.0976	0.0977	NA	NA	NA	1.66
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.112	0.0954	NA	NA	NA	1.79
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	NA	0.125	0.106	NA	NA	NA	2.16
9-Apr-21	FR_FR4 (RG_FOBSC)	NA	0.106	0.0982	NA	NA	NA	1.83
12-Apr-21	FR_FR1 (RG_FODHE)	NA	0.0348	0.0312	NA	NA	NA	1.54
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.0851	0.0773	NA	NA	NA	1.76
13-Apr-21	FR_FR4 (RG_FOBSC)	NA	0.118	0.112	NA	NA	NA	1.77
13-Apr-21	FR_FRABCH (RG_FO22)	<0.00001	0.118	0.108	0.000018	<0.00001	<0.00001	2.02
13-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.00001	0.12	0.112	<0.00001	<0.00001	<0.00001	1.8
13-Apr-21	FR_FRRD (RG_FRUPO)	NA	0.125	0.117	NA	NA	NA	1.89
13-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	0.0943	0.0886	NA	NA	NA	1.83
13-Apr-21	FR_UFR1 (RG_URF1)	NA	0.000875	0.000947	NA	NA	NA	1.95
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	NA	0.0816	0.0811	NA	NA	NA	1.83
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.111	0.103	NA	NA	NA	1.72
15-Apr-21	FR_FR4 (RG_FOBSC)	NA	0.116	0.114	NA	NA	NA	1.82
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	NA	0.0234	0.0242	NA	NA	NA	1.55
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	0.0939	0.0843	NA	NA	NA	1.76
20-Apr-21	FR_FRNTP (RG_FOUSH)	NA	0.0715	0.0645	NA	NA	NA	1.76
20-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	0.0735	0.0656	NA	NA	NA	1.75
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	NA	0.0959	0.089	NA	NA	NA	1.71
21-Apr-21	FR_FRABCH (RG_FO22)	NA	0.106	0.0993	NA	NA	NA	2.1
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0929	0.0888	NA	NA	NA	1.8
22-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.071	0.0642	NA	NA	NA	1.81
26-Apr-21	FR_FR1 (RG_FODHE)	NA	0.0213	0.0219	NA	NA	NA	1.51

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.0735	0.0759	NA	NA	NA	1.73
27-Apr-21	FR_FRCP1 (RG_FOBCP)	NA	0.097	0.103	NA	NA	NA	1.63
27-Apr-21	FR_FRNTP (RG_FOUSH)	NA	0.0736	0.0772	NA	NA	NA	1.69
27-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	0.076	0.0816	NA	NA	NA	1.65
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	NA	0.0996	0.1	NA	NA	NA	1.86
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.091	0.0973	NA	NA	NA	1.64
30-Apr-21	FR_FR4 (RG_FOBSC)	NA	0.0889	0.084	NA	NA	NA	1.6
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0639	0.0581	NA	NA	NA	1.7
3-May-21	FR_HC3 (RG_HENUP)	NA	0.000848	0.000884	NA	NA	NA	1.31
3-May-21	FR_UFR1 (RG_URF1)	NA	0.000651	0.000654	NA	NA	NA	1.88
4-May-21	FR_FR1 (RG_FODHE)	NA	0.0144	0.0127	NA	NA	NA	1.73
4-May-21	FR_FR2 (RG_FOUKI)	NA	0.0504	0.0496	NA	NA	NA	1.67
4-May-21	FR_FR3 (RG_FOBKS)	NA	0.0478	0.0484	NA	NA	NA	1.62
4-May-21	FR_FRNTP (RG_FOUSH)	NA	0.0528	0.0491	NA	NA	NA	1.64
4-May-21	FR_MULTIPLATE (RG_MP1)	NA	0.0558	0.049	NA	NA	NA	1.68
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0611	0.0603	NA	NA	NA	1.56
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	NA	0.0716	0.0655	NA	NA	NA	1.86
5-May-21	FR_FRABCH (RG_FO22)	NA	0.0792	0.085	NA	NA	NA	1.85
5-May-21	FR_FRCP1 (RG_FOBCP)	NA	0.0734	0.0649	NA	NA	NA	1.68
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	NA	0.0802	0.0802	NA	NA	NA	1.82
7-May-21	FR_FR4 (RG_FOBSC)	NA	0.0527	0.0539	NA	NA	NA	1.63
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	NA	0.0112	0.0108	NA	NA	NA	1.54
11-May-21	FR_FR2 (RG_FOUKI)	NA	0.0417	0.0424	NA	NA	NA	1.53
11-May-21	FR_FRCP1 (RG_FOBCP)	NA	0.0639	0.0608	NA	NA	NA	1.5
11-May-21	FR_FRNTP (RG_FOUSH)	NA	0.0444	0.0449	NA	NA	NA	1.58
11-May-21	FR_MULTIPLATE (RG_MP1)	NA	0.0438	0.0454	NA	NA	NA	1.6
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	NA	0.0841	0.0756	NA	NA	NA	1.68
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0616	0.0559	NA	NA	NA	1.49
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0271	0.0291	NA	NA	NA	1.63
18-May-21	FR_FR2 (RG_FOUKI)	NA	0.0149	0.0139	NA	NA	NA	1.58
18-May-21	FR_FR4 (RG_FOBSC)	NA	0.0196	0.0191	NA	NA	NA	1.6
18-May-21	FR_FRABCH (RG_FO22)	NA	0.0362	0.0358	NA	NA	NA	1.69
18-May-21	FR_FRCP1 (RG_FOBCP)	NA	0.0274	0.0259	NA	NA	NA	1.56
18-May-21	FR_FRRD (RG_FRUPO)	NA	0.0416	0.0391	NA	NA	NA	1.67
18-May-21	FR_MULTIPLATE (RG_MP1)	NA	0.0146	0.0142	NA	NA	NA	1.58
18-May-21	FR_UFR1 (RG_URF1)	NA	0.000515	0.000423	NA	NA	NA	1.67
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	NA	0.0346	0.0339	NA	NA	NA	1.7
20-May-21	FR_FRNTP (RG_FOUSH)	NA	0.0142	0.0132	NA	NA	NA	1.59
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	NA	0.0258	0.0243	NA	NA	NA	1.74
25-May-21	FR_FR4 (RG_FOBSC)	NA	0.0414	0.0412	NA	NA	NA	1.71
25-May-21	FR_FRABCH (RG_FO22)	NA	0.0686	0.0634	NA	NA	NA	1.91
25-May-21	FR_FRCP1 (RG_FOBCP)	NA	0.0578	0.0547	NA	NA	NA	1.74
25-May-21	FR_FRRD (RG_FRUPO)	NA	0.0772	0.0714	NA	NA	NA	1.8
25-May-21	FR_MULTIPLATE (RG_MP1)	NA	0.0255	0.0244	NA	NA	NA	1.79
25-May-21	FR_UFR1 (RG_URF1)	NA	0.0006	0.00054	NA	NA	NA	1.94
26-May-21	FR_FR1 (RG_FODHE)	NA	0.00744	0.00753	NA	NA	NA	1.7
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0338	0.0356	NA	NA	NA	1.8
27-May-21	FR_FR4 (RG_FOBSC)	NA	0.0397	0.0379	NA	NA	NA	1.66
27-May-21	FR_FRNTP (RG_FOUSH)	NA	0.0201	0.02	NA	NA	NA	1.59
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	NA	0.00629	0.0056	NA	NA	NA	1.42
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.026	0.025	NA	NA	NA	1.68
1-Jun-21	FR_FR2 (RG_FOUKI)	NA	0.0141	0.0131	NA	NA	NA	1.53
1-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0217	0.0219	NA	NA	NA	1.54
1-Jun-21	FR_FRABCH (RG_FO22)	NA	0.0417	0.0426	NA	NA	NA	1.62
1-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	0.0338	0.0344	NA	NA	NA	1.54
1-Jun-21	FR_FRNTP (RG_FOUSH)	NA	0.0153	0.0143	NA	NA	NA	1.59
1-Jun-21	FR_FRRD (RG_FRUPO)	NA	0.054	0.0503	NA	NA	NA	1.66
1-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	0.0148	0.0144	NA	NA	NA	1.51
1-Jun-21	FR_UFR1 (RG_URF1)	NA	0.000452	0.000454	NA	NA	NA	1.72
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0263	0.0256	NA	NA	NA	1.65
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0184	0.0187	NA	NA	NA	1.62
7-Jun-21	FR_FR1 (RG_FODHE)	NA	0.00482	0.00501	NA	NA	NA	1.55
7-Jun-21	FR_HC3 (RG_HENUP)	NA	0.000491	0.000503	NA	NA	NA	1.1
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0233	0.0226	NA	NA	NA	1.68
7-Jun-21	GH_PC2 (RG_FODPO)	NA	0.0605	0.0604	NA	NA	NA	1.74
8-Jun-21	FR_FR2 (RG_FOUKI)	NA	0.0182	0.0172	NA	NA	NA	1.75
8-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0358	0.0338	NA	NA	NA	1.74

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	NA	0.0605	0.0612	NA	NA	NA	1.87
8-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	0.0508	0.0518	NA	NA	NA	1.72
8-Jun-21	FR_FRRD (RG_FRUPO)	NA	0.0798	0.0694	NA	NA	NA	1.87
8-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	0.0176	0.017	NA	NA	NA	1.74
8-Jun-21	FR_UFR1 (RG_URF1)	NA	0.000463	0.000552	NA	NA	NA	1.91
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	NA	0.0184	0.02	NA	NA	NA	1.72
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0242	0.024	NA	NA	NA	1.77
10-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0511	0.0502	NA	NA	NA	1.73
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.063	0.0596	NA	NA	NA	1.54
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.00001	0.00631	0.00629	<0.00001	<0.00001	<0.00001	1.38
14-Jun-21	FR_FR1 (RG_FODHE)	<0.00001	0.005776667	0.00556	<0.00001	<0.00001	<0.00001	1.465
14-Jun-21	FR_FR3 (RG_FOBKS)	NA	0.0159	0.0163	NA	NA	NA	1.6
14-Jun-21	FR_FR5	NA	0.0399	0.0401	NA	NA	NA	1.76
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.00001	0.0148	0.0151	<0.00001	<0.00001	<0.00001	1.5
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0223	0.0225	NA	NA	NA	1.59
14-Jun-21	RG_FO26	<0.00001	0.00067	0.000719	<0.00001	<0.00001	<0.00001	1.85
15-Jun-21	FR_FR2 (RG_FOUKI)	NA	0.0124	0.0128	NA	NA	NA	1.5
15-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0212	0.022	NA	NA	NA	1.51
15-Jun-21	FR_FRABCH (RG_FO22)	NA	0.039	0.0376	NA	NA	NA	1.6
15-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	0.0317	0.031	NA	NA	NA	1.57
15-Jun-21	FR_FRNTP (RG_FOUSH)	<0.00001	0.012433333	0.012533333	<0.00001	<0.00001	<0.00001	1.475
15-Jun-21	FR_FRRD (RG_FRUPO)	NA	0.0542	0.0544	NA	NA	NA	1.72
15-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	0.0123	0.012	NA	NA	NA	1.45
15-Jun-21	FR_UFR1 (RG_URF1)	<0.00001	0.000659333	0.000696	<0.00001	<0.00001	<0.00001	1.85
15-Jun-21	RG_FOUNGD	<0.00001	0.009225	0.009455	<0.00001	<0.00001	<0.00001	1.44
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	<0.00001	0.0136	0.01395	<0.00001	<0.00001	<0.00001	1.42
16-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0301	0.0325	NA	NA	NA	1.61
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.00001	0.011	0.01085	<0.00001	<0.00001	<0.00001	1.38
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.00001	0.0005955	0.000596	<0.00001	<0.00001	<0.00001	0.833
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00001	0.019466667	0.0192	<0.00001	<0.00001	<0.00001	1.47
17-Jun-21	FR_FR2 (RG_FOUKI)	<0.00001	0.0151	0.0161	<0.00001	<0.00001	<0.00001	1.42
17-Jun-21	FR_FR4 (RG_FOBSC)	<0.00001	0.053	0.05025	<0.00001	<0.00001	<0.00001	1.55
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.00001	0.0393	0.0377	<0.00001	<0.00001	<0.00001	1.52
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	<0.00001	0.0391	0.03875	<0.00001	<0.00001	<0.00001	1.51
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.026	0.0239	NA	NA	NA	1.5
17-Jun-21	GH_PC2 (RG_FODPO)	<0.00001	0.05365	0.05035	<0.00001	<0.00001	<0.00001	1.58
18-Jun-21	FR_FRABCH (RG_FO22)	<0.00001	0.05075	0.0492	<0.00001	<0.00001	<0.00001	1.67
18-Jun-21	FR_FRRD (RG_FRUPO)	<0.00001	0.0571	0.05735	<0.00001	<0.00001	<0.00001	1.73
18-Jun-21	RG_FOUEW	<0.00001	0.0423	0.0381	<0.00001	<0.00001	<0.00001	1.74
21-Jun-21	FR_FR1 (RG_FODHE)	NA	0.00468	0.00456	NA	NA	NA	1.31
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0249	0.0246	NA	NA	NA	1.48
21-Jun-21	FR_UFR1 (RG_URF1)	NA	0.000526	0.0004835	NA	NA	NA	1.755
22-Jun-21	FR_FR2 (RG_FOUKI)	NA	0.0156	0.0167	NA	NA	NA	1.48
22-Jun-21	FR_FRABCH (RG_FO22)	NA	0.0485	0.0514	NA	NA	NA	1.59
22-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	0.0373	0.0416	NA	NA	NA	1.53
22-Jun-21	FR_FRNTP (RG_FOUSH)	NA	0.0161	0.016	NA	NA	NA	1.44
22-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	0.0164	0.0161	NA	NA	NA	1.38
23-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0338	0.0318	NA	NA	NA	1.63
28-Jun-21	FR_FR1 (RG_FODHE)	NA	0.00461	0.00416	NA	NA	NA	1.19
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0259	0.0245	NA	NA	NA	1.33
29-Jun-21	FR_FR2 (RG_FOUKI)	NA	0.0185	0.0178	NA	NA	NA	1.49
29-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0297	0.0299	NA	NA	NA	1.56
29-Jun-21	FR_FRABCH (RG_FO22)	NA	0.0535	0.0512	NA	NA	NA	1.67
29-Jun-21	FR_FRCP1 (RG_FOBCP)	NA	0.0405	0.0414	NA	NA	NA	1.56
29-Jun-21	FR_FRNTP (RG_FOUSH)	NA	0.0186	0.0181	NA	NA	NA	1.48
29-Jun-21	FR_FRRD (RG_FRUPO)	NA	0.0648	0.0653	NA	NA	NA	1.71
29-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	0.0178	0.0186	NA	NA	NA	1.38
29-Jun-21	FR_UFR1 (RG_URF1)	NA	0.000554	0.000454	NA	NA	NA	1.92
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	NA	0.0316	0.0316	NA	NA	NA	1.59
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	NA	0.00546	0.00534	NA	NA	NA	1.34
2-Jul-21	FR_UFR1 (RG_URF1)	NA	0.00049	0.00052	NA	NA	NA	2
4-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.0226	0.0255	NA	NA	NA	1.62
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.0235	0.0255	NA	NA	NA	1.53
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0349	0.0342	NA	NA	NA	1.59
5-Jul-21	FR_HC3 (RG_HENUP)	NA	0.000454	0.000534	NA	NA	NA	0.95
6-Jul-21	FR_FR1 (RG_FODHE)	NA	0.00484	0.00488	NA	NA	NA	1.27
6-Jul-21	FR_FR4 (RG_FOBSC)	NA	0.0294	0.0296	NA	NA	NA	1.55
6-Jul-21	FR_FRABCH (RG_FO22)	NA	0.0566	0.0552	NA	NA	NA	1.76
6-Jul-21	FR_FRCP1 (RG_FOBCP)	NA	0.0403	0.0409	NA	NA	NA	1.7
6-Jul-21	FR_FRRD (RG_FRUPO)	NA	0.0633	0.0601	NA	NA	NA	1.86
6-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.0188	0.0188	NA	NA	NA	1.46
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0304	0.0284	NA	NA	NA	1.6
6-Jul-21	FR_UFR1 (RG_URF1)	NA	0.000468	0.000539	NA	NA	NA	1.9
7-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.0215	0.0219	NA	NA	NA	1.68

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.0201	0.0238	NA	NA	NA	1.6
7-Jul-21	GH_PC2 (RG_FODPO)	NA	0.0583	0.0581	NA	NA	NA	1.86
8-Jul-21	FR_FR3 (RG_FOBKS)	NA	0.0236	0.0243	NA	NA	NA	1.82
8-Jul-21	FR_FR5	NA	0.0541	0.051	NA	NA	NA	1.83
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	NA	0.00769	0.00751	NA	NA	NA	1.43
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0439	0.0431	NA	NA	NA	1.73
13-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.028	0.029	NA	NA	NA	1.71
13-Jul-21	FR_FR4 (RG_FOBSC)	NA	0.048	0.0465	NA	NA	NA	1.74
13-Jul-21	FR_FRABCH (RG_FO22)	<0.00001	0.0741	0.0655	<0.00001	<0.00001	<0.00001	1.83
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.00001	0.057	0.0511	<0.00001	<0.00001	<0.00001	1.79
13-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.0299	0.027	NA	NA	NA	1.69
13-Jul-21	FR_FRRD (RG_FRUPO)	NA	0.0818	0.081	NA	NA	NA	1.86
13-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.0291	0.0307	NA	NA	NA	1.66
13-Jul-21	FR_UFR1 (RG_URF1)	NA	0.000591	0.000552	NA	NA	NA	2.09
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	NA	0.0489	0.0501	NA	NA	NA	1.69
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.0306	0.0279	NA	NA	NA	1.78
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.0372	0.0278	NA	NA	NA	2
20-Jul-21	FR_FR4 (RG_FOBSC)	NA	0.073	0.0585	NA	NA	NA	2.06
20-Jul-21	FR_FRRD (RG_FRUPO)	NA	0.112	0.0931	NA	NA	NA	1.94
20-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.0368	0.0301	NA	NA	NA	1.82
20-Jul-21	FR_UFR1 (RG_URF1)	NA	0.000695	0.000603	NA	NA	NA	2.18
22-Jul-21	FR_FRABCH (RG_FO22)	NA	0.0841	0.0802	NA	NA	NA	1.81
26-Jul-21	FR_FRABCH (RG_FO22)	NA	0.0857	0.082	NA	NA	NA	1.78
27-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.0411	0.0376	NA	NA	NA	1.9
27-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.0421	0.0414	NA	NA	NA	1.87
27-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.0469	0.0469	NA	NA	NA	1.84
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0862	0.0776	NA	NA	NA	1.98
4-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0419	0.0396	NA	NA	NA	2.05
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.0436	0.0415	NA	NA	NA	2.04
4-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0495	0.0442	NA	NA	NA	1.95
5-Aug-21	FR_FRABCH (RG_FO22)	NA	0.1	0.0944	NA	NA	NA	2.12
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0973	0.0891	NA	NA	NA	2.08
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.0481	0.0466	NA	NA	NA	1.98
10-Aug-21	FR_FR1 (RG_FODHE)	NA	0.0147	0.0143	NA	NA	NA	1.61
10-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0404	0.0389	NA	NA	NA	2
10-Aug-21	FR_FR4 (RG_FOBSC)	NA	0.0861	0.0812	NA	NA	NA	1.96
10-Aug-21	FR_FRABCH (RG_FO22)	NA	0.0918	0.0923	NA	NA	NA	2.1
10-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	0.0847	0.0803	NA	NA	NA	2.09
10-Aug-21	FR_FRRD (RG_FRUPO)	NA	0.11	0.101	NA	NA	NA	2.1
10-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.045	0.041	NA	NA	NA	1.91
10-Aug-21	FR_UFR1 (RG_URF1)	NA	0.000566	0.000604	NA	NA	NA	2.16
11-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0426	0.0411	NA	NA	NA	1.99
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0701	0.0693	NA	NA	NA	1.96
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0446	0.0413	NA	NA	NA	2
12-Aug-21	FR_FR4 (RG_FOBSC)	NA	0.0946	0.0995	NA	NA	NA	2.04
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0743	0.069	NA	NA	NA	2.03
13-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0469	0.0389	NA	NA	NA	2.03
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0804	0.066	NA	NA	NA	2.07
14-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0525	0.0434	NA	NA	NA	2.03
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0807	0.0707	NA	NA	NA	2.02
15-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0418	0.0422	NA	NA	NA	2
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0844	0.0808	NA	NA	NA	2.05
16-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.0499	0.0418	NA	NA	NA	2.14
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0851	0.0705	NA	NA	NA	2.2
17-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0418	0.0403	NA	NA	NA	1.93
17-Aug-21	FR_FR4 (RG_FOBSC)	NA	0.0893	0.0906	NA	NA	NA	1.93
17-Aug-21	FR_FR5	NA	0.0741	0.0689	NA	NA	NA	2.05
17-Aug-21	FR_FRABCH (RG_FO22)	NA	0.0935	0.0847	NA	NA	NA	2.16
17-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	0.088	0.0843	NA	NA	NA	1.97
17-Aug-21	FR_FRRD (RG_FRUPO)	NA	0.106	0.0974	NA	NA	NA	2.12
17-Aug-21	FR_HC3 (RG_HENUP)	NA	0.000922	0.00086	NA	NA	NA	1.1
17-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0415	0.0355	NA	NA	NA	1.85
17-Aug-21	FR_UFR1 (RG_URF1)	NA	0.00064	0.00055	NA	NA	NA	2.1
18-Aug-21	GH_PC2 (RG_FODPO)	NA	0.0741	0.0723	NA	NA	NA	2.14
19-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0292	0.0282	NA	NA	NA	1.98
19-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.0291	0.0283	NA	NA	NA	1.92
19-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0318	0.0289	NA	NA	NA	1.88
24-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0315	0.0271	NA	NA	NA	1.9
24-Aug-21	FR_FR4 (RG_FOBSC)	NA	0.0542	0.049	NA	NA	NA	1.93
24-Aug-21	FR_FRABCH (RG_FO22)	NA	0.0834	0.0811	NA	NA	NA	2.12
24-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	0.0546	0.0544	NA	NA	NA	1.95
24-Aug-21	FR_FRRD (RG_FRUPO)	NA	0.0981	0.0834	NA	NA	NA	2.14
24-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0337	0.0291	NA	NA	NA	1.78
24-Aug-21	FR_UFR1 (RG_URF1)	NA	0.000688	0.00072	NA	NA	NA	1.89
25-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.031	0.0301	NA	NA	NA	1.92
25-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.031	0.0304	NA	NA	NA	1.9

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0316	0.0328	NA	NA	NA	1.65
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.0383	0.0357	NA	NA	NA	2
31-Aug-21	FR_FR4 (RG_FOBSC)	NA	0.0729	0.0714	NA	NA	NA	2.01
31-Aug-21	FR_FRABCH (RG_FO22)	NA	0.0925	0.0841	NA	NA	NA	2.32
31-Aug-21	FR_FRCP1 (RG_FOBCP)	NA	0.0759	0.0707	NA	NA	NA	2.22
31-Aug-21	FR_FRRD (RG_FRUPO)	NA	0.1	0.088	NA	NA	NA	2.28
31-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.0434	0.0411	NA	NA	NA	1.83
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0751	0.0732	NA	NA	NA	2.04
31-Aug-21	FR_UFR1 (RG_URF1)	NA	0.000785	0.000694	NA	NA	NA	2
1-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0387	0.0406	NA	NA	NA	1.93
3-Sep-21	FR_FR4 (RG_FOBSC)	NA	0.0734	0.0694	NA	NA	NA	1.92
7-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.0451	0.0411	NA	NA	NA	2.03
7-Sep-21	FR_FR4 (RG_FOBSC)	NA	0.092	0.0807	NA	NA	NA	2.01
7-Sep-21	FR_FRABCH (RG_FO22)	NA	0.0946	0.091	NA	NA	NA	2.08
7-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	0.0824	0.0816	NA	NA	NA	1.96
7-Sep-21	FR_FRRD (RG_FRUPO)	NA	0.1	0.0944	NA	NA	NA	2.19
7-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.0523	0.0487	NA	NA	NA	1.88
7-Sep-21	FR_UFR1 (RG_URF1)	NA	0.000717	0.000742	NA	NA	NA	1.76
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.0475	0.0463	NA	NA	NA	2.04
9-Sep-21	FR_FR3 (RG_FOBKS)	<0.00001	0.0456	0.0446	<0.00001	<0.00001	<0.00001	1.91
9-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0478	0.0487	NA	NA	NA	1.95
9-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.0528	0.0533	NA	NA	NA	1.84
11-Sep-21	GH_PC2 (RG_FODPO)	<0.00001	0.0862	0.08105	<0.00001	<0.00001	<0.00001	2.18
11-Sep-21	RG_FOUEW	<0.00001	0.0776	0.07575	<0.00001	<0.00001	<0.00001	2.08
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<0.00001	0.085325	0.083275	<0.00001	<0.00001	<0.00001	2.13
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.00001	0.01565	0.0155	<0.00001	<0.00001	<0.00001	1.69
13-Sep-21	FR_FR1 (RG_FODHE)	<0.00001	0.01295	0.0123	<0.00001	<0.00001	<0.00001	1.5
13-Sep-21	FR_FR4 (RG_FOBSC)	<0.00001	0.07745	0.07245	<0.00001	<0.00001	<0.00001	2.06
13-Sep-21	FR_FR5	NA	0.0712	0.0738	NA	NA	NA	1.94
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.00001	0.074	0.07495	<0.00001	<0.00001	<0.00001	2
13-Sep-21	FR_FRRD (RG_FRUPO)	NA	0.098	0.0983	NA	NA	NA	2.06
13-Sep-21	FR_HC3 (RG_HENUP)	NA	0.00118	0.00116	NA	NA	NA	1.18
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0831	0.078	NA	NA	NA	2.06
13-Sep-21	GH_PC2 (RG_FODPO)	NA	0.089	0.0832	NA	NA	NA	2.14
14-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.0436	0.04	NA	NA	NA	2.09
14-Sep-21	FR_FR3 (RG_FOBKS)	NA	0.0444	0.039	NA	NA	NA	2.04
14-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0452	0.0512	NA	NA	NA	2.1
14-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.0496	0.0484	NA	NA	NA	1.87
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00001	0.0768	0.07655	<0.00001	<0.00001	<0.00001	2.02
15-Sep-21	FR_FR1 (RG_FODHE)	NA	0.0136	0.0129	NA	NA	NA	1.54
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<0.00001	0.0756	0.07435	<0.00001	<0.00001	<0.00001	2.08
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.00001	0.0485	0.05385	<0.00001	<0.00001	<0.00001	1.94
15-Sep-21	RG_FO26	<0.00001	0.0007605	0.0007265	<0.00001	<0.00001	<0.00001	2.02
16-Sep-21	FR_FRABCH (RG_FO22)	NA	0.0911	0.0909	NA	NA	NA	2.16
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	0.0422	0.041	NA	NA	NA	1.93
16-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0527	0.0476	NA	NA	NA	2.03
16-Sep-21	FR_HC3 (RG_HENUP)	<0.00001	0.001165	0.001125	<0.00001	<0.00001	<0.00001	1.23
16-Sep-21	RG_FOUNGD	<0.00001	0.0362	0.03465	<0.00001	<0.00001	<0.00001	1.95
17-Sep-21	FR_FR4 (RG_FOBSC)	NA	0.0943	0.078	NA	NA	NA	2.2
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	<0.00001	0.0372	0.0362	<0.00001	<0.00001	<0.00001	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	<0.00001	0.0369	0.0369	<0.00001	<0.00001	<0.00001	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	<0.00001	0.103	0.1	<0.00001	<0.00001	<0.00001	2.16
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	<0.00001	0.03915	0.0407	<0.00001	<0.00001	<0.00001	1.92
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.00001	0.000708	0.0006145	<0.00001	<0.00001	<0.00001	1.84
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.0476	0.0454	NA	NA	NA	1.88
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0513	0.0486	NA	NA	NA	1.92
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.0585	0.0556	NA	NA	NA	1.84
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	NA	0.102	0.0917	NA	NA	NA	2.26
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.101	0.0894	NA	NA	NA	1.83
28-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.0525	0.0497	NA	NA	NA	1.82
28-Sep-21	FR_FRABCH (RG_FO22)	NA	0.0987	0.0961	NA	NA	NA	2.12
28-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0566	0.0506	NA	NA	NA	2
28-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.0601	0.0575	NA	NA	NA	1.82

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate _mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.0546	0.0521	NA	NA	NA	1.75
4-Oct-21	FR_FR1 (RG_FODHE)	NA	0.0153	0.015	NA	NA	NA	1.56
4-Oct-21	FR_HC3 (RG_HENUP)	NA	0.00121	0.00129	NA	NA	NA	1.25
5-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0531	0.0526	NA	NA	NA	1.97
5-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	0.0623	0.0613	NA	NA	NA	1.76
6-Oct-21	FR_FR3 (RG_FOBKS)	NA	0.0479	0.0493	NA	NA	NA	1.96
6-Oct-21	FR_FR5	NA	0.0641	0.0633	NA	NA	NA	2.48
6-Oct-21	FR_FRABCH (RG_FO22)	NA	0.101	0.102	NA	NA	NA	2.3
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	NA	0.0976	0.0969	NA	NA	NA	2.24
7-Oct-21	FR_FR4 (RG_FOBSC)	NA	0.112	0.102	NA	NA	NA	1.67
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0589	0.0558	NA	NA	NA	1.83
9-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0617	0.0591	NA	NA	NA	1.79
10-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0554	0.0547	NA	NA	NA	1.72
10-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0586	0.0586	NA	NA	NA	1.68
11-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0574	0.0556	NA	NA	NA	1.82
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0596	0.0594	NA	NA	NA	1.83
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.12	0.108	NA	NA	NA	1.76
12-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0588	0.0527	NA	NA	NA	1.74
12-Oct-21	FR_FR4 (RG_FOBSC)	NA	0.129	0.104	NA	NA	NA	1.87
12-Oct-21	FR_FRABCH (RG_FO22)	NA	0.108	0.103	NA	NA	NA	2.39
12-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	0.125	0.117	NA	NA	NA	1.83
12-Oct-21	FR_FRRD (RG_FRUPO)	NA	0.12	0.0994	NA	NA	NA	2.4
12-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	0.068	0.0604	NA	NA	NA	1.84
13-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0553	0.0552	NA	NA	NA	1.82
13-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0567	0.061	NA	NA	NA	1.96
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0597	0.0533	NA	NA	NA	1.9
19-Oct-21	FR_FR4 (RG_FOBSC)	NA	0.126	0.103	NA	NA	NA	1.9
19-Oct-21	FR_FRABCH (RG_FO22)	NA	0.104	0.1	NA	NA	NA	2.39
19-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	0.114	0.112	NA	NA	NA	1.89
19-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0571	0.0559	NA	NA	NA	1.96
19-Oct-21	FR_FRRD (RG_FRUPO)	NA	0.12	0.101925	NA	NA	NA	2.42
19-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	0.0675	0.0612	NA	NA	NA	1.7
19-Oct-21	FR_UFR1 (RG_URF1)	NA	0.000862	0.0007585	NA	NA	NA	1.755
20-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0545	0.0542	NA	NA	NA	1.92
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.11	0.112	NA	NA	NA	1.94
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.0517	0.0547	NA	NA	NA	1.63
26-Oct-21	FR_FR4 (RG_FOBSC)	NA	0.113	0.11	NA	NA	NA	1.93
26-Oct-21	FR_FRABCH (RG_FO22)	NA	0.103	0.0996	NA	NA	NA	2.2
26-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	0.109	0.112	NA	NA	NA	1.83
26-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.0561	0.0594	NA	NA	NA	1.93
26-Oct-21	FR_FRRD (RG_FRUPO)	NA	0.107	0.107	NA	NA	NA	2.22
26-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	0.0596	0.0652	NA	NA	NA	1.55
26-Oct-21	FR_UFR1 (RG_URF1)	NA	0.000831	0.000838	NA	NA	NA	1.65
27-Oct-21	FR_FOUCL (RG_FOUCL)	NA	0.035	0.0331	NA	NA	NA	1.91
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	NA	0.0806	0.0704	NA	NA	NA	1.91
28-Oct-21	FR_FRABCH (RG_FO22)	NA	0.104	0.0946	NA	NA	NA	2.33
28-Oct-21	FR_FRRD (RG_FRUPO)	NA	0.117	0.105	NA	NA	NA	2.54
29-Oct-21	FR_FR4 (RG_FOBSC)	NA	0.116	0.106	NA	NA	NA	1.95
29-Oct-21	FR_FRCP1 (RG_FOBCP)	NA	0.118	0.104	NA	NA	NA	1.9
2-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.0607	0.0591	NA	NA	NA	1.95
2-Nov-21	FR_FR4 (RG_FOBSC)	NA	0.122	0.108	NA	NA	NA	2.08
2-Nov-21	FR_FRABCH (RG_FO22)	NA	0.0978	0.0964	NA	NA	NA	2.22
2-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	0.11	0.107	NA	NA	NA	1.92
2-Nov-21	FR_FRRD (RG_FRUPO)	NA	0.124	0.109	NA	NA	NA	2.54
2-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	0.073	0.0713	NA	NA	NA	1.74
2-Nov-21	FR_UFR1 (RG_URF1)	NA	0.000734	0.000733	NA	NA	NA	1.53
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	NA	0.0615	0.061	NA	NA	NA	1.85
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.107	0.106	NA	NA	NA	1.93
8-Nov-21	FR_FR3 (RG_FOBKS)	NA	0.0615	0.0603	NA	NA	NA	1.98
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.112	0.11	NA	NA	NA	2.03
8-Nov-21	GH_PC2 (RG_FODPO)	NA	0.104	0.102	NA	NA	NA	2.29
9-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.0652	0.0606	NA	NA	NA	1.88
9-Nov-21	FR_FR4 (RG_FOBSC)	NA	0.116	0.108	NA	NA	NA	1.91
9-Nov-21	FR_FRABCH (RG_FO22)	NA	0.098	0.0936	NA	NA	NA	2.29
9-Nov-21	FR_FRCP1 (RG_FOBCP)	NA	0.12	0.105	NA	NA	NA	1.9
9-Nov-21	FR_FRRD (RG_FRUPO)	NA	0.114	0.1	NA	NA	NA	2.45
9-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	0.0728	0.068	NA	NA	NA	1.87
9-Nov-21	FR_UFR1 (RG_URF1)	NA	0.000815	0.00071	NA	NA	NA	1.5
10-Nov-21	FR_FR4 (RG_FOBSC)	NA	0.108	0.0988	NA	NA	NA	2.04
10-Nov-21	FR_HC3 (RG_HENUP)	NA	0.00127	0.00111	NA	NA	NA	1.2
12-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.0618	0.0618	NA	NA	NA	1.78
12-Nov-21	FR_FR4 (RG_FOBSC)	NA	0.000881	0.000685	NA	NA	NA	1.74
12-Nov-21	FR_FRNTP (RG_FOUSH)	NA	0.0674	0.067	NA	NA	NA	1.8
15-Nov-21	FR_FR5	NA	0.0851	0.0768	NA	NA	NA	2.11
15-Nov-21	FR_FRABCH (RG_FO22)	NA	0.0978	0.0956	NA	NA	NA	2.12
16-Nov-21	FR_FR1 (RG_FODHE)	NA	0.0171	0.0168	NA	NA	NA	1.44
17-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.0628	0.0558	NA	NA	NA	1.97
17-Nov-21	FR_FRNTP (RG_FOUSH)	NA	0.0658	0.0555	NA	NA	NA	1.96
17-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	0.0718	0.0602	NA	NA	NA	1.81
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	NA	0.108	0.092	NA	NA	NA	2.36

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	SeCN - Selenocyanate_mg/L	Selenium (Se)-Dissolved_mg/L	Selenium (Se)-Total_mg/L	Selenium Unknown_mg/L	Selenosulfate_mg/L	SeMe - Selenomethionine_mg/L	Silicon (Si)-Dissolved_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.07	0.0635	NA	NA	NA	2.07
24-Nov-21	FR_FRNTP (RG_FOUSH)	NA	0.0736	0.0639	NA	NA	NA	2.09
24-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	0.0839	0.0771	NA	NA	NA	1.8
29-Nov-21	FR_FR2 (RG_FOUKI)	NA	0.0741	0.0683	NA	NA	NA	1.81
29-Nov-21	FR_FRNTP (RG_FOUSH)	NA	0.0784	0.0698	NA	NA	NA	1.84
29-Nov-21	FR_MULTIPLATE (RG_MP1)	NA	0.078	0.0703	NA	NA	NA	1.77
1-Dec-21	FR_FRABCH (RG_FO22)	NA	0.0928	0.094	NA	NA	NA	2.34
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0917	0.0788	NA	NA	NA	1.98
7-Dec-21	FR_FR2 (RG_FOUKI)	NA	0.0759	0.0708	NA	NA	NA	1.88
7-Dec-21	FR_FRNTP (RG_FOUSH)	NA	0.0808	0.0772	NA	NA	NA	1.86
7-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	0.0826	0.0773	NA	NA	NA	1.86
8-Dec-21	FR_FR3 (RG_FOBKS)	NA	0.0674	0.0654	NA	NA	NA	1.78
8-Dec-21	FR_FRABCH (RG_FO22)	NA	0.105	0.101	NA	NA	NA	2.4
8-Dec-21	FR_FRRD (RG_FRUPO)	NA	0.103	0.108	NA	NA	NA	2.31
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.114	0.107	NA	NA	NA	1.87
9-Dec-21	FR_FR1 (RG_FODHE)	NA	0.0345	0.0335	NA	NA	NA	1.41
9-Dec-21	FR_FR4 (RG_FOBSC)	NA	0.09465	0.0933	NA	NA	NA	1.78
9-Dec-21	FR_HC3 (RG_HENUP)	NA	0.00115	0.00117	NA	NA	NA	1.24
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.0894	0.0912	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	NA	0.117	0.107	NA	NA	NA	1.92
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	0.0842	0.0838	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	0.0899	0.093	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	NA	0.0874	0.08065	NA	NA	NA	2.38
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	0.0614	0.0588	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	<0.00001	0.0565	NA	<0.00001	<0.00001	<0.00001	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	0.0955	0.0957	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	<0.00001	0.0842	0.0826	<0.00001	<0.00001	<0.00001	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	0.0284	0.0304	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	0.0311	0.0317	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	NA	0.111	0.0992	NA	NA	NA	2.5
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<0.00001	0.0715	0.0763	<0.00001	<0.00001	<0.00001	1.79
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	0.0644	0.0629	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	0.0634	0.0643	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	0.0514	0.056	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.00001	0.000826	0.00087	<0.00001	<0.00001	<0.00001	1.85
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.00001	0.0346	0.0373	<0.00001	<0.00001	<0.00001	1.59
17-Dec-21	FR_FR1 (RG_FODHE)	<0.00001	0.0361	0.0401	<0.00001	<0.00001	<0.00001	1.5
17-Dec-21	FR_FR2 (RG_FOUKI)	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	FR_FRABCH (RG_FO22)	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	<0.00001	0.0748	0.0792	<0.00001	<0.00001	<0.00001	1.79
17-Dec-21	FR_FRRD (RG_FRUPO)	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.00001	0.0781	0.0819	<0.00001	<0.00001	<0.00001	1.82
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.00001	0.11	0.107	<0.00001	<0.00001	<0.00001	1.85
17-Dec-21	FR_UFR1 (RG_URF1)	NA	0.000766	0.000788	NA	NA	NA	1.88
17-Dec-21	RG_FOUEW	<0.00001	NA	NA	<0.00001	<0.00001	<0.00001	NA
17-Dec-21	RG_FOUNGD	<0.00001	0.0621	0.072	<0.00001	<0.00001	<0.00001	1.81
20-Dec-21	FR_FRABCH (RG_FO22)	NA	0.0927	0.0929	NA	NA	NA	2.44
21-Dec-21	GH_PC2 (RG_FODPO)	NA	0.0994	0.103	NA	NA	NA	2.45
22-Dec-21	FR_FR5	NA	0.0837	0.0786	NA	NA	NA	2.33
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	NA	0.105	0.0914	NA	NA	NA	2.4
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	0.159	0.157	NA	NA	NA	2.01
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	1.97	<0.00001	<0.00001	2.45	2.53	0.196	0.223
6-Jan-21	FR_FRNTP (RG_FOUSH)	2.07	<0.00001	<0.00001	2.18	2.24	0.215	0.219
6-Jan-21	FR_MULTIPLATE (RG_MP1)	1.95	<0.00001	<0.00001	1.8	1.99	0.205	0.203
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	1.64	<0.00001	<0.00001	0.739	0.69	0.0985	0.0888
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	2.08	<0.00001	<0.00001	2.69	2.56	0.207	0.219
12-Jan-21	FR_FR2 (RG_FOUKI)	1.94	<0.00001	<0.00001	2.56	2.69	0.239	0.244
12-Jan-21	FR_FR3 (RG_FOBKS)	1.99	<0.00001	<0.00001	2.39	2.66	0.213	0.206
12-Jan-21	FR_FR5	2.4	<0.00001	<0.00001	2.53	2.6	0.169	0.173
12-Jan-21	FR_FRNTP (RG_FOUSH)	1.89	<0.00001	<0.00001	2.17	2.2	0.243	0.25
12-Jan-21	FR_HC3 (RG_HENUP)	1.2	<0.00001	<0.00001	0.385	0.373	0.186	0.176
12-Jan-21	FR_MULTIPLATE (RG_MP1)	1.81	<0.00001	<0.00001	1.98	2.01	0.227	0.231
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	2.35	<0.00001	<0.00001	3.22	2.97	0.228	0.201
19-Jan-21	FR_FR2 (RG_FOUKI)	2.25	<0.00001	<0.00001	2.48	2.63	0.21	0.224
19-Jan-21	FR_FRABCH (RG_FO22)	2.54	<0.00001	<0.00001	2.76	2.79	0.193	0.208
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	2.53	<0.00001	<0.00001	2.67	3.58	0.247	0.264
21-Jan-21	GH_PC2 (RG_FODPO)	2.43	<0.00001	<0.00001	2.32	2.82	0.19	0.202
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	2.17	<0.00001	<0.00001	2.86	2.97	0.236	0.248
27-Jan-21	FR_FRNTP (RG_FOUSH)	2.16	<0.00001	<0.00001	2.48	2.59	0.244	0.256
27-Jan-21	FR_MULTIPLATE (RG_MP1)	1.73	<0.00001	<0.00001	2.35	2.12	0.243	0.222
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	2.19	<0.00001	<0.00001	2.9	3.28	0.233	0.227
2-Feb-21	FR_FRNTP (RG_FOUSH)	2.1	<0.00001	<0.00001	2.68	2.82	0.229	0.229
2-Feb-21	FR_MULTIPLATE (RG_MP1)	2.08	<0.00001	<0.00001	2.6	2.87	0.235	0.214
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	1.39	<0.00001	<0.00001	0.411	0.415	0.186	0.195
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	2.09	<0.00001	<0.00001	2.89	2.98	0.268	0.288
8-Feb-21	FR_FR5	2.44	<0.00001	<0.00001	2.53	2.5	0.219	0.224
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	2.19	<0.00001	<0.00001	3.06	2.94	0.236	0.277
9-Feb-21	FR_FR2 (RG_FOUKI)	2.27	<0.00001	<0.00001	3.31	3.14	0.231	0.254
9-Feb-21	FR_FRNTP (RG_FOUSH)	2.04	<0.00001	<0.00001	2.86	2.71	0.248	0.287
9-Feb-21	FR_MULTIPLATE (RG_MP1)	2.04	<0.00001	<0.00001	2.94	2.68	0.228	0.242
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	2.05	<0.00001	<0.00001	3.17	3.17	0.273	0.24
16-Feb-21	FR_FRNTP (RG_FOUSH)	2.04	<0.00001	<0.00001	3.01	2.94	0.268	0.246
16-Feb-21	FR_MULTIPLATE (RG_MP1)	1.86	<0.00001	<0.00001	2.92	2.8	0.263	0.233
16-Feb-21	GH_PC2 (RG_FODPO)	2.38	<0.00001	<0.00001	2.62	2.66	0.242	0.21
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	2.53	<0.00001	<0.00001	3.68	3.65	0.235	0.225
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	2.18	<0.00001	<0.00001	3.77	3.61	0.238	0.249
23-Feb-21	FR_FR4 (RG_FOBSC)	2.38	<0.00001	<0.00001	3.54	3.53	0.24	0.24
23-Feb-21	FR_FRABCH (RG_FO22)	2.43	<0.00001	<0.00001	2.48	2.7	0.202	0.206
23-Feb-21	FR_FRCP1 (RG_FOBCP)	3.07	<0.00001	<0.00001	4.85	5.32	0.296	0.319
23-Feb-21	FR_FRRD (RG_FRUPO)	2.61	<0.00001	<0.00001	3.85	3.73	0.25	0.252
23-Feb-21	FR_MULTIPLATE (RG_MP1)	2.01	<0.00001	<0.00001	3.45	3.39	0.236	0.237
23-Feb-21	FR_UFR1 (RG_URF1)	1.91	<0.00001	<0.00001	0.734	0.752	0.103	0.101
24-Feb-21	FR_FRNTP (RG_FOUSH)	2.21	<0.00001	<0.00001	3.25	3.44	0.248	0.251
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	2.31	<0.00001	<0.00001	3.83	3.81	0.259	0.23
2-Mar-21	FR_FR4 (RG_FOBSC)	2.28	<0.00001	<0.00001	3.92	3.7	0.248	0.236
2-Mar-21	FR_FRABCH (RG_FO22)	2.46	<0.00001	<0.00001	3	2.72	0.222	0.211
2-Mar-21	FR_FRCP1 (RG_FOBCP)	2.38	<0.00001	<0.00001	3.73	3.95	0.258	0.238
2-Mar-21	FR_FRNTP (RG_FOUSH)	2.17	<0.00001	<0.00001	3.34	3.7	0.242	0.242
2-Mar-21	FR_FRRD (RG_FRUPO)	2.52	<0.00001	<0.00001	4	3.79	0.271	0.245
2-Mar-21	FR_MULTIPLATE (RG_MP1)	1.98	<0.00001	<0.00001	3.81	3.56	0.248	0.225
2-Mar-21	FR_UFR1 (RG_URF1)	1.93	<0.00001	<0.00001	0.765	0.709	0.102	0.095
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	2.17	<0.00001	<0.00001	3.6	3.63	0.223	0.23
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	1.05	<0.00001	0.000024	0.098	0.111	0.0126	0.0155
5-Mar-21	FR_FR5	2.24	<0.00001	<0.00001	2.5	2.42	0.193	0.188
5-Mar-21	FR_HC3 (RG_HENUP)	1.32	<0.00001	<0.00001	0.376	0.39	0.181	0.187
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.1	<0.00001	<0.00001	3.67	3.2	0.239	0.245
8-Mar-21	FR_FRNTP (RG_FOUSH)	2.15	<0.00001	<0.00001	3.4	3.68	0.235	0.245
9-Mar-21	FR_FR2 (RG_FOUKI)	2.28	<0.00001	<0.00001	3.9	3.81	0.236	0.241
9-Mar-21	FR_FR4 (RG_FOBSC)	2.36	<0.00001	<0.00001	3.8	3.94	0.228	0.235
9-Mar-21	FR_FRABCH (RG_FO22)	2.44	<0.00001	<0.00001	2.7	3.08	0.211	0.219
9-Mar-21	FR_FRCP1 (RG_FOBCP)	2.42	<0.00001	<0.00001	3.46	3.96	0.234	0.251
9-Mar-21	FR_FRRD (RG_FRUPO)	2.66	<0.00001	<0.00001	4.21	4.18	0.252	0.246
9-Mar-21	FR_MULTIPLATE (RG_MP1)	2.24	<0.00001	<0.00001	3.74	3.67	0.238	0.232
9-Mar-21	FR_UFR1 (RG_URF1)	2.51	<0.00001	0.000017	0.628	0.67	0.0765	0.0829
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	2.26	<0.00001	0.000012	0.673	0.624	0.0812	0.0864
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	2.52	<0.00001	<0.00001	2.73	2.86	0.207	0.211
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	2.63	<0.00001	<0.00001	2.78	3.07	0.19	0.187
16-Mar-21	FR_FR4 (RG_FOBSC)	2.74	<0.00001	<0.00001	2.77	3.19	0.196	0.189
16-Mar-21	FR_FRABCH (RG_FO22)	2.32	<0.00001	<0.00001	3.22	3.28	0.201	0.209
16-Mar-21	FR_FRCP1 (RG_FOBCP)	2.2	<0.00001	0.00001	3.02	3.01	0.188	0.19
16-Mar-21	FR_FRNTP (RG_FOUSH)	2.62	<0.00001	<0.00001	2.83	3.02	0.18	0.194
16-Mar-21	FR_FRRD (RG_FRUPO)	2.65	<0.00001	<0.00001	3.67	4.16	0.211	0.209
16-Mar-21	FR_MULTIPLATE (RG_MP1)	2.61	<0.00001	0.00001	2.5	2.87	0.186	0.177
16-Mar-21	FR_UFR1 (RG_URF1)	2.63	0.000012	0.000042	0.545	0.546	0.0606	0.0634
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.55	<0.00001	0.00001	2.6	2.73	0.166	0.172
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	2.26	<0.00001	<0.00001	2.85	2.75	0.187	0.192
23-Mar-21	FR_FR4 (RG_FOBSC)	2.29	<0.00001	<0.00001	2.96	2.81	0.193	0.196
23-Mar-21	FR_FRABCH (RG_FO22)	2.47	<0.00001	<0.00001	3.06	3.28	0.191	0.198
23-Mar-21	FR_FRCP1 (RG_FOBCP)	2.43	<0.00001	<0.00001	2.68	2.83	0.177	0.186
23-Mar-21	FR_FRNTP (RG_FOUSH)	2.38	<0.00001	<0.00001	2.59	2.77	0.176	0.192
23-Mar-21	FR_FRRD (RG_FRUPO)	2.45	<0.00001	<0.00001	3.58	3.56	0.204	0.21
23-Mar-21	FR_MULTIPLATE (RG_MP1)	2.29	<0.00001	<0.00001	2.71	2.5	0.184	0.186
23-Mar-21	FR_UFR1 (RG_URF1)	2.54	<0.00001	0.000027	0.539	0.552	0.0562	0.0572
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.22	<0.00001	<0.00001	2.66	2.66	0.189	0.185
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	2.09	<0.00001	<0.00001	3.58	3	0.213	0.207
30-Mar-21	FR_FR4 (RG_FOBSC)	2.13	<0.00001	<0.00001	3.36	3.14	0.213	0.203
30-Mar-21	FR_FRABCH (RG_FO22)	2.26	<0.00001	<0.00001	3.32	3.34	0.201	0.213
30-Mar-21	FR_FRCP1 (RG_FOBCP)	2.04	<0.00001	<0.00001	3.5	3.38	0.216	0.222
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	2.32	<0.00001	<0.00001	3.56	3.35	0.216	0.21
30-Mar-21	FR_MULTIPLATE (RG_MP1)	2.08	<0.00001	<0.00001	3.3	2.96	0.21	0.203
30-Mar-21	FR_UFR1 (RG_URF1)	2.31	<0.00001	0.000011	0.632	0.603	0.0668	0.0729
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	2.02	<0.00001	<0.00001	3.14	3.25	0.212	0.224
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	2.15	<0.00001	<0.00001	3.34	3.35	0.211	0.22
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	2.01	<0.00001	<0.00001	2.64	2.7	0.198	0.18
6-Apr-21	FR_FR1 (RG_FODHE)	1.6	<0.00001	<0.00001	0.749	0.791	0.136	0.131
6-Apr-21	FR_FR2 (RG_FOUKI)	1.93	<0.00001	<0.00001	2.88	2.84	0.189	0.201
6-Apr-21	FR_FRNTP (RG_FOUSH)	1.97	<0.00001	<0.00001	2.63	2.71	0.186	0.198
6-Apr-21	FR_HC3 (RG_HENUP)	1.36	<0.00001	<0.00001	0.367	0.401	0.173	0.172
6-Apr-21	FR_MULTIPLATE (RG_MP1)	1.93	<0.00001	<0.00001	2.59	2.55	0.182	0.201
6-Apr-21	FR_UFR1 (RG_URF1)	2.02	<0.00001	<0.00001	0.6	0.644	0.0692	0.0772
7-Apr-21	FR_FR3 (RG_FOBKS)	1.78	<0.00001	<0.00001	2.77	2.74	0.198	0.196
7-Apr-21	FR_FR5	2.1	<0.00001	<0.00001	3.08	3.14	0.191	0.189
7-Apr-21	FR_FRABCH (RG_FO22)	2.15	<0.00001	<0.00001	3.33	3.03	0.211	0.199
7-Apr-21	FR_FRCP1 (RG_FOBCP)	1.85	<0.00001	<0.00001	2.63	2.8	0.196	0.193
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.9	<0.00001	<0.00001	2.82	2.61	0.204	0.198
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	2.12	<0.00001	<0.00001	3.01	2.94	0.218	0.198
9-Apr-21	FR_FR4 (RG_FOBSC)	1.94	<0.00001	<0.00001	2.57	2.62	0.185	0.187
12-Apr-21	FR_FR1 (RG_FODHE)	1.53	<0.00001	<0.00001	0.753	0.778	0.126	0.132
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	1.85	<0.00001	<0.00001	2.91	2.92	0.197	0.212
13-Apr-21	FR_FR4 (RG_FOBSC)	1.92	<0.00001	<0.00001	2.91	3.03	0.207	0.214
13-Apr-21	FR_FRABCH (RG_FO22)	2.28	<0.00001	<0.00001	2.98	2.98	0.189	0.197
13-Apr-21	FR_FRCP1 (RG_FOBCP)	2	<0.00001	<0.00001	2.95	2.73	0.213	0.207
13-Apr-21	FR_FRRD (RG_FRUPO)	2.02	<0.00001	<0.00001	3.45	3.48	0.205	0.214
13-Apr-21	FR_MULTIPLATE (RG_MP1)	1.85	<0.00001	0.000188	2.71	2.58	0.211	0.204
13-Apr-21	FR_UFR1 (RG_URF1)	2.1	<0.00001	<0.00001	0.673	0.66	0.0762	0.0728
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	1.95	<0.00001	<0.00001	2.66	2.81	0.194	0.213
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.89	<0.00001	<0.00001	2.82	2.96	0.197	0.217
15-Apr-21	FR_FR4 (RG_FOBSC)	1.83	<0.00001	<0.00001	3.07	2.65	0.214	0.202
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	1.83	<0.00001	<0.00001	0.776	0.804	0.0971	0.116
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	1.92	<0.00001	<0.00001	2.32	2.18	0.167	0.177
20-Apr-21	FR_FRNTP (RG_FOUSH)	2.01	<0.00001	<0.00001	2.06	2.06	0.16	0.171
20-Apr-21	FR_MULTIPLATE (RG_MP1)	1.88	<0.00001	<0.00001	1.93	1.85	0.155	0.164
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	1.9	<0.00001	<0.00001	2.12	2.14	0.157	0.175
21-Apr-21	FR_FRABCH (RG_FO22)	2.25	<0.00001	<0.00001	2.8	2.82	0.184	0.184
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.91	<0.00001	<0.00001	2.11	2.17	0.17	0.174
22-Apr-21	FR_FR2 (RG_FOUKI)	2.05	<0.00001	<0.00001	2.28	2.18	0.167	0.172
26-Apr-21	FR_FR1 (RG_FODHE)	1.54	<0.00001	<0.00001	0.659	0.757	0.105	0.116

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	1.8	<0.00001	<0.00001	2.26	2.39	0.18	0.187
27-Apr-21	FR_FRCP1 (RG_FOBCP)	1.87	<0.00001	<0.00001	2.18	2.46	0.186	0.186
27-Apr-21	FR_FRNTP (RG_FOUSH)	1.89	<0.00001	<0.00001	2.03	2.19	0.181	0.183
27-Apr-21	FR_MULTIPLATE (RG_MP1)	1.82	<0.00001	<0.00001	1.91	1.93	0.171	0.174
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	1.99	<0.00001	<0.00001	2.84	2.82	0.189	0.188
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.91	<0.00001	<0.00001	2.06	2.27	0.174	0.176
30-Apr-21	FR_FR4 (RG_FOBSC)	1.7	<0.00001	<0.00001	2.02	2.19	0.163	0.17
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	1.84	<0.00001	<0.00001	1.52	1.48	0.144	0.144
3-May-21	FR_HC3 (RG_HENUP)	1.38	<0.00001	<0.00001	0.332	0.352	0.152	0.143
3-May-21	FR_UFR1 (RG_URF1)	1.98	<0.00001	<0.00001	0.634	0.639	0.0778	0.0727
4-May-21	FR_FR1 (RG_FODHE)	1.73	<0.00001	<0.00001	0.68	0.669	0.104	0.0995
4-May-21	FR_FR2 (RG_FOUKI)	1.88	<0.00001	<0.00001	1.54	1.55	0.141	0.136
4-May-21	FR_FR3 (RG_FOBKS)	1.78	<0.00001	<0.00001	1.56	1.59	0.152	0.137
4-May-21	FR_FRNTP (RG_FOUSH)	1.85	<0.00001	<0.00001	1.38	1.4	0.141	0.132
4-May-21	FR_MULTIPLATE (RG_MP1)	1.81	<0.00001	<0.00001	1.31	1.34	0.122	0.128
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	1.89	<0.00001	<0.00001	1.48	1.53	0.136	0.133
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	1.96	<0.00001	<0.00001	1.97	2.07	0.146	0.148
5-May-21	FR_FRABCH (RG_FO22)	2.13	<0.00001	<0.00001	2.27	2.38	0.16	0.157
5-May-21	FR_FRCP1 (RG_FOBCP)	1.88	<0.00001	<0.00001	1.46	1.55	0.134	0.134
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	1.94	<0.00001	<0.00001	2.3	2.16	0.163	0.155
7-May-21	FR_FR4 (RG_FOBSC)	1.88	<0.00001	<0.00001	1.35	1.44	0.127	0.119
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	1.66	<0.00001	<0.00001	0.6	0.622	0.086	0.0908
11-May-21	FR_FR2 (RG_FOUKI)	1.68	<0.00001	<0.00001	1.55	1.57	0.123	0.123
11-May-21	FR_FRCP1 (RG_FOBCP)	1.65	<0.00001	<0.00001	1.66	1.72	0.128	0.131
11-May-21	FR_FRNTP (RG_FOUSH)	1.75	<0.00001	<0.00001	1.43	1.45	0.123	0.121
11-May-21	FR_MULTIPLATE (RG_MP1)	1.75	<0.00001	<0.00001	1.33	1.29	0.114	0.114
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	1.81	<0.00001	<0.00001	2.08	2.2	0.15	0.158
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	1.58	<0.00001	<0.00001	1.49	1.62	0.133	0.137
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	2.46	<0.00001	0.000011	0.881	0.92	0.0986	0.0974
18-May-21	FR_FR2 (RG_FOUKI)	2.55	<0.00001	0.000012	0.742	0.75	0.0842	0.088
18-May-21	FR_FR4 (RG_FOBSC)	2.91	<0.00001	0.000019	0.819	0.827	0.084	0.0889
18-May-21	FR_FRABCH (RG_FO22)	2.98	<0.00001	0.000013	1.18	1.29	0.104	0.104
18-May-21	FR_FRCP1 (RG_FOBCP)	2.3	<0.00001	<0.00001	0.936	0.989	0.0968	0.0958
18-May-21	FR_FRRD (RG_FRUPO)	3.31	<0.00001	0.000013	1.35	1.4	0.103	0.108
18-May-21	FR_MULTIPLATE (RG_MP1)	2.07	<0.00001	<0.00001	0.666	0.677	0.082	0.0834
18-May-21	FR_UFR1 (RG_URF1)	2.09	<0.00001	<0.00001	0.503	0.523	0.0634	0.0617
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	1.82	<0.00001	<0.00001	1.08	1.07	0.104	0.0994
20-May-21	FR_FRNTP (RG_FOUSH)	2.23	<0.00001	<0.00001	0.678	0.665	0.083	0.0848
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	1.79	<0.00001	<0.00001	1.09	1.02	0.0999	0.0958
25-May-21	FR_FR4 (RG_FOBSC)	2.12	<0.00001	<0.00001	1.37	1.3	0.106	0.112
25-May-21	FR_FRABCH (RG_FO22)	1.94	<0.00001	<0.00001	1.99	1.86	0.128	0.132
25-May-21	FR_FRCP1 (RG_FOBCP)	1.84	<0.00001	<0.00001	1.66	1.58	0.117	0.116
25-May-21	FR_FRRD (RG_FRUPO)	1.82	<0.00001	<0.00001	2.15	2.08	0.133	0.133
25-May-21	FR_MULTIPLATE (RG_MP1)	1.83	<0.00001	<0.00001	0.964	0.904	0.0978	0.0963
25-May-21	FR_UFR1 (RG_URF1)	1.95	<0.00001	<0.00001	0.631	0.608	0.0684	0.0699
26-May-21	FR_FR1 (RG_FODHE)	1.84	<0.00001	<0.00001	0.562	0.587	0.0793	0.0813
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	1.93	<0.00001	<0.00001	1.06	1.1	0.0897	0.0997
27-May-21	FR_FR4 (RG_FOBSC)	1.92	<0.00001	<0.00001	1.36	1.25	0.102	0.106
27-May-21	FR_FRNTP (RG_FOUSH)	1.81	<0.00001	<0.00001	0.94	0.869	0.0941	0.0966
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	1.7	<0.00001	<0.00001	0.514	0.549	0.0838	0.0838
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	1.81	<0.00001	<0.00001	0.961	0.991	0.0887	0.0972
1-Jun-21	FR_FR2 (RG_FOUKI)	1.73	<0.00001	<0.00001	0.802	0.724	0.0864	0.0834
1-Jun-21	FR_FR4 (RG_FOBSC)	1.96	<0.00001	<0.00001	0.934	0.869	0.0868	0.0861
1-Jun-21	FR_FRABCH (RG_FO22)	2.13	<0.00001	<0.00001	1.49	1.38	0.11	0.104
1-Jun-21	FR_FRCP1 (RG_FOBCP)	2	<0.00001	<0.00001	1.29	1.22	0.1	0.0964
1-Jun-21	FR_FRNTP (RG_FOUSH)	1.68	<0.00001	<0.00001	0.845	0.755	0.0908	0.0828
1-Jun-21	FR_FRRD (RG_FRUPO)	2	<0.00001	<0.00001	1.68	1.47	0.114	0.109
1-Jun-21	FR_MULTIPLATE (RG_MP1)	1.68	<0.00001	<0.00001	0.788	0.712	0.0885	0.0833
1-Jun-21	FR_UFR1 (RG_URF1)	2.03	<0.00001	<0.00001	0.563	0.528	0.0669	0.0628
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	2.31	<0.00001	0.000015	1.11	1.06	0.0776	0.0898
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.94	<0.00001	<0.00001	0.765	0.714	0.0709	0.0704
7-Jun-21	FR_FR1 (RG_FODHE)	1.74	<0.00001	<0.00001	0.522	0.503	0.071	0.0734
7-Jun-21	FR_HC3 (RG_HENUP)	1.18	<0.00001	<0.00001	0.247	0.248	0.0757	0.0748
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.9	<0.00001	<0.00001	0.92	0.931	0.0807	0.084
7-Jun-21	GH_PC2 (RG_FODPO)	2.13	<0.00001	<0.00001	2.01	2.06	0.111	0.112
8-Jun-21	FR_FR2 (RG_FOUKI)	2.12	<0.00001	<0.00001	0.961	0.977	0.0883	0.0972
8-Jun-21	FR_FR4 (RG_FOBSC)	2.14	<0.00001	<0.00001	1.36	1.47	0.0901	0.0995

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	2.08	<0.00001	<0.00001	2.19	2.21	0.114	0.119
8-Jun-21	FR_FRCP1 (RG_FOBCP)	1.83	<0.00001	<0.00001	1.88	2.08	0.106	0.107
8-Jun-21	FR_FRRD (RG_FRUPO)	2.39	<0.00001	<0.00001	2.3	2.38	0.121	0.132
8-Jun-21	FR_MULTIPLATE (RG_MP1)	2	<0.00001	<0.00001	0.778	0.798	0.0792	0.0871
8-Jun-21	FR_UFR1 (RG_URF1)	2.04	<0.00001	<0.00001	0.644	0.599	0.0668	0.0693
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	1.89	<0.00001	<0.00001	0.94	0.949	0.0915	0.0916
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.83	<0.00001	<0.00001	1.05	1.04	0.0951	0.0949
10-Jun-21	FR_FR4 (RG_FOBSC)	1.72	<0.00001	<0.00001	2.32	2.22	0.109	0.118
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	1.64	<0.00001	<0.00001	1.68	1.64	0.127	0.136
14-Jun-21	FR_FOUCL (RG_FOUCL)	1.49	<0.00001	<0.00001	0.453	0.489	0.0756	0.0753
14-Jun-21	FR_FR1 (RG_FODHE)	1.55	<0.00001	<0.00001	0.4725	0.487	0.07435	0.0782
14-Jun-21	FR_FR3 (RG_FOBKS)	1.58	<0.00001	<0.00001	1.01	0.953	0.0903	0.0931
14-Jun-21	FR_FR5	1.78	<0.00001	<0.00001	1.77	1.7	0.106	0.11
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	1.67	<0.00001	<0.00001	0.786	0.86	0.0882	0.0881
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.61	<0.00001	<0.00001	1	0.969	0.0899	0.0961
14-Jun-21	RG_FO26	1.93	<0.00001	<0.00001	0.55	0.627	0.0732	0.0703
15-Jun-21	FR_FR2 (RG_FOUKI)	1.51	<0.00001	<0.00001	0.858	0.798	0.0828	0.0847
15-Jun-21	FR_FR4 (RG_FOBSC)	1.59	<0.00001	<0.00001	1.04	1	0.0868	0.0856
15-Jun-21	FR_FRABCH (RG_FO22)	1.69	<0.00001	<0.00001	1.51	1.49	0.0948	0.101
15-Jun-21	FR_FRCP1 (RG_FOBCP)	1.67	<0.00001	<0.00001	1.37	1.31	0.0902	0.0938
15-Jun-21	FR_FRNTP (RG_FOUSH)	1.65	<0.00001	<0.00001	0.7335	0.7835	0.0816	0.0831
15-Jun-21	FR_FRRD (RG_FRUPO)	1.77	<0.00001	<0.00001	2	1.96	0.113	0.118
15-Jun-21	FR_MULTIPLATE (RG_MP1)	1.48	<0.00001	<0.00001	0.694	0.673	0.076	0.0776
15-Jun-21	FR_UFR1 (RG_URF1)	1.89	<0.00001	<0.00001	0.5505	0.567	0.0679	0.0679
15-Jun-21	RG_FOUNGD	1.53	<0.00001	<0.00001	0.631	0.674	0.0798	0.0775
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	1.55	<0.00001	<0.00001	0.874	0.843	0.0817	0.0842
16-Jun-21	FR_FR4 (RG_FOBSC)	1.66	<0.00001	<0.00001	1.38	1.43	0.0955	0.0996
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	1.53	<0.00001	<0.00001	0.654	0.647	0.0745	0.0774
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	0.92	<0.00001	<0.00001	0.171	0.175	0.0566	0.057
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.54	<0.00001	<0.00001	0.93	0.893	0.08515	0.0832
17-Jun-21	FR_FR2 (RG_FOUKI)	1.7	<0.00001	<0.00001	0.971	0.93	0.0849	0.0899
17-Jun-21	FR_FR4 (RG_FOBSC)	1.7	<0.00001	<0.00001	2.07	1.93	0.112	0.103
17-Jun-21	FR_FRCP1 (RG_FOBCP)	1.67	<0.00001	<0.00001	1.55	1.48	0.0962	0.0949
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	1.65	<0.00001	<0.00001	1.56	1.48	0.0973	0.0951
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.75	<0.00001	<0.00001	1.02	0.966	0.0897	0.0876
17-Jun-21	GH_PC2 (RG_FODPO)	1.91	<0.00001	<0.00001	1.79	1.88	0.111	0.107
18-Jun-21	FR_FRABCH (RG_FO22)	1.8	<0.00001	<0.00001	1.7	1.85	0.115	0.121
18-Jun-21	FR_FRRD (RG_FRUPO)	1.78	<0.00001	<0.00001	1.94	2.17	0.119	0.127
18-Jun-21	RG_FOUEW	1.77	<0.00001	<0.00001	1.56	1.66	0.109	0.109
21-Jun-21	FR_FR1 (RG_FODHE)	1.41	<0.00001	<0.00001	0.4275	0.4185	0.073	0.07355
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.55	<0.00001	<0.00001	0.952	1.02	0.0913	0.0974
21-Jun-21	FR_UFR1 (RG_URF1)	1.86	<0.00001	<0.00001	0.549	0.5515	0.07145	0.07335
22-Jun-21	FR_FR2 (RG_FOUKI)	1.55	<0.00001	<0.00001	1.04	0.869	0.0942	0.0913
22-Jun-21	FR_FRABCH (RG_FO22)	1.76	<0.00001	<0.00001	1.78	1.63	0.124	0.115
22-Jun-21	FR_FRCP1 (RG_FOBCP)	1.64	<0.00001	<0.00001	1.57	1.44	0.105	0.108
22-Jun-21	FR_FRNTP (RG_FOUSH)	1.51	<0.00001	<0.00001	0.951	0.785	0.0942	0.0866
22-Jun-21	FR_MULTIPLATE (RG_MP1)	1.46	<0.00001	<0.00001	0.749	0.69	0.0903	0.0807
23-Jun-21	FR_FR4 (RG_FOBSC)	1.66	<0.00001	<0.00001	1.3	1.16	0.103	0.0958
28-Jun-21	FR_FR1 (RG_FODHE)	1.32	<0.00001	<0.00001	0.349	0.359	0.0698	0.0724
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.64	<0.00001	<0.00001	0.961	0.978	0.0943	0.0964
29-Jun-21	FR_FR2 (RG_FOUKI)	1.55	<0.00001	<0.00001	1.06	1.08	0.0896	0.096
29-Jun-21	FR_FR4 (RG_FOBSC)	1.73	<0.00001	<0.00001	1.16	1.17	0.0976	0.0978
29-Jun-21	FR_FRABCH (RG_FO22)	1.92	<0.00001	<0.00001	1.69	1.74	0.112	0.116
29-Jun-21	FR_FRCP1 (RG_FOBCP)	1.76	<0.00001	<0.00001	1.41	1.5	0.0974	0.104
29-Jun-21	FR_FRNTP (RG_FOUSH)	1.62	<0.00001	<0.00001	0.895	0.924	0.0899	0.0927
29-Jun-21	FR_FRRD (RG_FRUPO)	1.83	<0.00001	<0.00001	2.13	2.16	0.123	0.126
29-Jun-21	FR_MULTIPLATE (RG_MP1)	1.49	<0.00001	<0.00001	0.8	0.785	0.084	0.0888
29-Jun-21	FR_UFR1 (RG_URF1)	1.89	<0.00001	<0.00001	0.582	0.552	0.0769	0.0765
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	1.66	<0.00001	<0.00001	1.25	1.26	0.101	0.104
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	1.32	<0.00001	<0.00001	0.395	0.378	0.0732	0.0758
2-Jul-21	FR_UFR1 (RG_URF1)	2.07	<0.00001	<0.00001	0.591	0.59	0.0802	0.0844
4-Jul-21	FR_FR2 (RG_FOUKI)	1.8	<0.00001	<0.00001	1.29	1.39	0.108	0.117
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	1.73	<0.00001	<0.00001	1.08	1.22	0.112	0.116
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	1.82	<0.00001	<0.00001	1.26	1.22	0.114	0.114
5-Jul-21	FR_HC3 (RG_HENUP)	1.05	<0.00001	<0.00001	0.206	0.212	0.0791	0.0797
6-Jul-21	FR_FR1 (RG_FODHE)	1.34	<0.00001	<0.00001	0.382	0.381	0.0766	0.0782
6-Jul-21	FR_FR4 (RG_FOBSC)	1.63	<0.00001	<0.00001	1.08	1.15	0.107	0.107
6-Jul-21	FR_FRABCH (RG_FO22)	1.88	<0.00001	<0.00001	1.93	1.95	0.119	0.131
6-Jul-21	FR_FRCP1 (RG_FOBCP)	1.77	<0.00001	<0.00001	1.57	1.53	0.11	0.113
6-Jul-21	FR_FRRD (RG_FRUPO)	1.82	<0.00001	<0.00001	2.23	2.06	0.128	0.129
6-Jul-21	FR_MULTIPLATE (RG_MP1)	1.44	<0.00001	<0.00001	0.867	0.851	0.0985	0.0915
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	1.65	<0.00001	<0.00001	1.12	1.12	0.0992	0.103
6-Jul-21	FR_UFR1 (RG_URF1)	2.11	<0.00001	<0.00001	0.54	0.59	0.0821	0.0823
7-Jul-21	FR_FR2 (RG_FOUKI)	1.71	<0.00001	<0.00001	1.17	1.18	0.107	0.108

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	1.69	<0.00001	<0.00001	1.04	1.12	0.106	0.116
7-Jul-21	GH_PC2 (RG_FODPO)	1.98	<0.00001	<0.00001	1.83	1.8	0.128	0.137
8-Jul-21	FR_FR3 (RG_FOBKS)	1.84	<0.00001	<0.00001	1.28	1.32	0.121	0.114
8-Jul-21	FR_FR5	1.84	<0.00001	<0.00001	1.96	1.99	0.13	0.124
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	1.59	<0.00001	<0.00001	0.453	0.434	0.0861	0.0844
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	1.92	<0.00001	<0.00001	1.43	1.53	0.131	0.122
13-Jul-21	FR_FR2 (RG_FOUKI)	1.82	<0.00001	<0.00001	1.51	1.4	0.129	0.128
13-Jul-21	FR_FR4 (RG_FOBSC)	1.79	<0.00001	<0.00001	1.47	1.45	0.133	0.13
13-Jul-21	FR_FRABCH (RG_FO22)	1.87	<0.00001	<0.00001	2.41	2.29	0.142	0.14
13-Jul-21	FR_FRCP1 (RG_FOBCP)	1.93	<0.00001	<0.00001	1.78	1.81	0.121	0.127
13-Jul-21	FR_FRNTP (RG_FOUSH)	1.72	<0.00001	<0.00001	1.3	1.28	0.117	0.12
13-Jul-21	FR_FRRD (RG_FRUPO)	1.91	<0.00001	<0.00001	2.68	2.58	0.151	0.147
13-Jul-21	FR_MULTIPLATE (RG_MP1)	1.73	<0.00001	<0.00001	1.14	1.15	0.118	0.115
13-Jul-21	FR_UFR1 (RG_URF1)	2.19	<0.00001	<0.00001	0.624	0.606	0.0933	0.0902
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	1.91	<0.00001	<0.00001	1.55	1.65	0.118	0.129
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	1.78	<0.00001	<0.00001	1.51	1.46	0.122	0.124
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	1.84	<0.00001	<0.00001	1.89	1.88	0.138	0.136
20-Jul-21	FR_FR4 (RG_FOBSC)	1.95	<0.00001	<0.00001	1.88	1.87	0.138	0.137
20-Jul-21	FR_FRRD (RG_FRUPO)	2.06	<0.00001	<0.00001	3.3	3.37	0.151	0.15
20-Jul-21	FR_MULTIPLATE (RG_MP1)	1.78	<0.00001	<0.00001	1.51	1.51	0.127	0.123
20-Jul-21	FR_UFR1 (RG_URF1)	2.23	<0.00001	<0.00001	0.659	0.671	0.093	0.0922
22-Jul-21	FR_FRABCH (RG_FO22)	1.9	<0.00001	<0.00001	2.54	2.39	0.149	0.169
26-Jul-21	FR_FRABCH (RG_FO22)	1.77	<0.00001	<0.00001	2.8	2.58	0.164	0.16
27-Jul-21	FR_FR2 (RG_FOUKI)	1.96	<0.00001	<0.00001	2.09	1.85	0.152	0.145
27-Jul-21	FR_FRNTP (RG_FOUSH)	1.86	<0.00001	<0.00001	1.9	1.68	0.155	0.15
27-Jul-21	FR_MULTIPLATE (RG_MP1)	1.83	<0.00001	<0.00001	1.7	1.52	0.14	0.141
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.07	<0.00001	<0.00001	2.11	2.13	0.167	0.155
4-Aug-21	FR_FR2 (RG_FOUKI)	2.05	<0.00001	<0.00001	2.01	2.08	0.161	0.152
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	2.02	<0.00001	<0.00001	1.92	1.89	0.16	0.15
4-Aug-21	FR_MULTIPLATE (RG_MP1)	1.96	<0.00001	<0.00001	1.64	1.63	0.145	0.136
5-Aug-21	FR_FRABCH (RG_FO22)	2.26	<0.00001	<0.00001	2.96	2.88	0.176	0.165
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.28	<0.00001	<0.00001	2.17	2.06	0.182	0.171
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	2.01	<0.00001	<0.00001	1.6	1.79	0.15	0.146
10-Aug-21	FR_FR1 (RG_FODHE)	1.63	<0.00001	<0.00001	0.603	0.611	0.116	0.109
10-Aug-21	FR_FR2 (RG_FOUKI)	2.04	<0.00001	<0.00001	1.94	1.9	0.162	0.158
10-Aug-21	FR_FR4 (RG_FOBSC)	2.02	<0.00001	<0.00001	2	1.95	0.169	0.162
10-Aug-21	FR_FRABCH (RG_FO22)	2.19	<0.00001	<0.00001	2.71	2.74	0.173	0.172
10-Aug-21	FR_FRCP1 (RG_FOBCP)	2.09	<0.00001	<0.00001	2.01	1.98	0.168	0.164
10-Aug-21	FR_FRRD (RG_FRUPO)	2.12	<0.00001	<0.00001	3.37	3.37	0.168	0.165
10-Aug-21	FR_MULTIPLATE (RG_MP1)	1.91	<0.00001	<0.00001	1.54	1.51	0.148	0.143
10-Aug-21	FR_UFR1 (RG_URF1)	2.15	<0.00001	<0.00001	0.657	0.676	0.104	0.102
11-Aug-21	FR_FR3 (RG_FOBKS)	2.12	<0.00001	<0.00001	2.09	2.04	0.16	0.164
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.11	<0.00001	<0.00001	2.13	2.12	0.165	0.17
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	2.1	<0.00001	<0.00001	1.91	2.04	0.154	0.157
12-Aug-21	FR_FR4 (RG_FOBSC)	2.32	<0.00001	<0.00001	1.99	2.1	0.162	0.181
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.08	<0.00001	<0.00001	1.94	2.02	0.156	0.161
13-Aug-21	FR_FR3 (RG_FOBKS)	2.15	<0.00001	<0.00001	2.11	2.04	0.157	0.154
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.19	<0.00001	<0.00001	2.18	2.08	0.164	0.164
14-Aug-21	FR_FR3 (RG_FOBKS)	2.16	<0.00001	<0.00001	2.05	2.05	0.16	0.166
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.2	<0.00001	<0.00001	2.06	2.08	0.163	0.174
15-Aug-21	FR_FR3 (RG_FOBKS)	2.21	<0.00001	<0.00001	2.08	2.19	0.163	0.171
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.2	<0.00001	<0.00001	2.1	2.22	0.17	0.176
16-Aug-21	FR_FR3 (RG_FOBKS)	2.22	<0.00001	<0.00001	2.06	2.09	0.168	0.169
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.27	<0.00001	<0.00001	2.18	2.16	0.167	0.176
17-Aug-21	FR_FR2 (RG_FOUKI)	3.11	<0.00001	0.000012	1.96	1.93	0.155	0.158
17-Aug-21	FR_FR4 (RG_FOBSC)	3.97	<0.00001	0.00003	2.14	2.17	0.157	0.164
17-Aug-21	FR_FR5	2.21	<0.00001	<0.00001	2.7	2.56	0.155	0.144
17-Aug-21	FR_FRABCH (RG_FO22)	2.35	<0.00001	<0.00001	2.68	2.63	0.164	0.16
17-Aug-21	FR_FRCP1 (RG_FOBCP)	2.57	<0.00001	0.000012	2.03	2.02	0.159	0.154
17-Aug-21	FR_FRRD (RG_FRUPO)	2.35	<0.00001	<0.00001	3.42	3.51	0.16	0.161
17-Aug-21	FR_HC3 (RG_HENUP)	1.39	<0.00001	<0.00001	0.285	0.28	0.126	0.12
17-Aug-21	FR_MULTIPLATE (RG_MP1)	2.57	<0.00001	0.000012	1.4	1.28	0.138	0.132
17-Aug-21	FR_UFR1 (RG_URF1)	2.44	<0.00001	<0.00001	0.684	0.662	0.0986	0.0923
18-Aug-21	GH_PC2 (RG_FODPO)	2.26	<0.00001	<0.00001	2.05	2.07	0.154	0.159
19-Aug-21	FR_FR2 (RG_FOUKI)	1.92	<0.00001	<0.00001	1.35	1.32	0.132	0.134
19-Aug-21	FR_FRNTP (RG_FOUSH)	1.87	<0.00001	<0.00001	1.19	1.12	0.132	0.128
19-Aug-21	FR_MULTIPLATE (RG_MP1)	1.84	<0.00001	<0.00001	0.998	0.993	0.125	0.122
24-Aug-21	FR_FR2 (RG_FOUKI)	1.87	<0.00001	<0.00001	1.48	1.51	0.144	0.136
24-Aug-21	FR_FR4 (RG_FOBSC)	2	<0.00001	<0.00001	1.53	1.59	0.144	0.146
24-Aug-21	FR_FRABCH (RG_FO22)	2.43	<0.00001	<0.00001	2.37	2.44	0.152	0.161
24-Aug-21	FR_FRCP1 (RG_FOBCP)	2.17	<0.00001	<0.00001	1.6	1.67	0.141	0.15
24-Aug-21	FR_FRRD (RG_FRUPO)	2.22	<0.00001	<0.00001	2.94	2.95	0.159	0.152
24-Aug-21	FR_MULTIPLATE (RG_MP1)	1.73	<0.00001	<0.00001	1.07	1.06	0.122	0.118
24-Aug-21	FR_UFR1 (RG_URF1)	2.06	<0.00001	<0.00001	0.601	0.642	0.0921	0.0977
25-Aug-21	FR_FR2 (RG_FOUKI)	1.92	<0.00001	<0.00001	1.67	1.55	0.152	0.15
25-Aug-21	FR_FRNTP (RG_FOUSH)	1.88	<0.00001	<0.00001	1.57	1.4	0.158	0.151

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	1.87	<0.00001	<0.00001	1.19	1.15	0.125	0.132
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	2.06	<0.00001	<0.00001	1.96	1.89	0.17	0.177
31-Aug-21	FR_FR4 (RG_FOBSC)	2.1	<0.00001	<0.00001	2.01	1.95	0.169	0.18
31-Aug-21	FR_FRABCH (RG_FO22)	2.41	<0.00001	<0.00001	2.71	2.76	0.172	0.176
31-Aug-21	FR_FRCP1 (RG_FOBCP)	2.23	<0.00001	<0.00001	2.1	2.04	0.172	0.177
31-Aug-21	FR_FRRD (RG_FRUPO)	2.26	<0.00001	<0.00001	3.5	3.18	0.167	0.174
31-Aug-21	FR_MULTIPLATE (RG_MP1)	1.87	<0.00001	<0.00001	1.47	1.44	0.142	0.143
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.1	<0.00001	<0.00001	2.05	2.05	0.189	0.195
31-Aug-21	FR_UFR1 (RG_URF1)	2.1	<0.00001	<0.00001	0.646	0.644	0.0993	0.103
1-Sep-21	FR_FRNTP (RG_FOUSH)	2	<0.00001	<0.00001	1.88	1.84	0.188	0.174
3-Sep-21	FR_FR4 (RG_FOBSC)	1.98	<0.00001	<0.00001	2.24	2.16	0.173	0.188
7-Sep-21	FR_FR2 (RG_FOUKI)	2.01	<0.00001	<0.00001	2.23	2.27	0.176	0.18
7-Sep-21	FR_FR4 (RG_FOBSC)	2.02	<0.00001	<0.00001	2.35	2.27	0.182	0.185
7-Sep-21	FR_FRABCH (RG_FO22)	2.13	<0.00001	<0.00001	2.73	2.74	0.17	0.193
7-Sep-21	FR_FRCP1 (RG_FOBCP)	2.1	<0.00001	<0.00001	2.22	2.28	0.171	0.18
7-Sep-21	FR_FRRD (RG_FRUPO)	2.18	<0.00001	<0.00001	3.49	3.45	0.162	0.165
7-Sep-21	FR_MULTIPLATE (RG_MP1)	1.81	<0.00001	<0.00001	1.74	1.67	0.153	0.151
7-Sep-21	FR_UFR1 (RG_URF1)	1.72	<0.00001	<0.00001	0.63	0.585	0.0981	0.113
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	2.06	<0.00001	<0.00001	2.09	2.2	0.179	0.18
9-Sep-21	FR_FR3 (RG_FOBKS)	1.92	<0.00001	<0.00001	2.32	2.1	0.177	0.176
9-Sep-21	FR_FRNTP (RG_FOUSH)	2.03	<0.00001	<0.00001	1.95	2.17	0.172	0.178
9-Sep-21	FR_MULTIPLATE (RG_MP1)	1.98	<0.00001	<0.00001	1.66	1.79	0.154	0.161
11-Sep-21	GH_PC2 (RG_FODPO)	2.2	<0.00001	<0.00001	2.51	2.55	0.176	0.179
11-Sep-21	RG_FOUEW	2.2	<0.00001	<0.00001	2.77	2.7	0.163	0.165
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	2.17	<0.00001	<0.00001	2.83	2.74	0.173	0.176
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	1.75	<0.00001	<0.00001	0.617	0.616	0.107	0.11
13-Sep-21	FR_FR1 (RG_FODHE)	1.61	<0.00001	<0.00001	0.62	0.616	0.11	0.111
13-Sep-21	FR_FR4 (RG_FOBSC)	2.03	<0.00001	<0.00001	2.32	2.29	0.195	0.191
13-Sep-21	FR_FR5	2.09	<0.00001	<0.00001	2.63	2.65	0.16	0.165
13-Sep-21	FR_FRCP1 (RG_FOBCP)	2.09	<0.00001	<0.00001	2.32	2.33	0.191	0.19
13-Sep-21	FR_FRRD (RG_FRUPO)	2.19	<0.00001	<0.00001	3.47	3.48	0.169	0.167
13-Sep-21	FR_HC3 (RG_HENUP)	1.18	<0.00001	<0.00001	0.329	0.338	0.143	0.137
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	2.07	<0.00001	<0.00001	2.42	2.39	0.196	0.197
13-Sep-21	GH_PC2 (RG_FODPO)	2.13	<0.00001	<0.00001	2.61	2.62	0.18	0.183
14-Sep-21	FR_FR2 (RG_FOUKI)	2.08	<0.00001	<0.00001	2.41	2.3	0.191	0.184
14-Sep-21	FR_FR3 (RG_FOBKS)	2.09	<0.00001	<0.00001	2.41	2.33	0.176	0.198
14-Sep-21	FR_FRNTP (RG_FOUSH)	2.44	<0.00001	<0.00001	2.21	2.23	0.186	0.187
14-Sep-21	FR_MULTIPLATE (RG_MP1)	1.88	<0.00001	<0.00001	1.78	1.68	0.153	0.159
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	2.06	<0.00001	<0.00001	2.35	2.29	0.194	0.19
15-Sep-21	FR_FR1 (RG_FODHE)	1.54	<0.00001	<0.00001	0.603	0.63	0.113	0.109
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	2.01	<0.00001	<0.00001	2.32	2.34	0.181	0.188
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	2.01	<0.00001	<0.00001	1.75	1.88	0.143	0.163
15-Sep-21	RG_FO26	1.99	<0.00001	<0.00001	0.585	0.629	0.102	0.108
16-Sep-21	FR_FRABCH (RG_FO22)	2.32	<0.00001	<0.00001	2.82	2.84	0.177	0.174
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	1.85	<0.00001	<0.00001	1.77	1.68	0.154	0.153
16-Sep-21	FR_FRNTP (RG_FOUSH)	1.86	<0.00001	<0.00001	2	1.85	0.161	0.161
16-Sep-21	FR_HC3 (RG_HENUP)	1.16	<0.00001	<0.00001	0.341	0.32	0.145	0.14
16-Sep-21	RG_FOUNGD	1.86	<0.00001	<0.00001	1.65	1.56	0.15	0.145
17-Sep-21	FR_FR4 (RG_FOBSC)	1.99	<0.00001	<0.00001	2.4	2.38	0.187	0.203
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	2.18	<0.00001	<0.00001	3.57	3.53	0.182	0.171
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	2.08	<0.00001	<0.00001	2.52	2.74	0.207	0.204
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	1.88	<0.00001	<0.00001	0.632	0.644	0.104	0.101
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	2.23	<0.00001	<0.00001	2.36	2.58	0.211	0.199
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	2.29	<0.00001	<0.00001	2.16	2.33	0.205	0.194
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	2.04	<0.00001	<0.00001	1.88	1.96	0.172	0.168
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	2.33	<0.00001	<0.00001	2.96	3.09	0.181	0.187
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	1.9	<0.00001	<0.00001	2.42	2.42	0.198	0.197
28-Sep-21	FR_FR2 (RG_FOUKI)	2.1	<0.00001	<0.00001	2.3	2.69	0.196	0.204
28-Sep-21	FR_FRABCH (RG_FO22)	2.24	<0.00001	<0.00001	2.8	3.24	0.183	0.194
28-Sep-21	FR_FRNTP (RG_FOUSH)	2.07	<0.00001	<0.00001	2.13	2.54	0.197	0.207
28-Sep-21	FR_MULTIPLATE (RG_MP1)	1.86	<0.00001	<0.00001	1.81	2.08	0.164	0.168

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	1.78	<0.00001	<0.00001	2.05	2.15	0.181	0.178
4-Oct-21	FR_FR1 (RG_FODHE)	1.66	<0.00001	<0.00001	0.671	0.661	0.116	0.127
4-Oct-21	FR_HC3 (RG_HENUP)	1.34	<0.00001	<0.00001	0.376	0.394	0.154	0.162
5-Oct-21	FR_FR2 (RG_FOUKI)	2.01	<0.00001	<0.00001	2.34	2.51	0.223	0.226
5-Oct-21	FR_MULTIPLATE (RG_MP1)	1.78	<0.00001	<0.00001	1.93	2.01	0.168	0.17
6-Oct-21	FR_FR3 (RG_FOBKS)	2.1	<0.00001	<0.00001	2.54	2.87	0.24	0.254
6-Oct-21	FR_FR5	2.53	<0.00001	<0.00001	2.42	2.77	0.164	0.167
6-Oct-21	FR_FRABCH (RG_FO22)	2.25	<0.00001	<0.00001	2.93	3.12	0.192	0.19
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	2.26	<0.00001	<0.00001	2.79	3.02	0.2	0.211
7-Oct-21	FR_FR4 (RG_FOBSC)	1.75	<0.00001	<0.00001	2.49	2.42	0.19	0.2
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	1.88	<0.00001	<0.00001	2.38	2.24	0.18	0.181
9-Oct-21	FR_FRNTP (RG_FOUSH)	1.81	<0.00001	<0.00001	2.07	1.97	0.174	0.165
10-Oct-21	FR_FR2 (RG_FOUKI)	1.81	<0.00001	<0.00001	2.39	2.21	0.179	0.172
10-Oct-21	FR_FRNTP (RG_FOUSH)	1.78	<0.00001	<0.00001	2.06	1.93	0.174	0.166
11-Oct-21	FR_FR2 (RG_FOUKI)	1.87	<0.00001	<0.00001	2.34	2.17	0.169	0.172
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	1.92	<0.00001	<0.00001	2.02	2.04	0.172	0.17
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	1.97	<0.00001	<0.00001	2.58	2.43	0.187	0.204
12-Oct-21	FR_FR2 (RG_FOUKI)	1.83	<0.00001	<0.00001	2.39	2.33	0.179	0.185
12-Oct-21	FR_FR4 (RG_FOBSC)	1.83	<0.00001	<0.00001	2.72	2.4	0.189	0.191
12-Oct-21	FR_FRABCH (RG_FO22)	2.51	<0.00001	<0.00001	3.16	3.41	0.186	0.191
12-Oct-21	FR_FRCP1 (RG_FOBCP)	1.97	<0.00001	<0.00001	2.45	2.49	0.186	0.196
12-Oct-21	FR_FRRD (RG_FRUPO)	2.46	<0.00001	<0.00001	4.02	3.95	0.185	0.184
12-Oct-21	FR_MULTIPLATE (RG_MP1)	2.02	<0.00001	<0.00001	2.04	2.21	0.178	0.18
13-Oct-21	FR_FR2 (RG_FOUKI)	1.98	<0.00001	<0.00001	2.39	2.55	0.199	0.202
13-Oct-21	FR_FRNTP (RG_FOUSH)	2.05	<0.00001	<0.00001	2.2	2.3	0.204	0.2
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	1.93	<0.00001	<0.00001	2.79	2.66	0.213	0.22
19-Oct-21	FR_FR4 (RG_FOBSC)	1.93	<0.00001	<0.00001	2.74	2.55	0.219	0.219
19-Oct-21	FR_FRABCH (RG_FO22)	2.6	<0.00001	<0.00001	3.02	3.4	0.183	0.197
19-Oct-21	FR_FRCP1 (RG_FOBCP)	2.07	<0.00001	<0.00001	2.63	2.8	0.215	0.231
19-Oct-21	FR_FRNTP (RG_FOUSH)	2.08	<0.00001	<0.00001	2.3	2.51	0.22	0.243
19-Oct-21	FR_FRRD (RG_FRUPO)	2.47	<0.00001	<0.00001	3.8025	3.8675	0.185	0.1845
19-Oct-21	FR_MULTIPLATE (RG_MP1)	1.78	<0.00001	<0.00001	2.09	2.06	0.171	0.174
19-Oct-21	FR_UFR1 (RG_URF1)	1.825	<0.00001	<0.00001	0.6755	0.686	0.09985	0.1045
20-Oct-21	FR_FR2 (RG_FOUKI)	1.99	<0.00001	<0.00001	2.49	2.69	0.219	0.223
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	2.01	<0.00001	<0.00001	2.65	2.67	0.229	0.217
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	1.95	<0.00001	<0.00001	2.46	2.72	0.211	0.208
26-Oct-21	FR_FR4 (RG_FOBSC)	2.03	<0.00001	<0.00001	2.6	2.73	0.212	0.21
26-Oct-21	FR_FRABCH (RG_FO22)	2.4	<0.00001	<0.00001	2.83	3.22	0.184	0.196
26-Oct-21	FR_FRCP1 (RG_FOBCP)	1.96	<0.00001	<0.00001	2.73	2.78	0.194	0.204
26-Oct-21	FR_FRNTP (RG_FOUSH)	2.01	<0.00001	<0.00001	2.5	2.52	0.204	0.217
26-Oct-21	FR_FRRD (RG_FRUPO)	2.48	<0.00001	<0.00001	3.84	4.1	0.198	0.184
26-Oct-21	FR_MULTIPLATE (RG_MP1)	1.82	<0.00001	<0.00001	2	2.12	0.176	0.178
26-Oct-21	FR_UFR1 (RG_URF1)	1.66	<0.00001	<0.00001	0.676	0.688	0.0942	0.105
27-Oct-21	FR_FOUCL (RG_FOUCL)	1.95	<0.00001	<0.00001	0.838	0.838	0.132	0.128
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	1.82	<0.00001	<0.00001	1.86	1.78	0.178	0.171
28-Oct-21	FR_FRABCH (RG_FO22)	2.39	<0.00001	<0.00001	3.09	3.02	0.192	0.208
28-Oct-21	FR_FRRD (RG_FRUPO)	2.58	<0.00001	<0.00001	3.99	4	0.198	0.198
29-Oct-21	FR_FR4 (RG_FOBSC)	2.06	<0.00001	<0.00001	2.74	2.75	0.226	0.244
29-Oct-21	FR_FRCP1 (RG_FOBCP)	1.97	<0.00001	<0.00001	2.76	2.73	0.226	0.234
2-Nov-21	FR_FR2 (RG_FOUKI)	2.1	<0.00001	<0.00001	2.76	2.94	0.251	0.254
2-Nov-21	FR_FR4 (RG_FOBSC)	2.11	<0.00001	<0.00001	2.86	3.03	0.267	0.252
2-Nov-21	FR_FRABCH (RG_FO22)	2.5	<0.00001	<0.00001	2.96	3.29	0.186	0.204
2-Nov-21	FR_FRCP1 (RG_FOBCP)	2.16	<0.00001	<0.00001	2.75	2.91	0.245	0.262
2-Nov-21	FR_FRRD (RG_FRUPO)	2.53	<0.00001	<0.00001	3.78	3.92	0.189	0.193
2-Nov-21	FR_MULTIPLATE (RG_MP1)	1.92	<0.00001	<0.00001	2.24	2.36	0.21	0.198
2-Nov-21	FR_UFR1 (RG_URF1)	1.74	<0.00001	<0.00001	0.609	0.663	0.0937	0.104
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	1.98	<0.00001	<0.00001	2.55	2.59	0.255	0.258
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	2.09	<0.00001	<0.00001	3.12	2.74	0.269	0.252
8-Nov-21	FR_FR3 (RG_FOBKS)	1.99	<0.00001	<0.00001	2.91	2.87	0.251	0.248
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	2.17	<0.00001	<0.00001	3.02	2.91	0.252	0.252
8-Nov-21	GH_PC2 (RG_FODPO)	2.33	<0.00001	<0.00001	2.88	2.8	0.205	0.202
9-Nov-21	FR_FR2 (RG_FOUKI)	1.85	<0.00001	<0.00001	2.92	2.8	0.228	0.222
9-Nov-21	FR_FR4 (RG_FOBSC)	1.89	<0.00001	<0.00001	2.87	2.86	0.234	0.23
9-Nov-21	FR_FRABCH (RG_FO22)	2.33	<0.00001	<0.00001	2.95	3.04	0.204	0.206
9-Nov-21	FR_FRCP1 (RG_FOBCP)	1.87	<0.00001	<0.00001	3.06	2.73	0.236	0.228
9-Nov-21	FR_FRRD (RG_FRUPO)	2.38	<0.00001	<0.00001	4.12	3.9	0.204	0.198
9-Nov-21	FR_MULTIPLATE (RG_MP1)	1.81	<0.00001	<0.00001	2.57	2.43	0.21	0.206
9-Nov-21	FR_UFR1 (RG_URF1)	1.55	<0.00001	<0.00001	0.676	0.634	0.104	0.101
10-Nov-21	FR_FR4 (RG_FOBSC)	2.14	<0.00001	<0.00001	2.87	3.25	0.256	0.264
10-Nov-21	FR_HC3 (RG_HENUP)	1.25	<0.00001	<0.00001	0.352	0.362	0.16	0.168
12-Nov-21	FR_FR2 (RG_FOUKI)	1.91	<0.00001	<0.00001	2.85	2.83	0.214	0.209
12-Nov-21	FR_FR4 (RG_FOBSC)	1.75	<0.00001	<0.00001	1.14	1.1	0.0786	0.0738
12-Nov-21	FR_FRNTP (RG_FOUSH)	1.9	<0.00001	<0.00001	2.62	2.6	0.216	0.222
15-Nov-21	FR_FR5	2.3	<0.00001	<0.00001	2.81	2.89	0.178	0.184
15-Nov-21	FR_FRABCH (RG_FO22)	2.38	<0.00001	<0.00001	2.75	2.97	0.202	0.194
16-Nov-21	FR_FR1 (RG_FODHE)	1.67	<0.00001	<0.00001	0.678	0.724	0.112	0.116
17-Nov-21	FR_FR2 (RG_FOUKI)	2.2	<0.00001	<0.00001	2.69	2.55	0.207	0.21
17-Nov-21	FR_FRNTP (RG_FOUSH)	2.04	<0.00001	<0.00001	2.48	2.41	0.218	0.22
17-Nov-21	FR_MULTIPLATE (RG_MP1)	2	<0.00001	<0.00001	2.42	2.33	0.177	0.183
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	2.14	<0.00001	<0.00001	3.09	3	0.199	0.196

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Silicon (Si)-Total_mg/L	Silver (Ag)-Dissolved_mg/L	Silver (Ag)-Total_mg/L	Sodium (Na)-Dissolved_mg/L	Sodium (Na)-Total_mg/L	Strontium (Sr)-Dissolved_mg/L	Strontium (Sr)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	2.06	<0.00001	<0.00001	2.95	2.84	0.243	0.244
24-Nov-21	FR_FRNTP (RG_FOUSH)	2.07	<0.00001	<0.00001	2.64	2.7	0.253	0.258
24-Nov-21	FR_MULTIPLATE (RG_MP1)	1.83	<0.00001	<0.00001	2.44	2.4	0.182	0.189
29-Nov-21	FR_FR2 (RG_FOUKI)	2.2	<0.00001	<0.00001	2.7	2.68	0.195	0.192
29-Nov-21	FR_FRNTP (RG_FOUSH)	1.94	<0.00001	<0.00001	2.46	2.5	0.188	0.19
29-Nov-21	FR_MULTIPLATE (RG_MP1)	1.91	<0.00001	<0.00001	2.34	2.33	0.185	0.18
1-Dec-21	FR_FRABCH (RG_FO22)	2.35	<0.00001	<0.00001	3.01	3.26	0.19	0.195
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	2.24	<0.00001	<0.00001	2.27	2.18	0.166	0.169
7-Dec-21	FR_FR2 (RG_FOUKI)	1.94	<0.00001	<0.00001	2.74	2.76	0.199	0.195
7-Dec-21	FR_FRNTP (RG_FOUSH)	1.93	<0.00001	<0.00001	2.49	2.65	0.198	0.196
7-Dec-21	FR_MULTIPLATE (RG_MP1)	1.97	<0.00001	<0.00001	2.44	2.56	0.192	0.188
8-Dec-21	FR_FR3 (RG_FOBKS)	1.84	<0.00001	<0.00001	2.57	2.71	0.211	0.194
8-Dec-21	FR_FRABCH (RG_FO22)	2.46	<0.00001	<0.00001	3.31	3.33	0.203	0.191
8-Dec-21	FR_FRRD (RG_FRUPO)	2.48	<0.00001	<0.00001	4.05	4.05	0.196	0.201
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	1.98	<0.00001	<0.00001	2.49	2.6	0.208	0.197
9-Dec-21	FR_FR1 (RG_FODHE)	1.49	<0.00001	<0.00001	0.739	0.738	0.139	0.148
9-Dec-21	FR_FR4 (RG_FOBSC)	2.04	<0.00001	<0.00001	2.54	2.66	0.194	0.197
9-Dec-21	FR_HC3 (RG_HENUP)	1.27	<0.00001	<0.00001	0.362	0.354	0.164	0.169
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	1.99	<0.00001	<0.00001	2.74	2.71	0.203	0.209
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	2.36	<0.00001	<0.00001	3.26	3.14	0.193	0.198
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	2.45	<0.00001	<0.00001	3.49	3.31	0.204	0.19
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	1.99	<0.00001	<0.00001	2.9	2.4	0.198	0.211
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	2.04	<0.00001	<0.00001	0.702	0.663	0.0821	0.0897
17-Dec-21	FR_FOUCL (RG_FOUCL)	1.69	<0.00001	<0.00001	0.805	0.756	0.146	0.151
17-Dec-21	FR_FR1 (RG_FODHE)	1.64	<0.00001	<0.00001	0.808	0.815	0.14	0.152
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	1.89	<0.00001	<0.00001	2.86	2.68	0.2	0.211
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	1.86	<0.00001	<0.00001	2.58	2.52	0.195	0.204
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	2.01	<0.00001	<0.00001	2.5	2.63	0.187	0.201
17-Dec-21	FR_UFR1 (RG_URF1)	1.98	<0.00001	<0.00001	0.714	0.683	0.0883	0.0895
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	1.97	<0.00001	<0.00001	2.7	2.5	0.188	0.208
20-Dec-21	FR_FRABCH (RG_FO22)	2.54	<0.00001	<0.00001	3.14	3.16	0.186	0.186
21-Dec-21	GH_PC2 (RG_FODPO)	2.61	<0.00001	<0.00001	2.94	3.1	0.189	0.204
22-Dec-21	FR_FR5	2.28	<0.00001	<0.00001	2.9	2.87	0.182	0.176
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	2.55	<0.00001	<0.00001	3.25	3.12	0.184	0.193
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	2.11	<0.00001	<0.00001	5.6	5.8	0.22	0.223
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	1.8	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	506	NA	NA	-0.1	0.000015	0.000016	<0.0001
6-Jan-21	FR_FRNTP (RG_FOUSH)	333	NA	NA	1.9	0.000022	0.000017	<0.0001
6-Jan-21	FR_MULTIPLATE (RG_MP1)	338	NA	NA	2	0.000012	<0.00001	<0.0001
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0.6	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	1.3	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.9	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	48	NA	NA	-0.1	<0.00001	<0.00001	<0.0001
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	495	NA	NA	0	0.000021	0.000016	<0.0001
12-Jan-21	FR_FR2 (RG_FOUKI)	322	NA	NA	1.5	0.000014	0.000011	<0.0001
12-Jan-21	FR_FR3 (RG_FOBKS)	365	NA	NA	0.6	0.000013	0.000026	<0.0001
12-Jan-21	FR_FR5	312	NA	NA	1.1	<0.00001	<0.00001	<0.0001
12-Jan-21	FR_FRNTP (RG_FOUSH)	323	NA	NA	1.6	0.000017	0.000014	<0.0001
12-Jan-21	FR_HC3 (RG_HENUP)	74.6	NA	NA	0.4	<0.00001	<0.00001	<0.0001
12-Jan-21	FR_MULTIPLATE (RG_MP1)	281	NA	NA	1.3	<0.00001	<0.00001	<0.0001
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	1.1	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0.1	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0.3	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.3	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	438	NA	NA	4.8	<0.00001	<0.00001	<0.0001
19-Jan-21	FR_FR2 (RG_FOUKI)	340	NA	NA	0.3	0.000016	0.000013	<0.0001
19-Jan-21	FR_FRABCH (RG_FO22)	403	NA	NA	0.4	<0.00001	<0.00001	<0.0001
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0.4	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	607	NA	NA	0	0.000018	0.000021	<0.0001
21-Jan-21	GH_PC2 (RG_FODPO)	405	NA	NA	3.1	<0.00001	<0.00001	<0.0001
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	0	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	355	NA	NA	0.3	0.000014	0.000015	<0.0001
27-Jan-21	FR_FRNTP (RG_FOUSH)	355	NA	NA	0.15	0.000018	0.000018	<0.0001
27-Jan-21	FR_MULTIPLATE (RG_MP1)	324	NA	NA	0.2	<0.00001	0.00001	<0.0001
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.7	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	371	NA	NA	1.5	0.000012	0.000012	<0.0001
2-Feb-21	FR_FRNTP (RG_FOUSH)	367	NA	NA	1.5	0.000015	0.000016	<0.0001
2-Feb-21	FR_MULTIPLATE (RG_MP1)	366	NA	NA	1.4	<0.00001	<0.00001	<0.0001
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	1.7	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	1.6	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	85.1	NA	NA	0.4	<0.00001	0.000012	<0.0001
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.7	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	355	NA	NA	0	0.00001	<0.00001	<0.0001
8-Feb-21	FR_FR5	317	NA	NA	0.2	<0.00001	<0.00001	<0.0001
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	651	NA	NA	0	0.000017	0.000019	<0.0001
9-Feb-21	FR_FR2 (RG_FOUKI)	351	NA	NA	0	0.00001	<0.00001	<0.0001
9-Feb-21	FR_FRNTP (RG_FOUSH)	355	NA	NA	0	0.000014	0.000011	<0.0001
9-Feb-21	FR_MULTIPLATE (RG_MP1)	346	NA	NA	0	<0.00001	<0.00001	<0.0001
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0.1	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0.1	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	341	NA	NA	0.1	<0.00001	<0.00001	<0.0001
16-Feb-21	FR_FRNTP (RG_FOUSH)	342	NA	NA	0	<0.00001	<0.00001	<0.0001
16-Feb-21	FR_MULTIPLATE (RG_MP1)	342	NA	NA	0	<0.00001	<0.00001	<0.0001
16-Feb-21	GH_PC2 (RG_FODPO)	392	NA	NA	3.3	<0.00001	<0.00001	<0.0001
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0.4	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0.3	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	428	NA	NA	2.8	<0.00001	<0.00001	<0.0001
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.4	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	0.2	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	367	NA	NA	0.46	<0.00001	<0.00001	<0.0001
23-Feb-21	FR_FR4 (RG_FOBSC)	593	NA	NA	0.01	0.000019	0.000015	<0.0001
23-Feb-21	FR_FRABCH (RG_FO22)	360	NA	NA	1.4	<0.00001	<0.00001	<0.0001
23-Feb-21	FR_FRCP1 (RG_FOBCP)	811	NA	NA	0.3	0.00002	0.000027	<0.0001
23-Feb-21	FR_FRRD (RG_FRUPO)	437	NA	NA	3.96	<0.00001	<0.00001	<0.0001
23-Feb-21	FR_MULTIPLATE (RG_MP1)	364	NA	NA	0.54	<0.00001	<0.00001	<0.0001
23-Feb-21	FR_UFR1 (RG_URF1)	46.9	NA	NA	0	<0.00001	<0.00001	<0.0001
24-Feb-21	FR_FRNTP (RG_FOUSH)	371	NA	NA	0.6	0.000014	0.000013	<0.0001
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	0.3	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	0.3	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	0.5	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	375	NA	NA	0.96	0.000011	<0.00001	<0.0001
2-Mar-21	FR_FR4 (RG_FOBSC)	575	NA	NA	NA	0.000015	0.000015	<0.0001
2-Mar-21	FR_FRABCH (RG_FO22)	384	NA	NA	2.4	<0.00001	<0.00001	<0.0001
2-Mar-21	FR_FRCP1 (RG_FOBCP)	571	NA	NA	0.1	0.000017	0.000016	<0.0001
2-Mar-21	FR_FRNTP (RG_FOUSH)	385	NA	NA	1.1	<0.00001	0.00001	<0.0001
2-Mar-21	FR_FRRD (RG_FRUPO)	460	NA	NA	5.68	<0.00001	<0.00001	<0.0001
2-Mar-21	FR_MULTIPLATE (RG_MP1)	369	NA	NA	NA	<0.00001	<0.00001	<0.0001
2-Mar-21	FR_UFR1 (RG_URF1)	49.2	NA	NA	0	<0.00001	<0.00001	<0.0001
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	2.5	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	2.9	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	342	NA	NA	0.7	0.000012	0.000013	<0.0001
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	1.3	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	6.59	NA	NA	0.8	<0.00001	0.000027	<0.0001
5-Mar-21	FR_FR5	321	NA	NA	1	<0.00001	<0.00001	<0.0001
5-Mar-21	FR_HC3 (RG_HENUP)	89.5	NA	NA	0.3	<0.00001	<0.00001	<0.0001
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	472	NA	NA	1.6	0.000011	0.000014	<0.0001
8-Mar-21	FR_FRNTP (RG_FOUSH)	354	NA	NA	2.7	0.000012	0.000011	<0.0001
9-Mar-21	FR_FR2 (RG_FOUKI)	351	NA	NA	0.06	0.00001	0.000011	<0.0001
9-Mar-21	FR_FR4 (RG_FOBSC)	448	NA	NA	0.025	0.000012	0.000016	<0.0001
9-Mar-21	FR_FRABCH (RG_FO22)	396	NA	NA	0.7	<0.00001	<0.00001	<0.0001
9-Mar-21	FR_FRCP1 (RG_FOBCP)	462	NA	NA	0	0.000018	0.000018	<0.0001
9-Mar-21	FR_FRRD (RG_FRUPO)	440	NA	NA	4.92	<0.00001	<0.00001	<0.0001
9-Mar-21	FR_MULTIPLATE (RG_MP1)	354	NA	NA	0.515	<0.00001	0.000012	<0.0001
9-Mar-21	FR_UFR1 (RG_URF1)	52.8	NA	NA	0	<0.00001	<0.00001	<0.0001
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	2.8	NA	NA	NA

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	3.2	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	3	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	37.6	NA	NA	NA	<0.00001	0.00002	<0.0001
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	1.2	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	414	NA	NA	4.8	<0.00001	<0.00001	<0.0001
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	-0.1	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	313	NA	NA	1.95	0.000013	0.00002	<0.0001
16-Mar-21	FR_FR4 (RG_FOBSC)	396	NA	NA	2.53	0.000015	0.000021	<0.0001
16-Mar-21	FR_FRABCH (RG_FO22)	416	NA	NA	3	<0.00001	<0.00001	<0.0001
16-Mar-21	FR_FRCP1 (RG_FOBCP)	389	NA	NA	0.4	0.000013	0.00002	<0.0001
16-Mar-21	FR_FRNTP (RG_FOUSH)	311	NA	NA	3.6	0.000012	0.000018	<0.0001
16-Mar-21	FR_FRRD (RG_FRUPO)	458	NA	NA	5.31	<0.00001	<0.00001	<0.0001
16-Mar-21	FR_MULTIPLATE (RG_MP1)	287	NA	NA	1.39	0.000011	0.00002	<0.0001
16-Mar-21	FR_UFR1 (RG_URF1)	27.8	NA	NA	0	<0.00001	0.000019	<0.0001
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	4.8	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	3.6	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	2.5	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	327	NA	NA	NA	0.000013	0.000021	<0.0001
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	3	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	0.8	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	0.9	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	0.9	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	307	NA	NA	1.27	0.000011	0.000015	<0.0001
23-Mar-21	FR_FR4 (RG_FOBSC)	371	NA	NA	1.23	0.000015	0.000018	<0.0001
23-Mar-21	FR_FRABCH (RG_FO22)	388	NA	NA	1.5	<0.00001	<0.00001	<0.0001
23-Mar-21	FR_FRCP1 (RG_FOBCP)	376	NA	NA	-0.1	0.000014	0.00002	<0.0001
23-Mar-21	FR_FRNTP (RG_FOUSH)	308	NA	NA	2.5	0.000014	0.000018	<0.0001
23-Mar-21	FR_FRRD (RG_FRUPO)	417	NA	NA	2.65	<0.00001	<0.00001	<0.0001
23-Mar-21	FR_MULTIPLATE (RG_MP1)	298	NA	NA	0.49	0.000012	0.000015	<0.0001
23-Mar-21	FR_UFR1 (RG_URF1)	22.3	NA	NA	0.1	<0.00001	0.000013	<0.0001
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	399	NA	NA	1.1	0.000015	0.000019	<0.0001
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	1.8	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	1.5	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	1.2	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	1.6	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	1.2	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	378	NA	NA	0.12	0.000013	0.000012	<0.0001
30-Mar-21	FR_FR4 (RG_FOBSC)	427	NA	NA	0.11	0.000015	0.000016	<0.0001
30-Mar-21	FR_FRABCH (RG_FO22)	460	NA	NA	0.9	<0.00001	<0.00001	<0.0001
30-Mar-21	FR_FRCP1 (RG_FOBCP)	528	NA	NA	0	0.000016	0.000018	<0.0001
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	3.4	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	511	NA	NA	2.21	<0.00001	<0.00001	<0.0001
30-Mar-21	FR_MULTIPLATE (RG_MP1)	425	NA	NA	0.3327026	0.000014	0.000012	<0.0001
30-Mar-21	FR_UFR1 (RG_URF1)	32.8	NA	NA	0	<0.00001	<0.00001	<0.0001
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	5.5	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	357	NA	NA	1.7	0.000012	0.000015	<0.0001
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	4.5	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	421	NA	NA	0.2	0.000015	0.000016	<0.0001
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	3.1	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	381	NA	NA	3.1	0.000014	0.000016	<0.0001
6-Apr-21	FR_FR1 (RG_FODHE)	180	NA	NA	3.7	<0.00001	<0.00001	<0.0001
6-Apr-21	FR_FR2 (RG_FOUKI)	328	NA	NA	2.5	0.000013	0.000015	<0.0001
6-Apr-21	FR_FRNTP (RG_FOUSH)	331	NA	NA	2.8	0.000013	0.000015	<0.0001
6-Apr-21	FR_HC3 (RG_HENUP)	76.8	NA	NA	1.2	<0.00001	<0.00001	<0.0001
6-Apr-21	FR_MULTIPLATE (RG_MP1)	327	NA	NA	3.6	0.000011	0.000014	<0.0001
6-Apr-21	FR_UFR1 (RG_URF1)	27.4	NA	NA	0.6	<0.00001	<0.00001	<0.0001
7-Apr-21	FR_FR3 (RG_FOBKS)	330	NA	NA	5.6	0.00001	0.000012	<0.0001
7-Apr-21	FR_FR5	342	NA	NA	3.3	<0.00001	<0.00001	<0.0001
7-Apr-21	FR_FRABCH (RG_FO22)	374	NA	NA	3.3	<0.00001	<0.00001	<0.0001
7-Apr-21	FR_FRCP1 (RG_FOBCP)	398	NA	NA	4	0.000012	0.000012	<0.0001
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	396	NA	NA	5.6	0.000013	0.000012	<0.0001
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	2.7	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	2.9	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	3	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	401	NA	NA	3.1	<0.00001	<0.00001	<0.0001
9-Apr-21	FR_FR4 (RG_FOBSC)	387	NA	NA	0.4	0.000013	0.000014	<0.0001
12-Apr-21	FR_FR1 (RG_FODHE)	176	NA	NA	2.2	<0.00001	<0.00001	<0.0001
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	1.7	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	336	NA	NA	3.13	0.000013	0.000016	<0.0001
13-Apr-21	FR_FR4 (RG_FOBSC)	411	NA	NA	3.3	0.000017	0.000018	<0.0001
13-Apr-21	FR_FRABCH (RG_FO22)	387	NA	NA	2.2	<0.00001	<0.00001	<0.0001
13-Apr-21	FR_FRCP1 (RG_FOBCP)	406	NA	NA	0.8	0.000017	0.000018	<0.0001
13-Apr-21	FR_FRRD (RG_FRUPO)	422	NA	NA	4.11	<0.00001	<0.00001	<0.0001
13-Apr-21	FR_MULTIPLATE (RG_MP1)	337	NA	NA	3.99	0.000015	0.000015	<0.0001
13-Apr-21	FR_UFR1 (RG_URF1)	28.1	NA	NA	-0.1	<0.00001	<0.00001	<0.0001
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	2.5	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	347	NA	NA	2.4	0.000013	0.000016	<0.0001
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	400	NA	NA	2.1	0.000012	0.000018	<0.0001
15-Apr-21	FR_FR4 (RG_FOBSC)	399	NA	NA	5.9	0.000018	0.000018	<0.0001
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	5.3	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	4.5	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	3.4	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	3.5	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	139	NA	NA	3.4	<0.00001	<0.00001	<0.0001
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	1.8	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	340	NA	NA	5.3	0.000011	0.000013	<0.0001
20-Apr-21	FR_FRNTP (RG_FOUSH)	277	NA	NA	NA	<0.00001	0.000012	<0.0001
20-Apr-21	FR_MULTIPLATE (RG_MP1)	267	NA	NA	NA	<0.00001	<0.00001	<0.0001
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	0.3	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	349	NA	NA	NA	0.00001	0.000019	<0.0001
21-Apr-21	FR_FRABCH (RG_FO22)	380	NA	NA	2.8	<0.00001	<0.00001	<0.0001
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	355	NA	NA	6.3	0.000012	0.000012	<0.0001
22-Apr-21	FR_FR2 (RG_FOUKI)	268	NA	NA	2.6	<0.00001	0.000012	<0.0001
26-Apr-21	FR_FR1 (RG_FODHE)	128	NA	NA	4.8	<0.00001	<0.00001	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	2.6	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	4.7	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	276	NA	NA	7	0.000011	0.000013	<0.0001
27-Apr-21	FR_FRCP1 (RG_FOBCP)	357	NA	NA	4.4	0.000015	0.000017	<0.0001
27-Apr-21	FR_FRNTP (RG_FOUSH)	274	NA	NA	5.7	0.000012	0.000013	<0.0001
27-Apr-21	FR_MULTIPLATE (RG_MP1)	266	NA	NA	4.1	<0.00001	0.00001	<0.0001
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	8	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	334	NA	NA	4	<0.00001	<0.00001	<0.0001
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	7.2	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	6.4	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	316	NA	NA	4.6	0.000014	0.000014	<0.0001
30-Apr-21	FR_FR4 (RG_FOBSC)	326	NA	NA	6.4	0.000014	0.000016	<0.0001
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	4.2	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	233	NA	NA	4.4	<0.00001	0.000013	<0.0001
3-May-21	FR_HC3 (RG_HENUP)	45.5	NA	NA	3.9	<0.00001	<0.00001	<0.0001
3-May-21	FR_UFR1 (RG_URF1)	17.2	NA	NA	3.6	<0.00001	<0.00001	<0.0001
4-May-21	FR_FR1 (RG_FODHE)	90.4	NA	NA	3.9	<0.00001	<0.00001	<0.0001
4-May-21	FR_FR2 (RG_FOUKI)	195	NA	NA	4.7	<0.00001	<0.00001	<0.0001
4-May-21	FR_FR3 (RG_FOBKS)	195	NA	NA	4.8	0.00001	<0.00001	<0.0001
4-May-21	FR_FRNTP (RG_FOUSH)	192	NA	NA	5	<0.00001	<0.00001	<0.0001
4-May-21	FR_MULTIPLATE (RG_MP1)	185	NA	NA	5.2	<0.00001	<0.00001	<0.0001
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	226	NA	NA	5	<0.00001	<0.00001	<0.0001
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	6.4	NA	NA	NA
5-May-21	FR_FR5	238	NA	NA	3.1	<0.00001	<0.00001	<0.0001
5-May-21	FR_FRABCH (RG_FO22)	306	NA	NA	3	<0.00001	<0.00001	<0.0001
5-May-21	FR_FRCP1 (RG_FOBCP)	245	NA	NA	3.1	0.000011	0.000012	<0.0001
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	6.2	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	5.9	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	320	NA	NA	4.7	<0.00001	<0.00001	<0.0001
7-May-21	FR_FR4 (RG_FOBSC)	193	NA	NA	4.7	<0.00001	<0.00001	<0.0001
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	3.2	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	3.2	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	72.7	NA	NA	1.1	<0.00001	0.000027	<0.0001
11-May-21	FR_FR2 (RG_FOUKI)	176	NA	NA	4.8	<0.00001	<0.00001	<0.0001
11-May-21	FR_FRCP1 (RG_FOBCP)	218	NA	NA	5.5	<0.00001	0.000011	<0.0001
11-May-21	FR_FRNTP (RG_FOUSH)	173	NA	NA	4.2	<0.00001	<0.00001	<0.0001
11-May-21	FR_MULTIPLATE (RG_MP1)	164	NA	NA	3.5	<0.00001	<0.00001	<0.0001
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	6.3	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	259	NA	NA	4	<0.00001	<0.00001	0.00206
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	5.1	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	4.2	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	205	NA	NA	5.9	<0.00001	<0.00001	<0.0001
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	5.2	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	5.9	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	4.6	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	3.7	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	103	NA	NA	5.8	<0.00001	0.000017	<0.0001
18-May-21	FR_FR2 (RG_FOUKI)	67.8	NA	NA	4.4	<0.00001	0.000016	<0.0001
18-May-21	FR_FR4 (RG_FOBSC)	85.7	NA	NA	4.45	<0.00001	0.000028	<0.0001
18-May-21	FR_FRABCH (RG_FO22)	131	NA	NA	4.6	<0.00001	0.000021	<0.0001
18-May-21	FR_FRCP1 (RG_FOBCP)	99.5	NA	NA	4.6	<0.00001	0.000015	<0.0001
18-May-21	FR_FRRD (RG_FRUPO)	152	NA	NA	4.41	<0.00001	0.000021	<0.0001
18-May-21	FR_MULTIPLATE (RG_MP1)	64.6	NA	NA	4.56	<0.00001	0.000011	<0.0001
18-May-21	FR_UFR1 (RG_URF1)	8.79	NA	NA	2.6	<0.00001	<0.00001	<0.0001
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	3.9	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	129	NA	NA	3.71	<0.00001	<0.00001	<0.0001
20-May-21	FR_FRNTP (RG_FOUSH)	63.9	NA	NA	3.6	<0.00001	0.000011	<0.0001
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	3.3	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	107	NA	NA	4.15	<0.00001	<0.00001	<0.0001
25-May-21	FR_FR4 (RG_FOBSC)	147	NA	NA	4.19	<0.00001	0.000015	<0.0001
25-May-21	FR_FRABCH (RG_FO22)	203	NA	NA	4.3	<0.00001	<0.00001	<0.0001
25-May-21	FR_FRCP1 (RG_FOBCP)	166	NA	NA	4.3	<0.00001	<0.00001	<0.0001
25-May-21	FR_FRRD (RG_FRUPO)	224	NA	NA	4.13	<0.00001	<0.00001	<0.0001
25-May-21	FR_MULTIPLATE (RG_MP1)	98.9	NA	NA	3.95	<0.00001	<0.00001	<0.0001
25-May-21	FR_UFR1 (RG_URF1)	12.7	NA	NA	2.9	<0.00001	<0.00001	<0.0001
26-May-21	FR_FR1 (RG_FODHE)	41.8	NA	NA	4.4	<0.00001	<0.00001	<0.0001
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	3.3	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	125	NA	NA	5.9	0.000011	<0.00001	<0.0001
27-May-21	FR_FR4 (RG_FOBSC)	125	NA	NA	7.03	<0.00001	<0.00001	<0.0001
27-May-21	FR_FRNTP (RG_FOUSH)	81.8	NA	NA	7.5	<0.00001	<0.00001	<0.0001
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	3.5	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	3.5	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	3.6	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	4.6	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	5	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	36.2	NA	NA	6.1	<0.00001	<0.00001	<0.0001
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	4.7	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	104	NA	NA	7.9	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_FR2 (RG_FOUKI)	61.5	NA	NA	5.02	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_FR4 (RG_FOBSC)	83.5	NA	NA	5.16	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_FRABCH (RG_FO22)	139	NA	NA	4.8	<0.00001	0.000012	<0.0001
1-Jun-21	FR_FRCP1 (RG_FOBCP)	112	NA	NA	5.9	<0.00001	0.00001	<0.0001
1-Jun-21	FR_FRNTP (RG_FOUSH)	64.2	NA	NA	NA	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_FRRD (RG_FRUPO)	157	NA	NA	4.76	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_MULTIPLATE (RG_MP1)	61.2	NA	NA	5	<0.00001	<0.00001	<0.0001
1-Jun-21	FR_UFR1 (RG_URF1)	9.2	NA	NA	3.1	<0.00001	<0.00001	<0.0001
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	6.9	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	80.8	NA	NA	8.4	<0.00001	0.000025	<0.0001
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	70.6	NA	NA	8.766666667	<0.00001	<0.00001	<0.0001
7-Jun-21	FR_FR1 (RG_FODHE)	28.7	NA	NA	4.6	<0.00001	<0.00001	<0.0001
7-Jun-21	FR_HC3 (RG_HENUP)	15.2	NA	NA	4.1	<0.00001	<0.00001	<0.0001
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	92.7	NA	NA	6.4	<0.00001	<0.00001	<0.0001
7-Jun-21	GH_PC2 (RG_FODPO)	162	NA	NA	5.1	<0.00001	0.00001	<0.0001
8-Jun-21	FR_FR2 (RG_FOUKI)	83.2	NA	NA	4.56	<0.00001	<0.00001	<0.0001
8-Jun-21	FR_FR4 (RG_FOBSC)	114	NA	NA	NA	<0.00001	0.000014	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	164	NA	NA	4	<0.00001	<0.00001	<0.0001
8-Jun-21	FR_FRCP1 (RG_FOBCP)	134	NA	NA	4.3	<0.00001	<0.00001	<0.0001
8-Jun-21	FR_FRRD (RG_FRUPO)	199	NA	NA	4.21	<0.00001	0.000012	<0.0001
8-Jun-21	FR_MULTIPLATE (RG_MP1)	70.8	NA	NA	NA	<0.00001	<0.00001	<0.0001
8-Jun-21	FR_UFR1 (RG_URF1)	9.33	NA	NA	2.7	<0.00001	<0.00001	<0.0001
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	4.7	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	86.7	NA	NA	4.6	<0.00001	<0.00001	<0.0001
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	99.8	NA	NA	4.7	<0.00001	<0.00001	<0.0001
10-Jun-21	FR_FR4 (RG_FOBSC)	148	NA	NA	5.4	<0.00001	<0.00001	<0.0001
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	4.6	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	4.3	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	216	NA	NA	7.28	<0.00001	0.00001	<0.0001
14-Jun-21	FR_FOUCL (RG_FOUCL)	34.7	NA	NA	7.2	<0.00001	<0.00001	<0.0001
14-Jun-21	FR_FR1 (RG_FODHE)	38.6	NA	NA	8.575	<0.00001	<0.00001	<0.0001
14-Jun-21	FR_FR3 (RG_FOBKS)	80.6	NA	NA	10	<0.00001	<0.00001	<0.0001
14-Jun-21	FR_FR5	138	NA	NA	5.9	<0.00001	<0.00001	<0.0001
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	5	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	70.7	NA	NA	10.26666667	<0.00001	<0.00001	<0.0001
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	99.4	NA	NA	9.7	<0.00001	<0.00001	<0.0001
14-Jun-21	RG_FO26	13.7	NA	NA	6.033333333	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FR2 (RG_FOUKI)	66.2	NA	NA	NA	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FR4 (RG_FOBSC)	91.6	NA	NA	NA	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FRABCH (RG_FO22)	132	NA	NA	5.9	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FRCP1 (RG_FOBCP)	106	NA	NA	6.3	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FRNTP (RG_FOUSH)	64.4	NA	NA	7.275	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_FRRD (RG_FRUPO)	167	NA	NA	NA	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_MULTIPLATE (RG_MP1)	56.8	NA	NA	NA	<0.00001	<0.00001	<0.0001
15-Jun-21	FR_UFR1 (RG_URF1)	12.5	NA	NA	5.18	<0.00001	<0.00001	<0.0001
15-Jun-21	RG_FOUNGD	50	NA	NA	7	<0.00001	<0.00001	<0.0001
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	5.7	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	75.2	NA	NA	7.418	<0.00001	<0.00001	<0.0001
16-Jun-21	FR_FR4 (RG_FOBSC)	115	NA	NA	9	<0.00001	<0.00001	<0.0001
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	55.6	NA	NA	7.366666667	<0.00001	<0.00001	<0.0001
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	7.25	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	10.8	NA	NA	3.333333333	<0.00001	<0.00001	<0.0001
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	7.1	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	91.35	NA	NA	6.14	<0.00001	<0.00001	<0.0001
17-Jun-21	FR_FR2 (RG_FOUKI)	83.4	NA	NA	5.633333333	<0.00001	<0.00001	<0.0001
17-Jun-21	FR_FR4 (RG_FOBSC)	165	NA	NA	8.433333333	<0.00001	<0.00001	<0.0001
17-Jun-21	FR_FRCP1 (RG_FOBCP)	135	NA	NA	5.8	<0.00001	<0.00001	<0.0001
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	135	NA	NA	8.733333333	<0.00001	<0.00001	<0.0001
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	109	NA	NA	NA	<0.00001	<0.00001	<0.0001
17-Jun-21	GH_PC2 (RG_FODPO)	176	NA	NA	9.7	<0.00001	<0.00001	<0.0001
18-Jun-21	FR_FRABCH (RG_FO22)	162	NA	NA	5.266666667	<0.00001	<0.00001	<0.0001
18-Jun-21	FR_FRRD (RG_FRUPO)	177	NA	NA	8.133333333	<0.00001	<0.00001	<0.0001
18-Jun-21	RG_FOUEW	144	NA	NA	5.366666667	<0.00001	<0.00001	<0.0001
21-Jun-21	FR_FR1 (RG_FODHE)	33.05	NA	NA	8.3	<0.00001	<0.00001	<0.0001
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	7	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	8.9	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	4.6	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	7.3	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	112	NA	NA	8.6	<0.00001	<0.00001	<0.0001
21-Jun-21	FR_UFR1 (RG_URF1)	14.85	NA	NA	7.3	<0.00001	<0.00001	<0.0001
22-Jun-21	FR_FR2 (RG_FOUKI)	80.3	NA	NA	7	<0.00001	<0.00001	<0.0001
22-Jun-21	FR_FRABCH (RG_FO22)	161	NA	NA	6	<0.00001	<0.00001	<0.0001
22-Jun-21	FR_FRCP1 (RG_FOBCP)	131	NA	NA	8	<0.00001	<0.00001	<0.0001
22-Jun-21	FR_FRNTP (RG_FOUSH)	78.5	NA	NA	NA	<0.00001	<0.00001	<0.0001
22-Jun-21	FR_MULTIPLATE (RG_MP1)	71.1	NA	NA	NA	<0.00001	<0.00001	<0.0001
23-Jun-21	FR_FR4 (RG_FOBSC)	124	NA	NA	11.1	<0.00001	<0.00001	<0.0001
28-Jun-21	FR_FR1 (RG_FODHE)	31.2	NA	NA	9.2	<0.00001	<0.00001	<0.0001
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	13.5	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	6.9	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	117	NA	NA	12.2	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FR2 (RG_FOUKI)	89.7	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FR4 (RG_FOBSC)	125	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FRABCH (RG_FO22)	173	NA	NA	8.5	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FRCP1 (RG_FOBCP)	142	NA	NA	10.6	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FRNTP (RG_FOUSH)	85.1	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_FRRD (RG_FRUPO)	194	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_MULTIPLATE (RG_MP1)	79.4	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Jun-21	FR_UFR1 (RG_URF1)	17.3	NA	NA	8.43	<0.00001	<0.00001	<0.0001
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	11.4	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	13.1	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	136	NA	NA	14	<0.00001	<0.00001	<0.0001
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	9.6	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	10.3	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	14.1	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	8.5	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	9.3	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	33	NA	NA	9.2	<0.00001	<0.00001	<0.0001
2-Jul-21	FR_UFR1 (RG_URF1)	17.1	NA	NA	10.4	<0.00001	<0.00001	<0.0001
4-Jul-21	FR_FR2 (RG_FOUKI)	122	NA	NA	10.4	<0.00001	<0.00001	<0.0001
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	11.5	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	117	NA	NA	NA	<0.00001	<0.00001	<0.0001
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	151	NA	NA	11.8	<0.00001	<0.00001	<0.0001
5-Jul-21	FR_HC3 (RG_HENUP)	17.7	NA	NA	7.6	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_FR1 (RG_FODHE)	37.1	NA	NA	8.4	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_FR4 (RG_FOBSC)	144	NA	NA	NA	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_FRABCH (RG_FO22)	196	NA	NA	10	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_FRCP1 (RG_FOBCP)	157	NA	NA	12.7	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_FRRD (RG_FRUPO)	200	NA	NA	8.11	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_MULTIPLATE (RG_MP1)	93.5	NA	NA	NA	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	138	NA	NA	11.2	<0.00001	<0.00001	<0.0001
6-Jul-21	FR_UFR1 (RG_URF1)	22	NA	NA	9.65	<0.00001	<0.00001	<0.0001
7-Jul-21	FR_FR2 (RG_FOUKI)	118	NA	NA	11.69	<0.00001	<0.00001	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	114	NA	NA	9.433333333	<0.00001	<0.00001	<0.0001
7-Jul-21	GH_PC2 (RG_FODPO)	209	NA	NA	9.9	<0.00001	<0.00001	<0.0001
8-Jul-21	FR_FR3 (RG_FOBKS)	123	NA	NA	11.4	<0.00001	<0.00001	<0.0001
8-Jul-21	FR_FR5	184	NA	NA	8.3	<0.00001	<0.00001	<0.0001
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	9.9	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	8.9	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	51.2	NA	NA	10.3	<0.00001	<0.00001	<0.0001
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	7.5	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	187	NA	NA	11.8	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FR2 (RG_FOUKI)	144	NA	NA	11.77	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FR4 (RG_FOBSC)	213	NA	NA	12.13	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FRABCH (RG_FO22)	236	NA	NA	9.1	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FRCP1 (RG_FOBCP)	205	NA	NA	12.4	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FRNTP (RG_FOUSH)	138	NA	NA	12.8	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_FRRD (RG_FRUPO)	246	NA	NA	7.69	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_MULTIPLATE (RG_MP1)	129	NA	NA	9.98	<0.00001	<0.00001	<0.0001
13-Jul-21	FR_UFR1 (RG_URF1)	24.8	NA	NA	8.83	<0.00001	<0.00001	<0.0001
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	11.1	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	11.2	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	9.9	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	190	NA	NA	10	<0.00001	<0.00001	<0.0001
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	12.1	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	12.3	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	13.9	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	144	NA	NA	12.4	<0.00001	<0.00001	<0.0001
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	11.4	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	154	NA	NA	17.18	<0.00001	<0.00001	<0.0001
20-Jul-21	FR_FR4 (RG_FOBSC)	184	NA	NA	16.81	0.000011	0.000011	<0.0001
20-Jul-21	FR_FRRD (RG_FRUPO)	260	NA	NA	10.45	<0.00001	<0.00001	<0.0001
20-Jul-21	FR_MULTIPLATE (RG_MP1)	142	NA	NA	13.7	<0.00001	<0.00001	<0.0001
20-Jul-21	FR_UFR1 (RG_URF1)	27.2	NA	NA	11.28	<0.00001	<0.00001	<0.0001
22-Jul-21	FR_FRABCH (RG_FO22)	274	NA	NA	9.1	<0.00001	<0.00001	<0.0001
26-Jul-21	FR_FRABCH (RG_FO22)	295	NA	NA	8.7	<0.00001	<0.00001	<0.0001
27-Jul-21	FR_FR2 (RG_FOUKI)	191	NA	NA	NA	<0.00001	<0.00001	<0.0001
27-Jul-21	FR_FRNTP (RG_FOUSH)	187	NA	NA	NA	0.00001	<0.00001	<0.0001
27-Jul-21	FR_MULTIPLATE (RG_MP1)	181	NA	NA	NA	0.00001	<0.00001	<0.0001
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	11.55	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	11.3	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	322	NA	NA	NA	0.000012	0.000014	<0.0001
4-Aug-21	FR_FR2 (RG_FOUKI)	204	NA	NA	11.9	<0.00001	<0.00001	<0.0001
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	11.9	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	202	NA	NA	11.8	<0.00001	<0.00001	<0.0001
4-Aug-21	FR_MULTIPLATE (RG_MP1)	188	NA	NA	11.1	<0.00001	<0.00001	<0.0001
5-Aug-21	FR_FRABCH (RG_FO22)	321	NA	NA	8.1	<0.00001	<0.00001	<0.0001
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	359	NA	NA	13.6	0.000014	0.000013	<0.0001
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	10.6	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	10.5	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	10.1	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	174	NA	NA	11.5	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_FR1 (RG_FODHE)	90.9	NA	NA	9.7	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_FR2 (RG_FOUKI)	213	NA	NA	11.2	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_FR4 (RG_FOBSC)	358	NA	NA	10.95	0.000011	0.000011	<0.0001
10-Aug-21	FR_FRABCH (RG_FO22)	297	NA	NA	8.6	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_FRCP1 (RG_FOBCP)	328	NA	NA	10.9	<0.00001	0.000011	<0.0001
10-Aug-21	FR_FRRD (RG_FRUPO)	299	NA	NA	6.77	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_MULTIPLATE (RG_MP1)	194	NA	NA	10.82	<0.00001	<0.00001	<0.0001
10-Aug-21	FR_UFR1 (RG_URF1)	34.6	NA	NA	9.7	<0.00001	<0.00001	<0.0001
11-Aug-21	FR_FR3 (RG_FOBKS)	216	NA	NA	NA	<0.00001	<0.00001	<0.0001
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	293	NA	NA	NA	<0.00001	<0.00001	<0.0001
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	11.1	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	210	NA	NA	NA	<0.00001	<0.00001	<0.0001
12-Aug-21	FR_FR4 (RG_FOBSC)	375	NA	NA	NA	0.000011	0.000014	<0.0001
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	12	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	11.6	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	294	NA	NA	NA	<0.00001	<0.00001	<0.0001
13-Aug-21	FR_FR3 (RG_FOBKS)	214	NA	NA	NA	<0.00001	<0.00001	<0.0001
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	289	NA	NA	10.1	0.000011	0.000011	<0.0001
14-Aug-21	FR_FR3 (RG_FOBKS)	220	NA	NA	NA	<0.00001	<0.00001	<0.0001
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	291	NA	NA	NA	0.00001	0.000012	<0.0001
15-Aug-21	FR_FR3 (RG_FOBKS)	156	NA	NA	11.4	<0.00001	<0.00001	<0.0001
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	266	NA	NA	11.3	0.000011	0.000012	<0.0001
16-Aug-21	FR_FR3 (RG_FOBKS)	230	NA	NA	NA	<0.00001	<0.00001	<0.0001
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	314	NA	NA	NA	<0.00001	0.000011	<0.0001
17-Aug-21	FR_FR2 (RG_FOUKI)	220	NA	NA	10.21	<0.00001	0.000022	<0.0001
17-Aug-21	FR_FR4 (RG_FOBSC)	349	NA	NA	9.64	<0.00001	0.000056	<0.0001
17-Aug-21	FR_FR5	232	NA	NA	8	<0.00001	<0.00001	<0.0001
17-Aug-21	FR_FRABCH (RG_FO22)	285	NA	NA	8	<0.00001	<0.00001	<0.0001
17-Aug-21	FR_FRCP1 (RG_FOBCP)	344	NA	NA	9.3	0.000012	0.000024	<0.0001
17-Aug-21	FR_FRRD (RG_FRUPO)	282	NA	NA	7.41	<0.00001	<0.00001	<0.0001
17-Aug-21	FR_HC3 (RG_HENUP)	44.4	NA	NA	6.2	<0.00001	<0.00001	<0.0001
17-Aug-21	FR_MULTIPLATE (RG_MP1)	176	NA	NA	10.11	<0.00001	0.000018	<0.0001
17-Aug-21	FR_UFR1 (RG_URF1)	34.2	NA	NA	8.2	<0.00001	<0.00001	<0.0001
18-Aug-21	GH_PC2 (RG_FODPO)	277	NA	NA	8	<0.00001	<0.00001	<0.0001
19-Aug-21	FR_FR2 (RG_FOUKI)	155	NA	NA	NA	<0.00001	<0.00001	<0.0001
19-Aug-21	FR_FRNTP (RG_FOUSH)	150	NA	NA	NA	<0.00001	<0.00001	<0.0001
19-Aug-21	FR_MULTIPLATE (RG_MP1)	138	NA	NA	NA	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_FR2 (RG_FOUKI)	165	NA	NA	9.23	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_FR4 (RG_FOBSC)	230	NA	NA	8.76	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_FRABCH (RG_FO22)	293	NA	NA	9.3	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_FRCP1 (RG_FOBCP)	250	NA	NA	9	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_FRRD (RG_FRUPO)	273	NA	NA	7.5	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_MULTIPLATE (RG_MP1)	141	NA	NA	9.08	<0.00001	<0.00001	<0.0001
24-Aug-21	FR_UFR1 (RG_URF1)	38.9	NA	NA	7.4	<0.00001	<0.00001	<0.0001
25-Aug-21	FR_FR2 (RG_FOUKI)	171	NA	NA	9.4	<0.00001	<0.00001	<0.0001
25-Aug-21	FR_FRNTP (RG_FOUSH)	168	NA	NA	8.2	<0.00001	<0.00001	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	149	NA	NA	7.7	<0.00001	<0.00001	<0.0001
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	12	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	12	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	208	NA	NA	10.03	<0.00001	<0.00001	<0.0001
31-Aug-21	FR_FR4 (RG_FOBSC)	316	NA	NA	NA	0.000012	0.00001	<0.0001
31-Aug-21	FR_FRABCH (RG_FO22)	315	NA	NA	7.2	<0.00001	<0.00001	<0.0001
31-Aug-21	FR_FRCP1 (RG_FOBCP)	306	NA	NA	10.1	0.00001	0.000011	<0.0001
31-Aug-21	FR_FRRD (RG_FRUPO)	306	NA	NA	7.35	<0.00001	<0.00001	<0.0001
31-Aug-21	FR_MULTIPLATE (RG_MP1)	187	NA	NA	NA	<0.00001	<0.00001	<0.0001
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	319	NA	NA	NA	0.000013	0.000013	<0.0001
31-Aug-21	FR_UFR1 (RG_URF1)	38.1	NA	NA	7.2	<0.00001	<0.00001	<0.0001
1-Sep-21	FR_FRNTP (RG_FOUSH)	210	NA	NA	NA	0.000012	0.000012	<0.0001
3-Sep-21	FR_FR4 (RG_FOBSC)	330	NA	NA	9.4	0.000014	0.000016	<0.0001
7-Sep-21	FR_FR2 (RG_FOUKI)	238	NA	NA	15.76	<0.00001	<0.00001	<0.0001
7-Sep-21	FR_FR4 (RG_FOBSC)	395	NA	NA	NA	0.000012	0.000013	<0.0001
7-Sep-21	FR_FRABCH (RG_FO22)	325	NA	NA	5.5	<0.00001	<0.00001	<0.0001
7-Sep-21	FR_FRCP1 (RG_FOBCP)	350	NA	NA	9.7	0.000012	0.00001	<0.0001
7-Sep-21	FR_FRRD (RG_FRUPO)	311	NA	NA	7.89	<0.00001	<0.00001	<0.0001
7-Sep-21	FR_MULTIPLATE (RG_MP1)	213	NA	NA	NA	<0.00001	<0.00001	<0.0001
7-Sep-21	FR_UFR1 (RG_URF1)	41.8	NA	NA	6.2	<0.00001	<0.00001	<0.0001
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	9	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	9	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	8.8	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	200	NA	NA	8.9	<0.00001	<0.00001	<0.0001
9-Sep-21	FR_FR3 (RG_FOBKS)	228	NA	NA	NA	<0.00001	<0.00001	<0.0001
9-Sep-21	FR_FRNTP (RG_FOUSH)	202	NA	NA	9	<0.00001	<0.00001	<0.0001
9-Sep-21	FR_MULTIPLATE (RG_MP1)	189	NA	NA	9.3	<0.00001	<0.00001	<0.0001
11-Sep-21	GH_PC2 (RG_FODPO)	335	NA	NA	NA	<0.00001	<0.00001	<0.0001
11-Sep-21	RG_FOUEW	291	NA	NA	NA	<0.00001	<0.00001	<0.0001
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	10	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	322	NA	NA	NA	<0.00001	<0.00001	<0.0001
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	9.9	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	108	NA	NA	NA	<0.00001	<0.00001	<0.0001
13-Sep-21	FR_FR1 (RG_FODHE)	102	NA	NA	NA	<0.00001	<0.00001	<0.0001
13-Sep-21	FR_FR4 (RG_FOBSC)	376	NA	NA	NA	0.000015	0.000013	<0.0001
13-Sep-21	FR_FR5	298	NA	NA	8	<0.00001	<0.00001	<0.0001
13-Sep-21	FR_FRCP1 (RG_FOBCP)	371	NA	NA	NA	0.00001	0.000011	<0.0001
13-Sep-21	FR_FRRD (RG_FRUPO)	325	NA	NA	7.3	<0.00001	<0.00001	<0.0001
13-Sep-21	FR_HC3 (RG_HENUP)	59.7	NA	NA	6.7	<0.00001	<0.00001	<0.0001
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	375	NA	NA	12.5	0.000017	0.000015	<0.0001
13-Sep-21	GH_PC2 (RG_FODPO)	353	NA	NA	9.2	<0.00001	<0.00001	<0.0001
14-Sep-21	FR_FR2 (RG_FOUKI)	243	NA	NA	8.3	0.000012	0.00001	<0.0001
14-Sep-21	FR_FR3 (RG_FOBKS)	256	NA	NA	10.9	0.000011	0.000012	<0.0001
14-Sep-21	FR_FRNTP (RG_FOUSH)	242	NA	NA	8.3	0.000011	0.000011	<0.0001
14-Sep-21	FR_MULTIPLATE (RG_MP1)	216	NA	NA	8.9	<0.00001	<0.00001	<0.0001
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	370	NA	NA	NA	0.000014	0.000015	<0.0001
15-Sep-21	FR_FR1 (RG_FODHE)	104	NA	NA	10	<0.00001	<0.00001	<0.0001
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	9.2	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	379	NA	NA	NA	0.000014	0.000014	<0.0001
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	9.2	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	224	NA	NA	9	<0.00001	0.00001	<0.0001
15-Sep-21	RG_FO26	47.1	NA	NA	NA	<0.00001	<0.00001	<0.0001
16-Sep-21	FR_FRABCH (RG_FO22)	336	NA	NA	5.5	<0.00001	<0.00001	<0.0001
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	196	NA	NA	NA	<0.00001	<0.00001	<0.0001
16-Sep-21	FR_FRNTP (RG_FOUSH)	230	NA	NA	NA	<0.00001	<0.00001	<0.0001
16-Sep-21	FR_HC3 (RG_HENUP)	60.7	NA	NA	NA	<0.00001	<0.00001	<0.0001
16-Sep-21	RG_FOUNGD	180	NA	NA	NA	<0.00001	<0.00001	<0.0001
17-Sep-21	FR_FR4 (RG_FOBSC)	382	NA	NA	8.5	0.000016	0.000019	<0.0001
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	290	NA	NA	NA	<0.00001	<0.00001	<0.0001
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	9.333333333	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	7.433333333	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	255	NA	NA	9.2	0.000015	0.000014	<0.0001
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	8.533333333	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	9.933333333	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	7.366666667	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	9.333333333	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	8.3	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	44.8	NA	NA	NA	<0.00001	<0.00001	<0.0001
20-Sep-21	RG_FO26	NA	NA	NA	5.4	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	272	NA	NA	6.6	<0.00001	0.000013	<0.0001
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	10.6	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	11.26666667	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	8.066666667	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	8.666666667	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	9.5	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	259	NA	NA	7.9	0.00001	0.000014	<0.0001
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	4.566666667	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	249	NA	NA	7.4	<0.00001	<0.00001	<0.0001
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	5.4	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	8.866666667	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	7.9	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	7.633333333	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	8.7	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	259	NA	NA	NA	<0.00001	<0.00001	<0.0001
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	7.4	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	7.9	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	6.3	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	12.1	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	382	NA	NA	11.9	0.000016	0.000015	<0.0001
28-Sep-21	FR_FR2 (RG_FOUKI)	275	NA	NA	NA	0.000013	0.000013	<0.0001
28-Sep-21	FR_FRABCH (RG_FO22)	341	NA	NA	7.8	<0.00001	<0.00001	<0.0001
28-Sep-21	FR_FRNTP (RG_FOUSH)	276	NA	NA	NA	0.000016	0.000016	<0.0001
28-Sep-21	FR_MULTIPLATE (RG_MP1)	262	NA	NA	NA	0.000014	0.000012	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	252	NA	NA	NA	0.00001	0.000011	<0.0001
4-Oct-21	FR_FR1 (RG_FODHE)	115	NA	NA	8.7	<0.00001	<0.00001	<0.0001
4-Oct-21	FR_HC3 (RG_HENUP)	68.7	NA	NA	4.8	<0.00001	<0.00001	<0.0001
5-Oct-21	FR_FR2 (RG_FOUKI)	292	NA	NA	7.9	0.000018	0.000014	<0.0001
5-Oct-21	FR_MULTIPLATE (RG_MP1)	259	NA	NA	7.4	<0.00001	<0.00001	<0.0001
6-Oct-21	FR_FR3 (RG_FOBKS)	257	NA	NA	8.2	0.000019	0.000019	<0.0001
6-Oct-21	FR_FR5	225	NA	NA	5.6	<0.00001	<0.00001	<0.0001
6-Oct-21	FR_FRABCH (RG_FO22)	340	NA	NA	6.3	<0.00001	<0.00001	<0.0001
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	8	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	353	NA	NA	6.1	<0.00001	<0.00001	<0.0001
7-Oct-21	FR_FR4 (RG_FOBSC)	474	NA	NA	NA	0.000015	0.000015	<0.0001
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	8.3	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	8	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	6.3	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	232	NA	NA	NA	<0.00001	0.00001	<0.0001
9-Oct-21	FR_FRNTP (RG_FOUSH)	232	NA	NA	NA	<0.00001	<0.00001	<0.0001
10-Oct-21	FR_FR2 (RG_FOUKI)	230	NA	NA	NA	<0.00001	<0.00001	<0.0001
10-Oct-21	FR_FRNTP (RG_FOUSH)	230	NA	NA	NA	<0.00001	<0.00001	<0.0001
11-Oct-21	FR_FR2 (RG_FOUKI)	231	NA	NA	NA	<0.00001	<0.00001	<0.0001
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	6.9	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	231	NA	NA	NA	<0.00001	0.00001	<0.0001
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	417	NA	NA	5.15	0.000011	0.000012	<0.0001
12-Oct-21	FR_FR2 (RG_FOUKI)	242	NA	NA	3.92	<0.00001	<0.00001	<0.0001
12-Oct-21	FR_FR4 (RG_FOBSC)	405	NA	NA	3.32	0.000012	0.000012	<0.0001
12-Oct-21	FR_FRABCH (RG_FO22)	321	NA	NA	3.2	<0.00001	<0.00001	<0.0001
12-Oct-21	FR_FRCP1 (RG_FOBCP)	445	NA	NA	2.6	0.000011	0.000012	<0.0001
12-Oct-21	FR_FRRD (RG_FRUPO)	316	NA	NA	6.57	<0.00001	<0.00001	<0.0001
12-Oct-21	FR_MULTIPLATE (RG_MP1)	243	NA	NA	4.42	<0.00001	<0.00001	<0.0001
13-Oct-21	FR_FR2 (RG_FOUKI)	270	NA	NA	NA	0.000011	0.000011	0.0002
13-Oct-21	FR_FRNTP (RG_FOUSH)	271	NA	NA	NA	0.000014	0.000013	<0.0001
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	3.8	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	4.9	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	4.8	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	285	NA	NA	6.52	0.000014	0.000011	<0.0001
19-Oct-21	FR_FR4 (RG_FOBSC)	446	NA	NA	5.22	0.000019	0.000018	<0.0001
19-Oct-21	FR_FRABCH (RG_FO22)	347	NA	NA	4.4	<0.00001	<0.00001	<0.0001
19-Oct-21	FR_FRCP1 (RG_FOBCP)	444	NA	NA	NA	0.000018	0.000018	<0.0001
19-Oct-21	FR_FRNTP (RG_FOUSH)	286	NA	NA	6.1	0.000018	0.000013	<0.0001
19-Oct-21	FR_FRRD (RG_FRUPO)	341	NA	NA	7	<0.00001	<0.00001	<0.0001
19-Oct-21	FR_MULTIPLATE (RG_MP1)	280	NA	NA	6.47	0.00001	<0.00001	<0.0001
19-Oct-21	FR_UFR1 (RG_URF1)	47	NA	NA	NA	<0.00001	<0.00001	<0.0001
20-Oct-21	FR_FR2 (RG_FOUKI)	286	NA	NA	NA	0.000014	0.000013	<0.0001
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	425	NA	NA	3.4	0.000018	0.000017	<0.0001
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	5.2	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	4.8	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	285	NA	NA	5.95	0.000013	0.000012	<0.0001
26-Oct-21	FR_FR4 (RG_FOBSC)	443	NA	NA	4.49	<0.00001	0.000018	<0.0001
26-Oct-21	FR_FRABCH (RG_FO22)	354	NA	NA	4.7	<0.00001	<0.00001	<0.0001
26-Oct-21	FR_FRCP1 (RG_FOBCP)	434	NA	NA	4.3	0.000016	0.000015	<0.0001
26-Oct-21	FR_FRNTP (RG_FOUSH)	281	NA	NA	5.8	0.000012	0.000014	<0.0001
26-Oct-21	FR_FRRD (RG_FRUPO)	351	NA	NA	5.41	<0.00001	<0.00001	<0.0001
26-Oct-21	FR_MULTIPLATE (RG_MP1)	271	NA	NA	5.81	<0.00001	<0.00001	<0.0001
26-Oct-21	FR_UFR1 (RG_URF1)	48	NA	NA	2.9	<0.00001	<0.00001	<0.0001
27-Oct-21	FR_FOUCL (RG_FOUCL)	162	NA	NA	4.2	<0.00001	<0.00001	<0.0001
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	280	NA	NA	4.4	<0.00001	0.000013	<0.0001
28-Oct-21	FR_FRABCH (RG_FO22)	363	NA	NA	NA	<0.00001	<0.00001	<0.0001
28-Oct-21	FR_FRRD (RG_FRUPO)	354	NA	NA	NA	<0.00001	<0.00001	<0.0001
29-Oct-21	FR_FR4 (RG_FOBSC)	456	NA	NA	NA	0.000021	0.000019	<0.0001
29-Oct-21	FR_FRCP1 (RG_FOBCP)	452	NA	NA	NA	0.000021	0.000018	<0.0001
2-Nov-21	FR_FR2 (RG_FOUKI)	300	NA	NA	2.63	0.000017	0.000019	<0.0001
2-Nov-21	FR_FR4 (RG_FOBSC)	435	NA	NA	0.96	0.00002	0.000022	<0.0001
2-Nov-21	FR_FRABCH (RG_FO22)	312	NA	NA	1.7	<0.00001	<0.00001	<0.0001
2-Nov-21	FR_FRCP1 (RG_FOBCP)	451	NA	NA	0.2	0.000021	0.000025	<0.0001
2-Nov-21	FR_FRRD (RG_FRUPO)	359	NA	NA	5.01	<0.00001	<0.00001	<0.0001
2-Nov-21	FR_MULTIPLATE (RG_MP1)	305	NA	NA	3.94	0.000013	0.000014	<0.0001
2-Nov-21	FR_UFR1 (RG_URF1)	47.1	NA	NA	-0.1	<0.00001	<0.00001	<0.0001
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	4	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	320	NA	NA	7.9	0.00002	0.00002	<0.0001
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	3.8	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	451	NA	NA	NA	0.000022	0.000024	<0.0001
8-Nov-21	FR_FR3 (RG_FOBKS)	324	NA	NA	3.9	0.000016	0.000018	<0.0001
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	468	NA	NA	3.6	0.000022	0.000024	<0.0001
8-Nov-21	GH_PC2 (RG_FODPO)	388	NA	NA	3.8	<0.00001	<0.00001	<0.0001
9-Nov-21	FR_FR2 (RG_FOUKI)	293	NA	NA	NA	0.000013	0.000013	<0.0001
9-Nov-21	FR_FR4 (RG_FOBSC)	455	NA	NA	NA	0.000018	0.000016	<0.0001
9-Nov-21	FR_FRABCH (RG_FO22)	369	NA	NA	1.7	<0.00001	<0.00001	<0.0001
9-Nov-21	FR_FRCP1 (RG_FOBCP)	458	NA	NA	NA	0.000018	0.000016	<0.0001
9-Nov-21	FR_FRRD (RG_FRUPO)	336	NA	NA	NA	<0.00001	<0.00001	<0.0001
9-Nov-21	FR_MULTIPLATE (RG_MP1)	303	NA	NA	NA	0.000014	0.000013	<0.0001
9-Nov-21	FR_UFR1 (RG_URF1)	47.2	NA	NA	NA	<0.00001	<0.00001	<0.0001
10-Nov-21	FR_FR4 (RG_FOBSC)	464	NA	NA	3	0.000021	0.00002	<0.0001
10-Nov-21	FR_HC3 (RG_HENUP)	76.9	NA	NA	0.8	<0.00001	<0.00001	<0.0001
12-Nov-21	FR_FR2 (RG_FOUKI)	302	NA	NA	NA	0.00001	0.000011	<0.0001
12-Nov-21	FR_FR4 (RG_FOBSC)	23.9	NA	NA	2.7	<0.00001	<0.00001	<0.0001
12-Nov-21	FR_FRNTP (RG_FOUSH)	295	NA	NA	NA	<0.00001	0.000014	<0.0001
15-Nov-21	FR_FR5	296	NA	NA	3.6	<0.00001	<0.00001	<0.0001
15-Nov-21	FR_FRABCH (RG_FO22)	353	NA	NA	4.3	<0.00001	<0.00001	<0.0001
16-Nov-21	FR_FR1 (RG_FODHE)	124	NA	NA	1	<0.00001	<0.00001	<0.0001
17-Nov-21	FR_FR2 (RG_FOUKI)	335	NA	NA	1.4	0.000014	0.000014	<0.0001
17-Nov-21	FR_FRNTP (RG_FOUSH)	343	NA	NA	1.4	0.000017	0.000018	<0.0001
17-Nov-21	FR_MULTIPLATE (RG_MP1)	302	NA	NA	1.5	0.000016	0.000016	<0.0001
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	1.9	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	1.9	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	368	NA	NA	3	<0.00001	<0.00001	<0.0001

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Sulphate_mg/L	Sulphur (S)-Dissolved_mg/L	Sulphur (S)-Total_mg/L	Temperature, Field_deg c	Thallium (Tl)-Dissolved_mg/L	Thallium (Tl)-Total_mg/L	Tin (Sn)-Dissolved_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	2.6	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	329	NA	NA	NA	0.000019	0.000019	<0.0001
24-Nov-21	FR_FRNTP (RG_FOUSH)	333	NA	NA	NA	0.000023	0.000019	<0.0001
24-Nov-21	FR_MULTIPLATE (RG_MP1)	345	NA	NA	NA	0.000015	0.000012	<0.0001
29-Nov-21	FR_FR2 (RG_FOUKI)	335	NA	NA	NA	<0.00001	0.000012	<0.0001
29-Nov-21	FR_FRNTP (RG_FOUSH)	332	NA	NA	NA	<0.00001	0.000013	<0.0001
29-Nov-21	FR_MULTIPLATE (RG_MP1)	329	NA	NA	NA	<0.00001	0.000011	<0.0001
1-Dec-21	FR_FRABCH (RG_FO22)	368	NA	NA	4.5	<0.00001	<0.00001	<0.0001
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	3.4	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	349	NA	NA	3.3	0.000012	0.000017	<0.0001
7-Dec-21	FR_FR2 (RG_FOUKI)	316	NA	NA	-0.05	0.000011	<0.00001	<0.0001
7-Dec-21	FR_FRNTP (RG_FOUSH)	313	NA	NA	0.8	0.000013	0.000011	<0.0001
7-Dec-21	FR_MULTIPLATE (RG_MP1)	320	NA	NA	0.9	0.000016	0.000012	<0.0001
8-Dec-21	FR_FR3 (RG_FOBKS)	318	NA	NA	-0.1	0.000014	0.000016	<0.0001
8-Dec-21	FR_FRABCH (RG_FO22)	356	NA	NA	0.6	<0.00001	<0.00001	<0.0001
8-Dec-21	FR_FRRD (RG_FRUPO)	363	NA	NA	6.2	<0.00001	<0.00001	<0.0001
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	441	NA	NA	0	0.000016	0.000019	<0.0001
9-Dec-21	FR_FR1 (RG_FODHE)	212	NA	NA	0.2	<0.00001	<0.00001	<0.0001
9-Dec-21	FR_FR4 (RG_FOBSC)	408	NA	NA	NA	0.000019	0.000022	<0.0001
9-Dec-21	FR_HC3 (RG_HENUP)	78.5	NA	NA	0	<0.00001	<0.00001	<0.0001
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	0.7	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	444	NA	NA	-0.1	0.000014	0.000015	<0.0001
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	3.2	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	321	111	117	NA	<0.00001	<0.00001	<0.0001
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	368	NA	NA	1.8	<0.00001	<0.00001	NA
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	337	NA	NA	NA	<0.00001	0.000012	<0.0001
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	0	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	0.1	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	37	NA	NA	NA	<0.00001	<0.00001	<0.0001
17-Dec-21	FR_FOUCL (RG_FOUCL)	192	NA	NA	1.4	<0.00001	<0.00001	<0.0001
17-Dec-21	FR_FR1 (RG_FODHE)	217	NA	NA	0	<0.00001	<0.00001	<0.0001
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	1.666666667	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	0	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	2.7	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	0	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	342	NA	NA	0.5	0.00001	<0.00001	<0.0001
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	5	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	342	NA	NA	1	0.000014	<0.00001	<0.0001
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	422	NA	NA	0	0.000019	0.000021	<0.0001
17-Dec-21	FR_UFR1 (RG_URF1)	38	NA	NA	0	<0.00001	<0.00001	<0.0001
17-Dec-21	RG_FOUEW	NA	NA	NA	1.866666667	NA	NA	NA
17-Dec-21	RG_FOUNGD	300	NA	NA	1.1	<0.00001	<0.00001	<0.0001
20-Dec-21	FR_FRABCH (RG_FO22)	365	NA	NA	NA	<0.00001	<0.00001	NA
21-Dec-21	GH_PC2 (RG_FODPO)	374	NA	NA	3	<0.00001	<0.00001	NA
22-Dec-21	FR_FR5	310	NA	NA	0.2	<0.00001	<0.00001	<0.0001
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	0	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	2	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	0.3	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	4.7	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	372	NA	NA	1	<0.00001	<0.00001	NA
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	648	NA	NA	0.2	0.000015	0.000012	NA
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	0.1	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	1030	0.213	2.71
6-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	792	<0.05	1.7
6-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0009	790	<0.05	1.91
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	192	<0.05	1.26
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.01	<0.01	1000	<0.05	2.05
12-Jan-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00045	768	<0.05	1.55
12-Jan-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00038	803	<0.05	2.95
12-Jan-21	FR_FR5	<0.0001	<0.0003	<0.0003	762	<0.05	0.56
12-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	827	0.233	2.18
12-Jan-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	220	0.133	<0.5
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00036	786	0.527	2.63
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	1040	<0.05	2.55
19-Jan-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	801	<0.05	2.16
19-Jan-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00076	902	<0.05	1.43
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	1200	<0.05	2.06
21-Jan-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	859	0.156	0.99
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	870	<0.05	1.3
27-Jan-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00081	885	<0.05	1.1
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0001	<0.0003	<0.0003	804	<0.05	0.51
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00078	806	<0.05	1.08
2-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00032	870	0.116	0.99
2-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	807	0.408	0.78
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	208	0.054	<0.5
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	789	0.192	0.79
8-Feb-21	FR_FR5	<0.0001	<0.0003	<0.0003	699	0.283	<0.5
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	1340	<0.05	0.82
9-Feb-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	882	<0.05	<0.5
9-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	887	<0.05	<0.5
9-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	862	<0.05	<0.5
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	933	<0.05	<0.5
16-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	812	2.47	<0.5
16-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	859	<0.05	<0.5
16-Feb-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	0.00031	858	<0.05	0.61
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	1160	<0.05	0.54
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.01	<0.01	870	<0.25	0.71
23-Feb-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.01	<0.01	1230	<0.25	<0.5
23-Feb-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	898	<0.05	<0.5
23-Feb-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00231	1590	0.12	2.7
23-Feb-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.01	<0.01	1140	<0.25	<0.5
23-Feb-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.01	<0.01	832	<0.25	0.53
23-Feb-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	194	<0.05	<0.5
24-Feb-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00121	913	<0.05	1.77
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	932	<0.05	<0.5
2-Mar-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	1240	<0.05	0.56
2-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	972	<0.05	1.29
2-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00036	1220	<0.05	1.17
2-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	939	<0.05	0.5
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	1240	<0.05	<0.5
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	910	<0.05	0.64
2-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	221	<0.05	<0.5
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00068	720	<0.05	1.86
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.00964	30	0.961	15.8
5-Mar-21	FR_FR5	<0.0001	<0.0003	<0.0003	716	<0.05	<0.5
5-Mar-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	189	0.064	<0.5
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00109	1010	<0.05	0.86
8-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00046	886	<0.05	0.95
9-Mar-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.01	<0.01	827	<0.05	<0.5
9-Mar-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.01	<0.01	1100	1.11	0.99
9-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	883	<0.05	0.56
9-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00056	1140	<0.05	1.15
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.01	<0.01	1240	<0.05	<0.5
9-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.01	<0.01	862	<0.05	<0.5
9-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	0.0003	0.00726	158	<0.05	2.4
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00338	160	0.067	1.62
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	1020	<0.05	<0.5
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.01	<0.01	707	<0.05	2.63
16-Mar-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.01	<0.01	831	0.1	1.23
16-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	1020	<0.05	0.54
16-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00148	766	<0.05	1.08
16-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.0073	722	<0.05	2.05
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.01	<0.01	1120	0.063	<0.5
16-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.01	<0.01	714	<0.25	1.41
16-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	0.00106	0.0135	151	0.072	3.56
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0027	739	0.162	2.61
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.01	<0.01	715	<0.05	1.53
23-Mar-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.01	<0.01	814	<0.05	2.43
23-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00051	948	<0.05	1.21
23-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.003	866	<0.05	2.72
23-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.0038	734	0.057	1.84
23-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.01	<0.01	958	<0.05	0.78
23-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.01	<0.01	665	<0.05	1.65
23-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	0.00079	0.0065	144	0.126	4.89
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00241	909	<0.05	1.54
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00151	808	1.98	1.23
30-Mar-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.0012	923	<0.05	1.44
30-Mar-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	993	0.344	0.67
30-Mar-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00073	1050	0.5	1.27
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.00108	1060	<0.05	1.38
30-Mar-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00089	841	0.822	1.99
30-Mar-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00541	160	<0.05	2.91
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.0007	870	<0.05	1.6
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0027	972	<0.05	1.91
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00343	851	<0.05	2.18
6-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	444	0.571	1.14
6-Apr-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00157	879	<0.05	2.02
6-Apr-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0015	873	<0.05	1.88
6-Apr-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	208	0.088	<0.5
6-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00199	862	0.093	1.93
6-Apr-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00268	156	0.118	2.65
7-Apr-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00115	822	<0.05	2.74
7-Apr-21	FR_FR5	<0.0001	<0.0003	0.00041	846	<0.05	1.12
7-Apr-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0006	972	<0.05	0.89
7-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00142	943	0.771	8.99
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0012	942	<0.05	1.88
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0006	900	<0.05	1.99
9-Apr-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00127	897	<0.05	1.97
12-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	434	0.375	1.64
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0009	820	<0.05	1.76
13-Apr-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0018	893	<0.05	1.46
13-Apr-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00172	981	<0.05	1.4
13-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00084	940	<0.05	2.03
13-Apr-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	1030	<0.05	1.68
13-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0009	836	<0.05	1.63
13-Apr-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00154	179	0.092	3.1
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0006	877	<0.05	1.13
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0009	982	<0.05	1.26
15-Apr-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00032	894	<0.05	1.76
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.00063	344	1.01	2.03
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00099	723	0.14	1.97
20-Apr-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00129	628	<0.05	1.51
20-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0015	665	<0.05	1.57
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0015	816	<0.05	2.7
21-Apr-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0015	838	<0.05	5.39
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00088	793	<0.05	9.2
22-Apr-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00184	700	<0.05	1.51
26-Apr-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	342	0.227	<0.5

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	761	<0.05	2.47
27-Apr-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00089	912	<0.05	2.61
27-Apr-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00042	767	<0.05	1.72
27-Apr-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	746	<0.05	2
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00046	848	<0.05	1.55
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00144	804	<0.05	1.81
30-Apr-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0009	799	<0.05	1.6
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0024	562	<0.05	1.53
3-May-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	150	<0.05	0.63
3-May-21	FR_UFR1 (RG_URF1)	<0.0001	0.00084	0.00092	126	<0.05	1.98
4-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	285	1.63	1.32
4-May-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00188	542	<0.05	1.37
4-May-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00068	535	0.542	1.06
4-May-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00077	548	0.709	1.41
4-May-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00084	528	0.49	1.77
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00082	586	0.231	2.15
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
5-May-21	FR_FR5	<0.0001	<0.0003	<0.0006	589	<0.05	1.35
5-May-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.0005	736	0.411	1.39
5-May-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00203	586	0.059	1.94
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0009	645	<0.05	4.02
7-May-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00081	488	0.177	2.34
10-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	249	0.142	1
11-May-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0009	507	<0.05	1.5
11-May-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00061	573	<0.05	1.32
11-May-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00064	498	<0.05	1.48
11-May-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00069	498	<0.05	1.49
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0006	689	<0.05	1.63
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00044	550	<0.05	1.8
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00868	299	1.02	2.75
18-May-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00956	249	0.835	3.17
18-May-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0195	285	0.945	3.1
18-May-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.0135	370	0.889	2.79
18-May-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.009	322	0.541	2.78
18-May-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.0176	431	0.387	5.15
18-May-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00558	223	0.658	3.3
18-May-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00325	127	0.155	2.99
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00146	370	0.599	2.31
20-May-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.0053	235	0.68	2.51
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00224	322	0.363	2.39
25-May-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0078	409	0.157	2.6
25-May-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0012	552	<0.05	2.11
25-May-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0015	455	<0.05	1.48
25-May-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.00145	562	<0.05	1.86
25-May-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00142	300	0.232	2.58
25-May-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0015	134	<0.05	2.31
26-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.00043	191	0.254	2.22
26-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0018	347	0.15	2.21
27-May-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00094	379	<0.05	2.11
27-May-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0009	269	<0.05	2.8
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.0005	184	0.106	2.64
31-May-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00117	285	0.053	2.8
1-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0012	222	0.277	2.83
1-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0021	274	0.108	4.42
1-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0045	415	0.467	2.98
1-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00358	387	0.565	2.72
1-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00165	226	0.212	2.9
1-Jun-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.00154	467	<0.05	3.41
1-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00088	225	0.178	3.13
1-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00447	121	0.058	2.73
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00443	283	0.837	3.68
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00463	251	0.515	5.87
7-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.00089	141	0.298	1.51
7-Jun-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	108	<0.05	<0.5
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0024	310	0.118	2.13
7-Jun-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	0.00408	492	<0.05	1.38
8-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00268	286	0.218	2.3
8-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0045	374	<0.05	2.09

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00114	524	<0.05	2.29
8-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0006	460	<0.05	2.01
8-Jun-21	FR_FRRD (RG_FRUPO)	0.00012	<0.0003	0.00741	615	<0.05	1.8
8-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.003	259	0.228	2.22
8-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0006	128	<0.05	2.5
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00033	285	0.298	1.87
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00048	319	<0.05	1.83
10-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	442	<0.05	3.66
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00036	543	0.227	2.26
14-Jun-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0003	<0.0003	183	0.246	1.13
14-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	183.5	0.241	1.505
14-Jun-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00052	266	<0.05	1.6
14-Jun-21	FR_FR5	<0.0001	<0.0003	<0.0012	444	0.354	1.74
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0006	265	<0.05	1.42
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00078	292	<0.05	1.83
14-Jun-21	RG_FO26	<0.0001	<0.0003	<0.0003	144	0.132	1.39
15-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00063	236	0.449	1.52
15-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00059	291	<0.05	1.49
15-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.0016	421	<0.05	1.67
15-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00065	359	0.125	1.72
15-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00155	235.5	0.324	1.525
15-Jun-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.00076	492	<0.05	1.3
15-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00173	216	0.47	1.51
15-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.0007	196	0.1225	1.71
15-Jun-21	RG_FOUNGD	<0.0001	<0.0003	0.00055	221	0.347	1.03
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0006	267	0.156	1.78
16-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00047	362	0.084	5.25
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	<0.0001	<0.0003	0.0004	226	0.274	1.86
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	113	<0.05	1.16
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00041	292	0.221	2.6
17-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00044	260	0.224	1.78
17-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	476	<0.05	1.75
17-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	379	<0.05	1.86
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	<0.0001	<0.0003	0.00037	395	<0.05	1.93
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0012	306	0.205	2.06
17-Jun-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0012	492	0.076	1.84
18-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00099	512	0.099	1.76
18-Jun-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	534	<0.05	1.68
18-Jun-21	RG_FOUEW	<0.0001	<0.0003	0.00046	446	<0.05	1.69
21-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	163	0.116	1.43
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	334	<0.05	1.78
21-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.000315	140	0.106	1.755
22-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	288	<0.05	1.68
22-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	506	<0.05	1.2
22-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00036	417	<0.05	1.76
22-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	262	0.299	1.71
22-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	256	0.245	1.5
23-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00046	349	<0.05	1.32
28-Jun-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	171	0.256	1.79
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	357	0.069	1.66
29-Jun-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	307	0.576	2.16
29-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00066	410	1.98	1.58
29-Jun-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	516	<0.05	0.94
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00037	447	<0.05	1
29-Jun-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00032	305	0.307	1.49
29-Jun-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	592	0.495	1.34
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	259	0.135	1.37
29-Jun-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	122	0.073	1.54
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	389	0.126	1.18
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	168	0.183	1.3
2-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	162	<0.05	1.58
4-Jul-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	363	<0.05	1.3
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	344	0.228	1.1
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	418	0.061	1.85
5-Jul-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	125	<0.05	<0.5
6-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	163	<0.05	<0.5
6-Jul-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00113	368	<0.05	0.97
6-Jul-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00032	578	<0.05	0.86
6-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00048	445	0.069	1.13
6-Jul-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0009	589	<0.05	0.9
6-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00034	290	0.205	0.75
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00096	375	0.081	<0.5
6-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.0022	164	0.289	1.07
7-Jul-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0006	353	0.052	<0.5

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0006	342	<0.05	1.29
7-Jul-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	0.00096	570	<0.05	1.22
8-Jul-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00053	376	0.144	0.9
8-Jul-21	FR_FR5	<0.0001	<0.0003	<0.0006	524	<0.05	0.75
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	193	<0.05	0.72
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00032	499	<0.05	0.83
13-Jul-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00039	403	<0.05	2.13
13-Jul-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	560	<0.05	2.83
13-Jul-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	706	0.436	2.82
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	588	0.719	3.06
13-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	437	<0.05	2.81
13-Jul-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	695	0.209	2.92
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	353	0.181	2.85
13-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	138	0.115	2.14
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	510	<0.05	0.77
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	425	<0.05	1.02
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	476	0.397	0.6
20-Jul-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00039	632	0.464	0.96
20-Jul-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	803	0.446	0.69
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	439	0.443	0.79
20-Jul-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0006	183	0.054	0.78
22-Jul-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	767	<0.05	2.08
26-Jul-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	750	<0.05	0.78
27-Jul-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0006	530	<0.05	<0.5
27-Jul-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	524	<0.05	0.95
27-Jul-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	517	<0.05	0.92
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	746	0.39	1.09
4-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	562	0.407	0.67
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	539	0.436	0.9
4-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	519	0.389	0.77
5-Aug-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	776	<0.05	1.13
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	778	0.186	1.36
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	504	0.384	1.12
10-Aug-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	290	0.128	2.14
10-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	539	0.289	2.34
10-Aug-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	797	0.401	1.13
10-Aug-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	820	0.467	2.14
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	756	0.44	2.02
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	845	0.294	1.56
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	502	0.158	2.32
10-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	211	0.083	2.19
11-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	527	0.417	<0.5
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	697	0.304	0.63
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	563	<0.05	0.95
12-Aug-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	813	0.585	1.1
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	762	<0.05	1.28
13-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	551	0.356	0.97
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	579	0.457	1.73
14-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	577	<0.05	1.14
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	708	<0.05	1.06
15-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	634	<0.2	0.78
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	838	0.113	1.04
16-Aug-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	567	0.071	0.74
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	758	<0.05	0.76
17-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0141	582	0.476	1.67
17-Aug-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.0247	782	0.94	2.44
17-Aug-21	FR_FR5	<0.0001	<0.0003	<0.0003	653	0.498	3.89
17-Aug-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00079	731	0.509	4.24
17-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	0.00403	731	0.529	12.3
17-Aug-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	0.00039	839	<0.05	1.5
17-Aug-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0015	162	0.085	4.05
17-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.0113	488	<0.05	1.97
17-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.00164	169	0.319	4.51
18-Aug-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	0.00045	698	0.218	0.88
19-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	412	0.488	0.74
19-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	397	0.34	1.18
19-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	378	0.344	0.83
24-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	484	0.374	2.98
24-Aug-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	595	0.408	2.79
24-Aug-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0015	750	<0.05	1.7
24-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	606	0.218	2.17
24-Aug-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	784	0.314	2.71
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	408	0.218	1.19
24-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	204	0.101	1.59
25-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	493	0.312	4
25-Aug-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	484	0.326	3.47

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0012	447	0.329	2.52
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	539	0.399	1.59
31-Aug-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	701	0.397	2.26
31-Aug-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	770	0.312	1.76
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	712	0.354	1.65
31-Aug-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	814	0.343	1.62
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	504	0.375	2.21
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	713	0.132	1.91
31-Aug-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	211	<0.05	1.7
1-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	616	0.408	3.27
3-Sep-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	815	0.138	0.96
7-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	656	0.343	0.81
7-Sep-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	863	0.407	1.21
7-Sep-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	887	0.29	1.86
7-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	813	<0.05	1.74
7-Sep-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	875	0.172	0.74
7-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	567	0.319	0.82
7-Sep-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	206	<0.05	1.62
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	629	0.348	0.69
9-Sep-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	623	<0.05	1.72
9-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	621	0.209	1.34
9-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00072	598	0.368	0.81
11-Sep-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	844	<0.05	1.56
11-Sep-21	RG_FOUEW	<0.0001	<0.0003	0.00066	769	<0.05	1.39
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	857	<0.05	1.57
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0003	<0.0003	310	0.291	<0.5
13-Sep-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	290	0.186	0.9
13-Sep-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	865	0.432	1.37
13-Sep-21	FR_FR5	<0.0001	<0.0003	<0.0003	763	0.368	1.21
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	847	<0.05	1.4
13-Sep-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	855	0.251	1.82
13-Sep-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	192	<0.05	0.92
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	815	0.453	1.4
13-Sep-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	810	0.334	1.16
14-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	624	0.341	1.08
14-Sep-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	604	<0.05	0.94
14-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	623	0.328	1.3
14-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	557	0.27	1.15
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	917	0.17	0.88
15-Sep-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	282	0.259	1.55
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<0.0001	<0.0003	<0.0003	818	<0.05	1.54
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	589	<0.05	1.31
15-Sep-21	RG_FO26	<0.0001	<0.0003	<0.0003	218	<0.05	1.55
16-Sep-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	867	<0.05	0.88
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	<0.0001	<0.0003	<0.0003	559	0.285	1.55
16-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	616	<0.05	1.18
16-Sep-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	205	<0.05	0.72
16-Sep-21	RG_FOUNGD	<0.0001	<0.0003	<0.0003	507	0.178	1.04
17-Sep-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	901	0.445	1.14
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	949	<0.05	0.84
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	658	0.404	1.14
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	203	<0.05	0.82
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	661	0.492	1.12
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	660	0.523	1.08
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	623	<0.05	1.08
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	864	0.171	1.91
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	900	<0.05	0.9
28-Sep-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0006	720	0.343	0.94
28-Sep-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	871	<0.05	0.7
28-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00046	722	0.64	1.22
28-Sep-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00051	663	0.388	0.93

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	631	0.483	0.7
4-Oct-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	321	0.265	1.22
4-Oct-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	218	0.055	1.58
5-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00055	680	0.487	0.95
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	663	0.43	0.85
6-Oct-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	674	0.535	0.89
6-Oct-21	FR_FR5	<0.0001	<0.0003	<0.0003	608	0.718	<0.5
6-Oct-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	892	0.35	<0.5
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	890	<0.05	<0.5
7-Oct-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	927	0.436	1.25
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	673	0.322	0.89
9-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	664	0.418	0.97
10-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	663	0.37	1.27
10-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	646	0.356	1.51
11-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	665	0.366	1.05
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	641	<0.05	0.88
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	943	0.39	1.43
12-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	675	<0.05	0.86
12-Oct-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	940	<0.05	1.03
12-Oct-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	858	<0.05	0.92
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	903	0.35	0.89
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	927	0.332	0.55
12-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0006	647	0.756	0.97
13-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	679	<0.05	0.88
13-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	699	0.372	0.86
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	669	0.376	0.69
19-Oct-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00038	966	0.453	0.89
19-Oct-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00036	887	0.114	1.78
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	957	0.517	1.84
19-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	700	0.644	1.11
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	914.5	0.0938	0.8575
19-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	667	0.326	0.6
19-Oct-21	FR_UFR1 (RG_URF1)	0.00016	<0.0003	<0.0003	207	<0.05	0.82
20-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	664	0.750875	0.62
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	973	0.401	1.27
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	10.2	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	702	0.449	1.14
26-Oct-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.00109	957	<0.05	1.23
26-Oct-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	873	0.082	1.18
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	977	0.429	1.7
26-Oct-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	727	0.33	1.17
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	952	0.31	0.87
26-Oct-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	685	0.392	1.13
26-Oct-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	210	<0.05	1.21
27-Oct-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0003	<0.0003	422	0.247	<0.5
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	<0.0001	<0.0003	<0.0003	702	<0.05	0.52
28-Oct-21	FR_FRABCH (RG_FO22)	<0.0001	<0.01	<0.0003	903	0.337	0.83
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.01	<0.0003	927	0.268	<0.5
29-Oct-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.01	<0.0003	1020	0.455	1.14
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.01	<0.0003	986	0.408	1.09
2-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	736	<0.05	1.54
2-Nov-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	952	<0.05	1.42
2-Nov-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	854	0.444	1.15
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	1010	0.237	1.48
2-Nov-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	946	<0.05	0.96
2-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	765	0.116	1.07
2-Nov-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	210	0.057	1.13
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	749	<0.05	0.58
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00035	1020	<0.05	1.48
8-Nov-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	<0.0003	792	0.371	0.63
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00084	1030	0.07	0.95
8-Nov-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0021	926	<0.05	1.07
9-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	771	0.204	0.78
9-Nov-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	1040	0.478	0.71
9-Nov-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	915	<0.05	<0.5
9-Nov-21	FR_FRCP1 (RG_FOBCP)	<0.0001	<0.0003	<0.0003	1040	0.392	0.52
9-Nov-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	971	0.372	<0.5
9-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	759	0.502	0.53
9-Nov-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	<0.0003	203	<0.05	<0.5
10-Nov-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	1010	0.382	0.89
10-Nov-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	207	<0.05	0.89
12-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	756	<0.05	<0.5
12-Nov-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	165	<0.05	<0.5
12-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	752	<0.05	<0.5
15-Nov-21	FR_FR5	<0.0001	<0.0003	<0.0003	737	<0.05	1.43
15-Nov-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	840	0.132	1.45
16-Nov-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.0005	341	0.263	0.61
17-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0018	701	<0.05	1.3
17-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00103	694	<0.05	1.38
17-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00171	700	<0.05	1.23
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	926	<0.05	0.51

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Tin (Sn)-Total_mg/L	Titanium (Ti)-Dissolved_mg/L	Titanium (Ti)-Total_mg/L	Total Dissolved Solids_mg/L	Total Kjeldahl Nitrogen_mg/L	Total Organic Carbon_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.0004	848	0.667	1.9
24-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	856	0.757	1.46
24-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00032	854	<0.05	1.57
29-Nov-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	0.00226	745	0.388	0.78
29-Nov-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	0.00046	732	0.359	0.6
29-Nov-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	693	0.325	0.68
1-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	855	0.466	0.86
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.0043	717	0.571	1.86
7-Dec-21	FR_FR2 (RG_FOUKI)	<0.0001	<0.0003	<0.0003	787	0.253	0.84
7-Dec-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	820	0.08	1.09
7-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	0.00032	813	0.382	0.84
8-Dec-21	FR_FR3 (RG_FOBKS)	<0.0001	<0.0003	0.00066	739	<0.05	1.12
8-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	911	<0.05	0.87
8-Dec-21	FR_FRRD (RG_FRUPO)	<0.0001	<0.0003	<0.0003	932	0.253	0.71
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	0.00034	936	<0.05	1.27
9-Dec-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	0.00093	468	0.258	1.08
9-Dec-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	0.0004	944	0.442	1.19
9-Dec-21	FR_HC3 (RG_HENUP)	<0.0001	<0.0003	<0.0003	235	0.094	0.51
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	<0.0001	<0.0003	<0.0003	1020	0.388	1.34
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	<0.0001	<0.0003	<0.0003	809	0.372	0.72
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	928	<0.05	0.56
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	<0.0001	<0.0003	<0.0003	897	0.382	0.85
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<0.0001	0.00046	0.00097	203	0.056	1.37
17-Dec-21	FR_FOUCL (RG_FOUCL)	<0.0001	<0.0003	<0.0003	487	0.257	0.8
17-Dec-21	FR_FR1 (RG_FODHE)	<0.0001	<0.0003	<0.0003	508	0.278	0.78
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	<0.0001	<0.0003	<0.0003	851	<0.05	1.05
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<0.0001	<0.0003	<0.0003	841	<0.05	1.07
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	<0.0001	<0.0003	<0.0003	923	0.441	1.23
17-Dec-21	FR_UFR1 (RG_URF1)	<0.0001	<0.0003	0.0008	173	0.062	1.06
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	<0.0001	<0.0003	<0.0003	758	0.372	0.77
20-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	0.00035	834	0.489	1.24
21-Dec-21	GH_PC2 (RG_FODPO)	<0.0001	<0.0003	<0.0003	884	0.097	0.67
22-Dec-21	FR_FR5	<0.0001	<0.0003	<0.0003	767	0.215	0.53
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	<0.0001	<0.0003	<0.0003	853	<0.05	0.71
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.00012	<0.0003	<0.0003	1220	0.249	1.18
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.46	0.00528	0.0061	<0.0005	<0.0005
6-Jan-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.43	0.00422	0.00414	<0.0005	<0.0005
6-Jan-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.43	0.00404	0.00382	<0.0005	<0.0005
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	<1	NA	<0.1	0.000518	0.00052	<0.0005	<0.0005
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	3.9	NA	0.99	0.00579	0.00571	<0.0005	<0.0005
12-Jan-21	FR_FR2 (RG_FOUKI)	<1	NA	0.46	0.00416	0.00474	<0.0005	<0.0005
12-Jan-21	FR_FR3 (RG_FOBKS)	<1	NA	0.88	0.00458	0.00468	<0.0005	<0.0005
12-Jan-21	FR_FR5	<1	NA	0.22	0.00327	0.00336	<0.0005	<0.0005
12-Jan-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.67	0.00427	0.00464	<0.0005	<0.0005
12-Jan-21	FR_HC3 (RG_HENUP)	<1	NA	<0.1	0.000895	0.000911	<0.0005	<0.0005
12-Jan-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.63	0.00402	0.00445	<0.0005	<0.0005
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	<1	NA	0.11	0.00487	0.00501	<0.0005	<0.0005
19-Jan-21	FR_FR2 (RG_FOUKI)	<1	NA	0.38	0.00426	0.00421	<0.0005	<0.0005
19-Jan-21	FR_FRABCH (RG_FO22)	3.9	NA	1.42	0.00374	0.00384	<0.0005	<0.0005
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	1.3	NA	2.16	0.00675	0.00702	<0.0005	<0.0005
21-Jan-21	GH_PC2 (RG_FODPO)	<1	NA	0.11	0.00394	0.00359	<0.0005	<0.0005
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	<1	NA	0.34	0.00423	0.00457	<0.0005	<0.0005
27-Jan-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.64	0.00443	0.00452	<0.0005	<0.0005
27-Jan-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.41	0.00426	0.00415	<0.0005	<0.0005
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	2.7	NA	0.41	0.00492	0.00445	<0.0005	<0.0005
2-Feb-21	FR_FRNTP (RG_FOUSH)	4.5	NA	0.56	0.0052	0.00452	<0.0005	<0.0005
2-Feb-21	FR_MULTIPLATE (RG_MP1)	1.1	NA	0.3	0.00496	0.00431	<0.0005	<0.0005
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	<1	NA	<0.1	0.000921	0.000897	<0.0005	<0.0005
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	1.5	NA	0.23	0.00478	0.0048	<0.0005	<0.0005
8-Feb-21	FR_FR5	1.8	NA	<0.1	0.00318	0.00314	<0.0005	<0.0005
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	1.4	NA	0.18	0.00743	0.00782	<0.0005	<0.0005
9-Feb-21	FR_FR2 (RG_FOUKI)	<1	NA	0.27	0.00443	0.00494	<0.0005	<0.0005
9-Feb-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.51	0.00465	0.00484	<0.0005	<0.0005
9-Feb-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.33	0.00421	0.00483	<0.0005	<0.0005
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	-0.73	NA	NA	NA	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	-0.8	NA	NA	NA	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	-0.62	NA	NA	NA	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	2.2	NA	0.23	0.00468	0.00452	<0.0005	<0.0005
16-Feb-21	FR_FRNTP (RG_FOUSH)	1.8	NA	0.57	0.00463	0.00444	<0.0005	<0.0005
16-Feb-21	FR_MULTIPLATE (RG_MP1)	1.6	NA	0.38	0.00448	0.00445	<0.0005	<0.0005
16-Feb-21	GH_PC2 (RG_FODPO)	10.9	NA	0.14	0.00422	0.00398	<0.0005	<0.0005
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	0.46	NA	NA	NA	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	0.44	NA	NA	NA	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	1.2	NA	0.17	0.00573	0.0055	<0.0005	<0.0005
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	1.58	NA	NA	NA	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	1.1	NA	0.35	0.00474	0.00494	<0.0005	<0.0005
23-Feb-21	FR_FR4 (RG_FOBSC)	1.8	NA	0.26	0.00673	0.00721	<0.0005	<0.0005
23-Feb-21	FR_FRABCH (RG_FO22)	<1	NA	0.22	0.00374	0.00388	<0.0005	<0.0005
23-Feb-21	FR_FRCP1 (RG_FOBCP)	33	NA	23.6	0.00843	0.00921	<0.0005	0.001
23-Feb-21	FR_FRRD (RG_FRUPO)	3.9	NA	0.19	0.00536	0.00566	<0.0005	<0.0005
23-Feb-21	FR_MULTIPLATE (RG_MP1)	1.3	NA	0.27	0.00471	0.00487	<0.0005	<0.0005
23-Feb-21	FR_UFR1 (RG_URF1)	<1	NA	0.14	0.000506	0.000536	<0.0005	<0.0005
24-Feb-21	FR_FRNTP (RG_FOUSH)	3.6	NA	3.86	0.00527	0.00477	<0.0005	<0.0005
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	<1	NA	0.67	0.00488	0.00498	<0.0005	<0.0005
2-Mar-21	FR_FR4 (RG_FOBSC)	1.2	NA	0.62	0.00647	0.00676	<0.0005	<0.0005
2-Mar-21	FR_FRABCH (RG_FO22)	1.1	NA	0.36	0.0038	0.00385	<0.0005	<0.0005
2-Mar-21	FR_FRCP1 (RG_FOBCP)	6.8	NA	2.5	0.00671	0.00682	<0.0005	<0.0005
2-Mar-21	FR_FRNTP (RG_FOUSH)	1.2	NA	0.74	0.00485	0.00485	<0.0005	<0.0005
2-Mar-21	FR_FRRD (RG_FRUPO)	<1	NA	0.16	0.0059	0.00602	<0.0005	<0.0005
2-Mar-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.44	0.00477	0.00483	<0.0005	<0.0005
2-Mar-21	FR_UFR1 (RG_URF1)	<1	NA	0.11	0.000509	0.0005	<0.0005	<0.0005
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	11	NA	3.44	0.0046	0.00427	<0.0005	<0.0005
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	2.75	NA	NA	NA	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	30.6	NA	84.5	0.000069	0.000142	<0.0005	0.00317
5-Mar-21	FR_FR5	<1	NA	0.16	0.00302	0.00324	<0.0005	<0.0005
5-Mar-21	FR_HC3 (RG_HENUP)	<1	NA	<0.1	0.000916	0.000973	<0.0005	<0.0005
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	5.8	NA	4.33	0.00586	0.00591	<0.0005	<0.0005
8-Mar-21	FR_FRNTP (RG_FOUSH)	2.6	5.1	1.88	0.00459	0.00486	<0.0005	<0.0005
9-Mar-21	FR_FR2 (RG_FOUKI)	7.1	NA	2.01	0.0044	0.0044	<0.0005	<0.0005
9-Mar-21	FR_FR4 (RG_FOBSC)	7.5	NA	2.32	0.00551	0.00542	<0.0005	<0.0005
9-Mar-21	FR_FRABCH (RG_FO22)	<1	-0.26	0.12	0.00398	0.00401	<0.0005	<0.0005
9-Mar-21	FR_FRCP1 (RG_FOBCP)	1.7	1.51	1.55	0.00642	0.0068	<0.0005	<0.0005
9-Mar-21	FR_FRRD (RG_FRUPO)	<1	NA	<0.1	0.00583	0.00584	<0.0005	<0.0005
9-Mar-21	FR_MULTIPLATE (RG_MP1)	2.2	NA	0.93	0.00446	0.00439	<0.0005	<0.0005
9-Mar-21	FR_UFR1 (RG_URF1)	1.3	1.34	3.49	0.000402	0.000453	<0.0005	0.00136
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<1	NA	2.44	0.000434	0.000429	<0.0005	0.00101
15-Mar-21	FR_HC3 (RG_HENUP)	<1	-0.66	<0.1	NA	NA	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	2.3	NA	0.25	0.00434	0.00422	<0.0005	<0.0005
16-Mar-21	FR_FR1 (RG_FODHE)	NA	6.1	NA	NA	NA	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	15.7	NA	8.45	0.00377	0.0039	<0.0005	0.00136
16-Mar-21	FR_FR4 (RG_FOBSC)	10.7	NA	9.57	0.00455	0.00461	<0.0005	0.00157
16-Mar-21	FR_FRABCH (RG_FO22)	3.1	0.08	0.44	0.00401	0.0047	<0.0005	<0.0005
16-Mar-21	FR_FRCP1 (RG_FOBCP)	13.5	10.75	8.95	0.00441	0.00497	<0.0005	0.00082
16-Mar-21	FR_FRNTP (RG_FOUSH)	5.6	7.56	7.28	0.00364	0.00378	<0.0005	0.00133
16-Mar-21	FR_FRRD (RG_FRUPO)	3.9	NA	0.37	0.00545	0.00564	<0.0005	<0.0005
16-Mar-21	FR_MULTIPLATE (RG_MP1)	6.1	NA	8.01	0.00377	0.00367	<0.0005	0.00154
16-Mar-21	FR_UFR1 (RG_URF1)	2.8	NA	6.84	0.000319	0.000384	<0.0005	0.00217
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	10.29	NA	NA	NA	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	10.22	NA	NA	NA	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	9.7	NA	NA	NA	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	10.4	NA	10	0.00385	0.00378	<0.0005	0.00124
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	9.3	NA	NA	NA	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	<1	1.12	0.8	NA	NA	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	<1	0.1	<0.1	NA	NA	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	7.9	NA	3.47	0.00377	0.00355	<0.0005	0.00053
23-Mar-21	FR_FR4 (RG_FOBSC)	7.7	NA	3.65	0.0045	0.00414	<0.0005	0.00062
23-Mar-21	FR_FRABCH (RG_FO22)	<1	0.54	0.9	0.00409	0.00404	<0.0005	<0.0005
23-Mar-21	FR_FRCP1 (RG_FOBCP)	5	3.74	4.13	0.00428	0.00429	<0.0005	0.00085
23-Mar-21	FR_FRNTP (RG_FOUSH)	3.4	3.8	3.36	0.00389	0.00374	<0.0005	0.00079
23-Mar-21	FR_FRRD (RG_FRUPO)	13.1	NA	2.14	0.00489	0.00459	<0.0005	0.00051
23-Mar-21	FR_MULTIPLATE (RG_MP1)	<1	NA	3.76	0.00382	0.00331	<0.0005	0.00085
23-Mar-21	FR_UFR1 (RG_URF1)	<1	3.58	3.73	0.000299	0.000301	<0.0005	0.00136
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	3.1	3.23	3.1	0.00433	0.00465	<0.0005	0.00057
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	2.52	NA	NA	NA	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	2.88	NA	NA	NA	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	2.57	NA	NA	NA	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	1.8	0.1	0.26	NA	NA	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	<1	0.01	<0.1	NA	NA	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	6.5	NA	1.99	0.0043	0.00467	<0.0005	0.00052
30-Mar-21	FR_FR4 (RG_FOBSC)	8.5	NA	2.76	0.005	0.00537	<0.0005	0.0005
30-Mar-21	FR_FRABCH (RG_FO22)	1.1	0.44	0.51	0.00404	0.00435	<0.0005	0.00069
30-Mar-21	FR_FRCP1 (RG_FOBCP)	1.2	5.66	1.26	0.00522	0.00544	<0.0005	0.00079
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	0.49	NA	NA	NA	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	7.9	NA	1.82	0.005	0.00567	<0.0005	0.00051
30-Mar-21	FR_MULTIPLATE (RG_MP1)	3.1	NA	1.56	0.00449	0.00472	<0.0005	<0.0005
30-Mar-21	FR_UFR1 (RG_URF1)	3.3	NA	2.46	0.000358	0.000381	<0.0005	0.00143
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	0.27	NA	NA	NA	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	1.2	3.3	1.07	0.00448	0.00501	<0.0005	0.00078
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	0.51	NA	NA	NA	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	3.1	2.3	1.56	0.00511	0.00551	<0.0005	0.001
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	4.2	NA	3.67	0.00451	0.00447	<0.0005	0.00077
6-Apr-21	FR_FR1 (RG_FODHE)	<1	0.1	0.48	0.00138	0.00142	<0.0005	<0.0005
6-Apr-21	FR_FR2 (RG_FOUKI)	2.5	1.9	1.88	0.00418	0.00432	<0.0005	0.00051
6-Apr-21	FR_FRNTP (RG_FOUSH)	2.1	3.04	2.15	0.00425	0.00439	<0.0005	0.00054
6-Apr-21	FR_HC3 (RG_HENUP)	<1	-0.1	<0.1	0.000852	0.000959	<0.0005	<0.0005
6-Apr-21	FR_MULTIPLATE (RG_MP1)	1.6	2.02	2.13	0.00416	0.00446	<0.0005	0.00063
6-Apr-21	FR_UFR1 (RG_URF1)	2	1.4	1.72	0.000397	0.000448	<0.0005	0.00075
7-Apr-21	FR_FR3 (RG_FOBKS)	3.6	3.16	1.45	0.00396	0.00406	<0.0005	<0.0005
7-Apr-21	FR_FR5	<1	0.53	0.55	0.00352	0.00347	<0.0005	<0.0005
7-Apr-21	FR_FRABCH (RG_FO22)	<1	1.7	0.7	0.00403	0.0041	<0.0005	<0.0005
7-Apr-21	FR_FRCP1 (RG_FOBCP)	1.5	1.09	1.68	0.00448	0.00474	<0.0005	<0.0005
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	1.4	2.75	1.69	0.0049	0.00462	<0.0005	<0.0005
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	2	NA	NA	NA	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	2.17	NA	NA	NA	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	2.6	NA	NA	NA	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	<1	0.5	0.47	0.00434	0.00451	<0.0005	<0.0005
9-Apr-21	FR_FR4 (RG_FOBSC)	2	1.94	1.53	0.00455	0.00475	<0.0005	<0.0005
12-Apr-21	FR_FR1 (RG_FODHE)	<1	0.01	0.18	0.00134	0.00141	<0.0005	<0.0005
12-Apr-21	FR_HC3 (RG_HENUP)	<1	0.08	<0.1	NA	NA	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	<1	2.51	0.88	0.0041	0.00446	<0.0005	<0.0005
13-Apr-21	FR_FR4 (RG_FOBSC)	2.6	2.06	12.2	0.00494	0.00535	<0.0005	<0.0005
13-Apr-21	FR_FRABCH (RG_FO22)	<1	0.7	0.64	0.00384	0.00418	<0.0005	<0.0005
13-Apr-21	FR_FRCP1 (RG_FOBCP)	2.7	1	1.03	0.00505	0.00521	<0.0005	<0.0005
13-Apr-21	FR_FRRD (RG_FRUPO)	<1	1.46	0.45	0.00491	0.00532	<0.0005	<0.0005
13-Apr-21	FR_MULTIPLATE (RG_MP1)	<1	1.88	0.83	0.00446	0.00444	<0.0005	<0.0005
13-Apr-21	FR_UFR1 (RG_URF1)	<1	0.36	0.8	0.000425	0.000408	<0.0005	<0.0005
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.57	NA	NA	NA	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	3.5	0.63	0.63	0.00418	0.0045	<0.0005	<0.0005
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	2.4	0.94	0.72	0.00482	0.00515	<0.0005	<0.0005
15-Apr-21	FR_FR4 (RG_FOBSC)	2.6	1.1	0.84	0.00515	0.00482	<0.0005	0.00054
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	1.48	NA	NA	NA	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	1.57	NA	NA	NA	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	5.8	0.78	<0.1	0.001	0.00122	<0.0005	<0.0005
19-Apr-21	FR_HC3 (RG_HENUP)	<1	0.29	<0.1	NA	NA	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	2.6	1.16	1.08	0.00384	0.00404	<0.0005	0.00052
20-Apr-21	FR_FRNTP (RG_FOUSH)	2.2	NA	1.06	0.00321	0.00352	<0.0005	0.00059
20-Apr-21	FR_MULTIPLATE (RG_MP1)	<1	NA	1.24	0.00313	0.00331	<0.0005	0.00055
20-Apr-21	FR_UFR1 (RG_URF1)	<1	0.47	0.72	NA	NA	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	3.9	NA	1.48	0.00373	0.00412	<0.0005	0.00052
21-Apr-21	FR_FRABCH (RG_FO22)	7.4	2.58	1.81	0.00364	0.00377	<0.0005	0.00057
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	5.6	2.65	1.87	0.00364	0.00384	<0.0005	<0.0005
22-Apr-21	FR_FR2 (RG_FOUKI)	2.9	2.81	0.96	0.00336	0.00345	<0.0005	0.00062
26-Apr-21	FR_FR1 (RG_FODHE)	<1	0.06	0.38	0.00115	0.00117	<0.0005	<0.0005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	<1	0.23	0.14	NA	NA	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	<1	2.55	0.62	NA	NA	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	1.4	0.74	0.81	0.00359	0.00371	<0.0005	<0.0005
27-Apr-21	FR_FRCP1 (RG_FOBCP)	17.7	0.77	2.87	0.00419	0.00416	<0.0005	0.00054
27-Apr-21	FR_FRNTP (RG_FOUSH)	1.2	0.67	0.71	0.0036	0.00357	<0.0005	<0.0005
27-Apr-21	FR_MULTIPLATE (RG_MP1)	1	0.75	0.62	0.00348	0.00341	<0.0005	<0.0005
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	0.71	NA	NA	NA	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	3.6	0.59	0.83	0.00405	0.00397	<0.0005	<0.0005
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	0.5	NA	NA	NA	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	0.87	NA	NA	NA	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	2.6	0.64	0.84	0.00419	0.00414	<0.0005	<0.0005
30-Apr-21	FR_FR4 (RG_FOBSC)	4	1.24	1.09	0.00371	0.00362	<0.0005	0.00058
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	9	NA	3.23	0.00273	0.00276	<0.0005	<0.0005
3-May-21	FR_HC3 (RG_HENUP)	<1	NA	0.14	0.000761	0.000773	<0.0005	<0.0005
3-May-21	FR_UFR1 (RG_URF1)	<1	NA	0.82	0.000365	0.000363	<0.0005	0.00056
4-May-21	FR_FR1 (RG_FODHE)	<1	NA	0.63	0.000906	0.000853	<0.0005	<0.0005
4-May-21	FR_FR2 (RG_FOUKI)	5.1	NA	1.76	0.00251	0.00246	<0.0005	0.00062
4-May-21	FR_FR3 (RG_FOBKS)	4.8	NA	1.28	0.00262	0.00247	<0.0005	0.00066
4-May-21	FR_FRNTP (RG_FOUSH)	4.3	NA	1.2	0.00254	0.00236	<0.0005	0.00072
4-May-21	FR_MULTIPLATE (RG_MP1)	2.3	NA	1.09	0.00223	0.00226	<0.0005	0.00068
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	5.6	NA	1.16	0.00273	0.00268	<0.0005	0.00078
5-May-21	FR_FR2 (RG_FOUKI)	NA	1.47	NA	NA	NA	NA	NA
5-May-21	FR_FR5	3.2	2.32	1	0.0025	0.00253	<0.0005	<0.0005
5-May-21	FR_FRABCH (RG_FO22)	2.6	7.4	1.21	0.0032	0.00295	<0.0005	<0.0005
5-May-21	FR_FRCP1 (RG_FOBCP)	3.1	1.3	1.8	0.00259	0.00268	<0.0005	0.00058
5-May-21	FR_FRNTP (RG_FOUSH)	NA	1.66	NA	NA	NA	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	2.14	NA	NA	NA	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	2.9	1.83	1.47	0.00332	0.00341	<0.0005	<0.0005
7-May-21	FR_FR4 (RG_FOBSC)	12.8	1.14	4.45	0.00227	0.00218	<0.0005	<0.0005
10-May-21	FR_HC3 (RG_HENUP)	<1	0.31	0.22	NA	NA	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	1.6	0.09	0.74	NA	NA	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	<1	2.66	0.29	0.00079	0.000814	<0.0005	<0.0005
11-May-21	FR_FR2 (RG_FOUKI)	2.2	0.67	0.81	0.00236	0.00215	<0.0005	<0.0005
11-May-21	FR_FRCP1 (RG_FOBCP)	3.8	118.8	0.85	0.00264	0.00276	<0.0005	<0.0005
11-May-21	FR_FRNTP (RG_FOUSH)	2.5	0.13	0.9	0.0023	0.00221	<0.0005	<0.0005
11-May-21	FR_MULTIPLATE (RG_MP1)	2.3	0.63	0.76	0.0022	0.00214	<0.0005	<0.0005
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	4.7	0.38	0.51	0.00298	0.00316	<0.0005	<0.0005
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	2.5	0.45	0.52	0.00254	0.00267	<0.0005	<0.0005
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	7.9	6.83	2.69	NA	NA	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	3.5	2.8	2.31	NA	NA	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	34.1	10.62	10	0.00143	0.0014	<0.0005	0.00151
18-May-21	FR_FR2 (RG_FOUKI)	28.2	NA	7.49	0.00101	0.00108	<0.0005	0.00189
18-May-21	FR_FR4 (RG_FOBSC)	42.8	NA	21.7	0.00113	0.00123	<0.0005	0.00286
18-May-21	FR_FRABCH (RG_FO22)	138	28.8	27.3	0.0017	0.00174	<0.0005	0.00243
18-May-21	FR_FRCP1 (RG_FOBCP)	59	19.15	15.1	0.00146	0.00143	<0.0005	0.00162
18-May-21	FR_FRRD (RG_FRUPO)	30.8	NA	18.3	0.00188	0.00204	<0.0005	0.00253
18-May-21	FR_MULTIPLATE (RG_MP1)	21.2	NA	6.83	0.000933	0.00101	<0.0005	0.00117
18-May-21	FR_UFR1 (RG_URF1)	18.1	9.96	7.27	0.000293	0.000304	<0.0005	0.0009
20-May-21	FR_FR2 (RG_FOUKI)	NA	3.13	NA	NA	NA	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	5.8	9.07	1.32	0.00172	0.00175	<0.0005	0.00056
20-May-21	FR_FRNTP (RG_FOUSH)	5.5	2.64	13.7	0.000939	0.000952	<0.0005	0.00131
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	2.7	NA	NA	NA	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	4.4	NA	3.41	0.00153	0.00154	<0.0005	0.00065
25-May-21	FR_FR4 (RG_FOBSC)	5.3	NA	3.75	0.00216	0.00219	<0.0005	0.00142
25-May-21	FR_FRABCH (RG_FO22)	7.6	5.38	3.37	0.00284	0.00286	<0.0005	0.00054
25-May-21	FR_FRCP1 (RG_FOBCP)	7.6	1.57	2.58	0.00255	0.00263	<0.0005	0.00052
25-May-21	FR_FRRD (RG_FRUPO)	5.6	NA	2.88	0.0031	0.00313	<0.0005	<0.0005
25-May-21	FR_MULTIPLATE (RG_MP1)	2.6	NA	2.63	0.00143	0.00144	<0.0005	0.00057
25-May-21	FR_UFR1 (RG_URF1)	2.2	0.55	1.59	0.000334	0.000335	<0.0005	0.00052
26-May-21	FR_FR1 (RG_FODHE)	<1	0.12	0.59	0.00057	0.000594	<0.0005	<0.0005
26-May-21	FR_HC3 (RG_HENUP)	<1	0.29	0.19	NA	NA	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	4.3	2.65	1.28	0.00144	0.00164	<0.0005	<0.0005
27-May-21	FR_FR4 (RG_FOBSC)	9	8.81	2.81	0.00193	0.00191	<0.0005	<0.0005
27-May-21	FR_FRNTP (RG_FOUSH)	10.3	2.36	2.06	0.00115	0.00122	<0.0005	<0.0005
28-May-21	FR_FR2 (RG_FOUKI)	NA	3.51	NA	NA	NA	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	3.45	NA	NA	NA	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	3.1	NA	NA	NA	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	2.2	1	0.99	0.000597	0.000669	<0.0005	<0.0005
31-May-21	FR_HC3 (RG_HENUP)	1	0.5	0.36	NA	NA	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	5.8	1.95	1.73	0.0014	0.00149	<0.0005	<0.0005
1-Jun-21	FR_FR2 (RG_FOUKI)	18	NA	6.83	0.00109	0.000982	<0.0005	<0.0005
1-Jun-21	FR_FR4 (RG_FOBSC)	24.8	NA	10.1	0.00135	0.00126	<0.0005	0.00087
1-Jun-21	FR_FRABCH (RG_FO22)	21	17.1	9.36	0.00219	0.00203	<0.0005	0.0012
1-Jun-21	FR_FRCP1 (RG_FOBCP)	10.3	8.28	6.2	0.00198	0.0019	<0.0005	0.0011
1-Jun-21	FR_FRNTP (RG_FOUSH)	9.6	NA	4.44	0.00111	0.00102	<0.0005	0.0007
1-Jun-21	FR_FRRD (RG_FRUPO)	35.2	NA	11.8	0.00252	0.00223	<0.0005	0.00102
1-Jun-21	FR_MULTIPLATE (RG_MP1)	13.6	NA	5.74	0.00112	0.001	<0.0005	<0.0005
1-Jun-21	FR_UFR1 (RG_URF1)	10	6.59	3.53	0.000322	0.000318	<0.0005	0.0008
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	56	24.12	28.4	0.0014	0.0016	<0.0005	0.00212
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	42.4	NA	28.7	0.00103	0.00105	<0.0005	0.00109
7-Jun-21	FR_FR1 (RG_FODHE)	3	1.66	1.41	0.000543	0.000569	<0.0005	<0.0005
7-Jun-21	FR_HC3 (RG_HENUP)	1.6	1	0.42	0.000479	0.000506	<0.0005	<0.0005
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	9.6	4.9	4.88	0.00139	0.00138	<0.0005	0.00071
7-Jun-21	GH_PC2 (RG_FODPO)	13.2	6	6.02	0.00285	0.00283	<0.0005	0.00088
8-Jun-21	FR_FR2 (RG_FOUKI)	9	NA	2.67	0.00136	0.00132	<0.0005	0.00072
8-Jun-21	FR_FR4 (RG_FOBSC)	29.2	NA	5.59	0.00201	0.00198	<0.0005	0.00123

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	11.6	5.01	4.57	0.00265	0.00274	<0.0005	0.00063
8-Jun-21	FR_FRCP1 (RG_FOBCP)	6	2.13	2.06	0.00254	0.00263	<0.0005	<0.0005
8-Jun-21	FR_FRRD (RG_FRUPO)	<0	NA	2.75	0.00322	0.00314	<0.0005	0.00141
8-Jun-21	FR_MULTIPLATE (RG_MP1)	9.8	NA	2.62	0.00119	0.00116	<0.0005	0.00067
8-Jun-21	FR_UFR1 (RG_URF1)	3.2	1.06	1.21	0.000303	0.00032	<0.0005	<0.0005
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	2.6	1.26	1.4	0.00136	0.00136	<0.0005	<0.0005
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.6	NA	1.21	0.00151	0.00165	<0.0005	<0.0005
10-Jun-21	FR_FR4 (RG_FOBSC)	2.4	1.34	0.62	0.00286	0.00279	<0.0005	<0.0005
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	1.22	NA	NA	NA	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	2.55	NA	NA	NA	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	1.4	6.01	0.96	0.00269	0.00282	<0.0005	<0.0005
14-Jun-21	FR_FOUCL (RG_FOUCL)	2.1	NA	1.34	0.000589	0.000603	<0.0005	<0.0005
14-Jun-21	FR_FR1 (RG_FODHE)	2.05	1	1.2	0.0006235	0.000623	<0.0005	<0.0005
14-Jun-21	FR_FR3 (RG_FOBKS)	3.2	184	1.27	0.00126	0.00129	<0.0005	<0.0005
14-Jun-21	FR_FR5	10.8	4.27	3.2	0.00204	0.00201	<0.0005	0.00051
14-Jun-21	FR_HC3 (RG_HENUP)	3.5	1	1.22	NA	NA	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	2.6	NA	1.54	0.00113	0.00115	<0.0005	<0.0005
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	3.5	2.09	1.8	0.00142	0.00141	<0.0005	<0.0005
14-Jun-21	RG_FO26	1.8	NA	0.54	0.000371	0.000376	<0.0005	<0.0005
15-Jun-21	FR_FR2 (RG_FOUKI)	10.1	NA	3.95	0.00107	0.00106	<0.0005	<0.0005
15-Jun-21	FR_FR4 (RG_FOBSC)	8	NA	1.77	0.00139	0.00141	<0.0005	<0.0005
15-Jun-21	FR_FRABCH (RG_FO22)	42.9	9.12	6.69	0.00195	0.00196	<0.0005	0.00055
15-Jun-21	FR_FRCP1 (RG_FOBCP)	9.3	4.03	2.54	0.00175	0.00178	<0.0005	0.00053
15-Jun-21	FR_FRNTP (RG_FOUSH)	6.65	4.03	2.5	0.001035	0.00106	<0.0005	<0.0005
15-Jun-21	FR_FRRD (RG_FRUPO)	8.9	NA	2.66	0.00245	0.0025	<0.0005	<0.0005
15-Jun-21	FR_MULTIPLATE (RG_MP1)	9.5	NA	2.99	0.000934	0.00094	<0.0005	0.00053
15-Jun-21	FR_UFR1 (RG_URF1)	4.45	1.035	1.01	0.00033	0.000341	<0.0005	<0.0005
15-Jun-21	RG_FOUNGD	7.1	NA	2.06	0.000899	0.0009	<0.0005	<0.0005
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	8.57	NA	NA	NA	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	8.7	NA	2.92	0.00115	0.0011	<0.0005	<0.0005
16-Jun-21	FR_FR4 (RG_FOBSC)	3.4	3.01	0.95	0.0018	0.00192	<0.0005	<0.0005
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	4.2	NA	1.78	0.00093	0.000916	<0.0005	<0.0005
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	2.74	NA	NA	NA	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	2	NA	1.46	0.000378	0.000377	<0.0005	<0.0005
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	1.55	NA	NA	NA	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	5.9	NA	2.43	0.00132	0.00126	<0.0005	<0.0005
17-Jun-21	FR_FR2 (RG_FOUKI)	2.7	NA	1.12	0.00123	0.00126	<0.0005	<0.0005
17-Jun-21	FR_FR4 (RG_FOBSC)	2.3	NA	1.24	0.0028	0.0025	<0.0005	<0.0005
17-Jun-21	FR_FRCP1 (RG_FOBCP)	4	NA	0.82	0.00216	0.002	<0.0005	<0.0005
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	3	NA	0.78	0.00218	0.00198	<0.0005	<0.0005
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	6.2	NA	2.8	0.0015	0.00135	<0.0005	0.00051
17-Jun-21	GH_PC2 (RG_FODPO)	8.2	NA	1.18	0.00252	0.00225	<0.0005	<0.0005
18-Jun-21	FR_FRABCH (RG_FO22)	5.6	NA	1.6	0.00255	0.00261	<0.0005	<0.0005
18-Jun-21	FR_FRRD (RG_FRUPO)	5.1	NA	0.53	0.0029	0.00297	<0.0005	<0.0005
18-Jun-21	RG_FOUEW	6.2	NA	1.06	0.00236	0.00216	<0.0005	<0.0005
21-Jun-21	FR_FR1 (RG_FODHE)	3.4	1	0.455	0.0005195	0.00057	<0.0005	<0.0005
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	1	NA	NA	NA	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	1.65	NA	NA	NA	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	<1	1	0.27	NA	NA	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	1.37	NA	NA	NA	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.3	1	0.47	0.00141	0.00162	<0.0005	<0.0005
21-Jun-21	FR_UFR1 (RG_URF1)	5.05	1	0.405	0.0003215	0.000358	<0.0005	<0.0005
22-Jun-21	FR_FR2 (RG_FOUKI)	1.9	1	1.16	0.00134	0.00123	<0.0005	<0.0005
22-Jun-21	FR_FRABCH (RG_FO22)	3	2.11	2.37	0.00258	0.00244	<0.0005	<0.0005
22-Jun-21	FR_FRCP1 (RG_FOBCP)	<1	4.02	1	0.0023	0.00209	<0.0005	<0.0005
22-Jun-21	FR_FRNTP (RG_FOUSH)	<1	NA	1.12	0.00129	0.00118	<0.0005	<0.0005
22-Jun-21	FR_MULTIPLATE (RG_MP1)	1	NA	1.18	0.00112	0.0011	<0.0005	<0.0005
23-Jun-21	FR_FR4 (RG_FOBSC)	2	1.82	0.84	0.002	0.00185	<0.0005	<0.0005
28-Jun-21	FR_FR1 (RG_FODHE)	1.5	1	0.41	0.000509	0.000519	<0.0005	<0.0005
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	<1	1.22	0.4	NA	NA	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	1.8	1	0.38	0.00154	0.0016	<0.0005	<0.0005
29-Jun-21	FR_FR2 (RG_FOUKI)	3.8	NA	0.53	0.00128	0.00138	<0.0005	<0.0005
29-Jun-21	FR_FR4 (RG_FOBSC)	1.8	NA	0.55	0.0017	0.00175	<0.0005	<0.0005
29-Jun-21	FR_FRABCH (RG_FO22)	<1	1.75	0.38	0.00245	0.00247	<0.0005	<0.0005
29-Jun-21	FR_FRCP1 (RG_FOBCP)	<1	1	0.47	0.00223	0.00232	<0.0005	<0.0005
29-Jun-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.42	0.00133	0.00133	<0.0005	<0.0005
29-Jun-21	FR_FRRD (RG_FRUPO)	1.4	NA	0.19	0.00285	0.00299	<0.0005	<0.0005
29-Jun-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.33	0.0012	0.00122	<0.0005	<0.0005
29-Jun-21	FR_UFR1 (RG_URF1)	<1	NA	0.24	0.00033	0.000347	<0.0005	<0.0005
30-Jun-21	FR_FR1 (RG_FODHE)	NA	0.55	NA	NA	NA	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	1	NA	NA	NA	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	1.6	1.22	0.32	0.00197	0.00192	<0.0005	<0.0005
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	1	NA	NA	NA	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	1	NA	NA	NA	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	0.44	NA	NA	NA	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	0.11	NA	NA	NA	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	0.17	NA	NA	NA	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<1	0.08	0.39	0.000544	0.00056	<0.0005	<0.0005
2-Jul-21	FR_UFR1 (RG_URF1)	1	0.1	0.46	0.00035	0.000366	<0.0005	<0.0005
4-Jul-21	FR_FR2 (RG_FOUKI)	<1	5.67	1.51	0.00171	0.00179	<0.0005	<0.0005
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.54	0.00168	0.00173	<0.0005	<0.0005
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	1.1	NA	0.35	0.00201	0.00197	<0.0005	<0.0005
5-Jul-21	FR_HC3 (RG_HENUP)	<1	-0.13	0.14	0.000532	0.000519	<0.0005	<0.0005
6-Jul-21	FR_FR1 (RG_FODHE)	2.5	0.04	0.39	0.000531	0.000603	<0.0005	<0.0005
6-Jul-21	FR_FR4 (RG_FOBSC)	3.8	NA	1.46	0.00177	0.00165	<0.0005	<0.0005
6-Jul-21	FR_FRABCH (RG_FO22)	2.4	5.97	1.4	0.00239	0.00272	<0.0005	<0.0005
6-Jul-21	FR_FRCP1 (RG_FOBCP)	3.4	1.11	0.67	0.0022	0.00233	<0.0005	<0.0005
6-Jul-21	FR_FRRD (RG_FRUPO)	4.5	NA	1.39	0.0028	0.00267	<0.0005	<0.0005
6-Jul-21	FR_MULTIPLATE (RG_MP1)	2.3	NA	0.67	0.00131	0.00122	<0.0005	<0.0005
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	5	1.53	0.82	0.00163	0.00182	<0.0005	<0.0005
6-Jul-21	FR_UFR1 (RG_URF1)	2.2	NA	0.82	0.000342	0.00035	<0.0005	0.00056
7-Jul-21	FR_FR2 (RG_FOUKI)	1.2	NA	0.29	0.00158	0.0017	<0.0005	<0.0005

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	2	1.976666667	0.43	0.0015	0.00174	<0.0005	<0.0005
7-Jul-21	GH_PC2 (RG_FODPO)	2.8	1.52	0.98	0.00267	0.00299	<0.0005	<0.0005
8-Jul-21	FR_FR3 (RG_FOBKS)	12	0.72	1.23	0.00165	0.00181	<0.0005	<0.0005
8-Jul-21	FR_FR5	2.1	13.18	0.42	0.00228	0.00244	<0.0005	<0.0005
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.45	NA	NA	NA	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.37	NA	NA	NA	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	<1	0.02	0.16	0.00069	0.000672	<0.0005	<0.0005
12-Jul-21	FR_HC3 (RG_HENUP)	<1	0.04	0.22	NA	NA	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	1.3	0.79	0.42	0.00247	0.00235	<0.0005	<0.0005
13-Jul-21	FR_FR2 (RG_FOUKI)	<1	NA	0.39	0.00215	0.00211	<0.0005	<0.0005
13-Jul-21	FR_FR4 (RG_FOBSC)	<1	NA	0.43	0.00268	0.00261	<0.0005	<0.0005
13-Jul-21	FR_FRABCH (RG_FO22)	<1	1.42	0.33	0.00315	0.00314	<0.0005	<0.0005
13-Jul-21	FR_FRCP1 (RG_FOBCP)	<1	0.44	0.28	0.00278	0.00299	<0.0005	<0.0005
13-Jul-21	FR_FRNTP (RG_FOUSH)	2.9	0.61	0.33	0.0019	0.00192	<0.0005	<0.0005
13-Jul-21	FR_FRRD (RG_FRUPO)	<1	NA	0.26	0.0036	0.00365	<0.0005	<0.0005
13-Jul-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.41	0.00184	0.00186	<0.0005	<0.0005
13-Jul-21	FR_UFR1 (RG_URF1)	<1	NA	0.21	0.000409	0.000399	<0.0005	<0.0005
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.63	NA	NA	NA	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	0.05	NA	NA	NA	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.16	NA	NA	NA	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	1.1	0.74	0.4	0.00251	0.00264	<0.0005	<0.0005
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	0.2	NA	NA	NA	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	5.9	0.27	0.91	0.00206	0.002	<0.0005	<0.0005
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	0.22	NA	NA	NA	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	1.5	NA	0.5	0.0023	0.00234	<0.0005	<0.0005
20-Jul-21	FR_FR4 (RG_FOBSC)	17.6	NA	1.94	0.00305	0.00312	<0.0005	<0.0005
20-Jul-21	FR_FRRD (RG_FRUPO)	2.6	NA	0.31	0.00384	0.00387	<0.0005	<0.0005
20-Jul-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.28	0.00209	0.00209	<0.0005	<0.0005
20-Jul-21	FR_UFR1 (RG_URF1)	1.4	NA	0.31	0.000425	0.00042	<0.0005	<0.0005
22-Jul-21	FR_FRABCH (RG_FO22)	4	NA	0.33	0.00334	0.00344	<0.0005	<0.0005
26-Jul-21	FR_FRABCH (RG_FO22)	<1	NA	0.24	0.00346	0.00333	<0.0005	<0.0005
27-Jul-21	FR_FR2 (RG_FOUKI)	4.7	NA	0.68	0.00261	0.00248	<0.0005	<0.0005
27-Jul-21	FR_FRNTP (RG_FOUSH)	<1	NA	0.4	0.00262	0.00253	<0.0005	<0.0005
27-Jul-21	FR_MULTIPLATE (RG_MP1)	2	NA	5.12	0.00242	0.00249	<0.0005	<0.0005
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.4	0.00342	0.00394	<0.0005	<0.0005
4-Aug-21	FR_FR2 (RG_FOUKI)	<1	0.09	0.36	0.00288	0.00259	<0.0005	<0.0005
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	0.09	NA	NA	NA	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	<1	0.13	0.32	0.00275	0.00249	<0.0005	<0.0005
4-Aug-21	FR_MULTIPLATE (RG_MP1)	<1	4.12	0.3	0.00264	0.00236	<0.0005	<0.0005
5-Aug-21	FR_FRABCH (RG_FO22)	<1	1.17	0.49	0.00346	0.00364	<0.0005	<0.0005
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<1	0.28	0.44	0.00382	0.00397	<0.0005	<0.0005
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.01	NA	NA	NA	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.16	NA	NA	NA	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.01	NA	NA	NA	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	1.3	0.13	0.25	0.00246	0.00258	<0.0005	<0.0005
10-Aug-21	FR_FR1 (RG_FODHE)	<1	0.01	0.23	0.000947	0.000955	<0.0005	<0.0005
10-Aug-21	FR_FR2 (RG_FOUKI)	<1	NA	0.46	0.00269	0.00273	<0.0005	<0.0005
10-Aug-21	FR_FR4 (RG_FOBSC)	<1	NA	0.32	0.00398	0.00398	<0.0005	<0.0005
10-Aug-21	FR_FRABCH (RG_FO22)	<1	NA	0.38	0.00365	0.00358	<0.0005	<0.0005
10-Aug-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.37	0.00384	0.00388	<0.0005	<0.0005
10-Aug-21	FR_FRRD (RG_FRUPO)	<1	NA	0.14	0.00434	0.0044	<0.0005	<0.0005
10-Aug-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.41	0.0024	0.00248	<0.0005	<0.0005
10-Aug-21	FR_UFR1 (RG_URF1)	<1	0.76	0.28	0.000429	0.000458	<0.0005	<0.0005
11-Aug-21	FR_FR3 (RG_FOBKS)	2.1	NA	0.49	0.00263	0.00277	<0.0005	<0.0005
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.6	NA	0.33	0.00335	0.00355	<0.0005	<0.0005
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	0.11	NA	NA	NA	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	8.7	NA	2.82	0.00249	0.00264	<0.0005	<0.0005
12-Aug-21	FR_FR4 (RG_FOBSC)	1.6	NA	0.47	0.00426	0.00403	<0.0005	<0.0005
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	0.05	NA	NA	NA	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	0.01	NA	NA	NA	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	5.8	NA	1.05	0.00328	0.00346	<0.0005	<0.0005
13-Aug-21	FR_FR3 (RG_FOBKS)	1.2	NA	0.32	0.00268	0.00274	<0.0005	<0.0005
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.2	NA	0.42	0.00343	0.00354	<0.0005	<0.0005
14-Aug-21	FR_FR3 (RG_FOBKS)	1.9	NA	1.15	0.00273	0.00274	<0.0005	<0.0005
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	1.1	NA	0.36	0.00337	0.00358	<0.0005	<0.0005
15-Aug-21	FR_FR3 (RG_FOBKS)	<1	NA	0.64	0.00281	0.00272	<0.0005	<0.0005
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.35	0.00407	0.00385	<0.0005	<0.0005
16-Aug-21	FR_FR3 (RG_FOBKS)	<1	NA	0.81	0.00271	0.00273	<0.0005	<0.0005
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.39	0.00349	0.00349	<0.0005	<0.0005
17-Aug-21	FR_FR2 (RG_FOUKI)	30.7	NA	34.8	0.00268	0.00278	<0.0005	0.00243
17-Aug-21	FR_FR4 (RG_FOBSC)	73.6	NA	84.6	0.00393	0.00432	<0.0005	0.00497
17-Aug-21	FR_FR5	2.1	1.66	1.32	0.00286	0.00258	<0.0005	<0.0005
17-Aug-21	FR_FRABCH (RG_FO22)	1.9	NA	2.41	0.00347	0.00325	<0.0005	<0.0005
17-Aug-21	FR_FRCP1 (RG_FOBCP)	18.5	NA	29.7	0.00394	0.00384	<0.0005	0.00174
17-Aug-21	FR_FRRD (RG_FRUPO)	1	NA	1.37	0.00434	0.00412	<0.0005	<0.0005
17-Aug-21	FR_HC3 (RG_HENUP)	8.7	7.17	8.15	0.000774	0.000754	<0.0005	<0.0005
17-Aug-21	FR_MULTIPLATE (RG_MP1)	33.2	NA	32	0.0021	0.00208	<0.0005	0.00188
17-Aug-21	FR_UFR1 (RG_URF1)	24.5	NA	9.4	0.000416	0.000401	<0.0005	0.00066
18-Aug-21	GH_PC2 (RG_FODPO)	2.4	2.29	1.85	0.00306	0.00336	<0.0005	<0.0005
19-Aug-21	FR_FR2 (RG_FOUKI)	2.4	NA	0.69	0.00197	0.00195	<0.0005	<0.0005
19-Aug-21	FR_FRNTP (RG_FOUSH)	6	NA	2.18	0.00184	0.00187	<0.0005	<0.0005
19-Aug-21	FR_MULTIPLATE (RG_MP1)	1.3	NA	0.49	0.00175	0.00178	<0.0005	<0.0005
24-Aug-21	FR_FR2 (RG_FOUKI)	3.7	NA	0.98	0.00216	0.00214	<0.0005	<0.0005
24-Aug-21	FR_FR4 (RG_FOBSC)	<1	NA	0.45	0.00279	0.00289	<0.0005	<0.0005
24-Aug-21	FR_FRABCH (RG_FO22)	16.3	NA	5.18	0.00325	0.00364	<0.0005	0.00063
24-Aug-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.42	0.0028	0.00326	<0.0005	<0.0005
24-Aug-21	FR_FRRD (RG_FRUPO)	<1	NA	0.22	0.00385	0.00389	<0.0005	<0.0005
24-Aug-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.28	0.00179	0.00179	<0.0005	<0.0005
24-Aug-21	FR_UFR1 (RG_URF1)	<1	NA	0.41	0.00043	0.000477	<0.0005	<0.0005
25-Aug-21	FR_FR2 (RG_FOUKI)	1.8	-0.34	0.46	0.00222	0.00222	<0.0005	<0.0005
25-Aug-21	FR_FRNTP (RG_FOUSH)	<1	-0.44	0.34	0.00229	0.00217	<0.0005	<0.0005

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	<1	-0.53	0.25	0.00182	0.00193	<0.0005	<0.0005
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	7.2	NA	1.94	0.00288	0.00295	<0.0005	<0.0005
31-Aug-21	FR_FR4 (RG_FOBSC)	<1	NA	0.5	0.00396	0.00394	<0.0005	<0.0005
31-Aug-21	FR_FRABCH (RG_FO22)	<1	NA	0.29	0.00374	0.00388	<0.0005	<0.0005
31-Aug-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.38	0.00373	0.00397	<0.0005	<0.0005
31-Aug-21	FR_FRRD (RG_FRUPO)	<1	NA	0.22	0.00437	0.00452	<0.0005	<0.0005
31-Aug-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.29	0.00248	0.00256	<0.0005	<0.0005
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	2.2	NA	0.99	0.00363	0.00341	<0.0005	<0.0005
31-Aug-21	FR_UFR1 (RG_URF1)	<1	NA	0.13	0.000455	0.000461	<0.0005	<0.0005
1-Sep-21	FR_FRNTP (RG_FOUSH)	1.7	NA	0.58	0.00293	0.00277	<0.0005	<0.0005
3-Sep-21	FR_FR4 (RG_FOBSC)	1.6	-1.16	1.03	0.00382	0.00424	<0.0005	<0.0005
7-Sep-21	FR_FR2 (RG_FOUKI)	1.1	NA	0.61	0.00303	0.00305	<0.0005	<0.0005
7-Sep-21	FR_FR4 (RG_FOBSC)	<1	NA	0.46	0.00418	0.00421	<0.0005	<0.0005
7-Sep-21	FR_FRABCH (RG_FO22)	<1	-1.32	0.36	0.00367	0.00407	<0.0005	<0.0005
7-Sep-21	FR_FRCP1 (RG_FOBCP)	6	-0.18	1.7	0.00392	0.00425	<0.0005	<0.0005
7-Sep-21	FR_FRRD (RG_FRUPO)	1.3	NA	0.12	0.00424	0.00427	<0.0005	<0.0005
7-Sep-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.81	0.00267	0.00265	<0.0005	<0.0005
7-Sep-21	FR_UFR1 (RG_URF1)	<1	NA	0.17	0.000446	0.000448	<0.0005	<0.0005
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.21	NA	NA	NA	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.17	NA	NA	NA	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.13	NA	NA	NA	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	1.4	0.02	1.71	0.0031	0.0032	<0.0005	<0.0005
9-Sep-21	FR_FR3 (RG_FOBKS)	1.6	NA	0.4	0.0029	0.00299	<0.0005	<0.0005
9-Sep-21	FR_FRNTP (RG_FOUSH)	1.4	0.14	1.18	0.00308	0.00322	<0.0005	<0.0005
9-Sep-21	FR_MULTIPLATE (RG_MP1)	5	0.44	0.95	0.00282	0.00295	<0.0005	<0.0005
11-Sep-21	GH_PC2 (RG_FODPO)	1	NA	0.2	0.00371	0.00403	<0.0005	<0.0005
11-Sep-21	RG_FOUEW	2.2	NA	0.28	0.00335	0.00354	<0.0005	<0.0005
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	1.7	NA	0.34	0.00358	0.00392	<0.0005	<0.0005
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<1	NA	0.22	0.00102	0.00104	<0.0005	<0.0005
13-Sep-21	FR_FR1 (RG_FODHE)	<1	NA	0.17	0.000944	0.00101	<0.0005	<0.0005
13-Sep-21	FR_FR4 (RG_FOBSC)	2.1	NA	0.44	0.00431	0.00475	<0.0005	<0.0005
13-Sep-21	FR_FR5	1	0.16	0.2	0.00306	0.00328	<0.0005	<0.0005
13-Sep-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.28	0.00451	0.00466	<0.0005	<0.0005
13-Sep-21	FR_FRRD (RG_FRUPO)	<1	NA	0.12	0.00418	0.00455	<0.0005	<0.0005
13-Sep-21	FR_HC3 (RG_HENUP)	<1	-1.7	0.23	0.000823	0.000852	<0.0005	<0.0005
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<1	0.37	0.59	0.00436	0.00456	<0.0005	<0.0005
13-Sep-21	GH_PC2 (RG_FODPO)	1.2	0.9	0.41	0.00386	0.0041	<0.0005	<0.0005
14-Sep-21	FR_FR2 (RG_FOUKI)	2.1	1.38	0.68	0.00316	0.00357	<0.0005	<0.0005
14-Sep-21	FR_FR3 (RG_FOBKS)	1	NA	0.39	0.00308	0.00362	<0.0005	<0.0005
14-Sep-21	FR_FRNTP (RG_FOUSH)	<1	1.44	0.52	0.00313	0.00361	<0.0005	<0.0005
14-Sep-21	FR_MULTIPLATE (RG_MP1)	<1	1.66	0.31	0.00275	0.00327	<0.0005	<0.0005
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.44	0.00471	0.00462	<0.0005	<0.0005
15-Sep-21	FR_FR1 (RG_FODHE)	<1	-1.56	0.45	0.00092	0.000974	<0.0005	<0.0005
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.56	NA	NA	NA	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	<1	NA	0.46	0.00429	0.00425	<0.0005	<0.0005
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.52	NA	NA	NA	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	<1	0.22	0.45	0.00284	0.00302	<0.0005	<0.0005
15-Sep-21	RG_FO26	<1	NA	0.2	0.00048	0.000488	<0.0005	<0.0005
16-Sep-21	FR_FRABCH (RG_FO22)	1	NA	0.22	0.00373	0.00387	<0.0005	<0.0005
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	2.3	NA	0.27	0.00263	0.00267	<0.0005	<0.0005
16-Sep-21	FR_FRNTP (RG_FOUSH)	21.6	NA	0.38	0.00295	0.00296	<0.0005	<0.0005
16-Sep-21	FR_HC3 (RG_HENUP)	<1	NA	0.23	0.000896	0.000847	<0.0005	<0.0005
16-Sep-21	RG_FOUNGD	<1	NA	0.18	0.00227	0.00227	<0.0005	<0.0005
17-Sep-21	FR_FR4 (RG_FOBSC)	<1	1.49	0.47	0.00453	0.00479	<0.0005	<0.0005
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	1.5	NA	0.39	0.00481	0.00458	<0.0005	<0.0005
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	<1	NA	0.35	0.00357	0.00358	<0.0005	<0.0005
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<1	NA	0.71	0.000481	0.000479	<0.0005	<0.0005
20-Sep-21	RG_FO26	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	<1	0.08	0.51	0.00317	0.00342	<0.0005	<0.0005
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	<1	1.84	0.49	0.00302	0.00344	<0.0005	<0.0005
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	1.1	0.07	0.43	0.00296	0.00321	<0.0005	<0.0005
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	0.02	NA	NA	NA	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	2	NA	0.38	0.00382	0.00379	<0.0005	<0.0005
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	0.16	NA	NA	NA	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	0.03	NA	NA	NA	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	1.06	NA	NA	NA	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.39	0.00467	0.00475	<0.0005	<0.0005
28-Sep-21	FR_FR2 (RG_FOUKI)	2	NA	1.32	0.00345	0.00344	<0.0005	<0.0005
28-Sep-21	FR_FRABCH (RG_FO22)	<1	NA	0.34	0.0038	0.00387	<0.0005	<0.0005
28-Sep-21	FR_FRNTP (RG_FOUSH)	1.1	NA	1.29	0.00344	0.00341	<0.0005	<0.0005
28-Sep-21	FR_MULTIPLATE (RG_MP1)	1.6	NA	1.27	0.00317	0.00323	<0.0005	<0.0005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	32.7	NA	5.48	0.00323	0.00328	<0.0005	<0.0005
4-Oct-21	FR_FR1 (RG_FODHE)	1.2	0.02	0.28	0.00104	0.00105	<0.0005	<0.0005
4-Oct-21	FR_HC3 (RG_HENUP)	13	-0.24	2.78	0.000927	0.000912	<0.0005	<0.0005
5-Oct-21	FR_FR2 (RG_FOUKI)	<1	-0.07	0.42	0.00354	0.0036	<0.0005	<0.0005
5-Oct-21	FR_MULTIPLATE (RG_MP1)	<1	-0.02	0.23	0.00326	0.00326	<0.0005	<0.0005
6-Oct-21	FR_FR3 (RG_FOBKS)	4.2	NA	1.25	0.00362	0.00393	<0.0005	<0.0005
6-Oct-21	FR_FR5	1	0.12	0.25	0.00186	0.00181	<0.0005	<0.0005
6-Oct-21	FR_FRABCH (RG_FO22)	<1	NA	0.17	0.00399	0.00408	<0.0005	<0.0005
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	<1	0.09	0.13	0.0042	0.00442	<0.0005	<0.0005
7-Oct-21	FR_FR4 (RG_FOBSC)	1.3	NA	0.39	0.00502	0.00514	<0.0005	<0.0005
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	-0.06	NA	NA	NA	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	0.05	NA	NA	NA	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	-0.07	NA	NA	NA	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	1.4	NA	0.26	0.00334	0.00321	<0.0005	<0.0005
9-Oct-21	FR_FRNTP (RG_FOUSH)	1.9	NA	0.33	0.0032	0.00308	<0.0005	<0.0005
10-Oct-21	FR_FR2 (RG_FOUKI)	<1	NA	0.37	0.00332	0.00318	<0.0005	<0.0005
10-Oct-21	FR_FRNTP (RG_FOUSH)	1	NA	0.31	0.00328	0.00313	<0.0005	<0.0005
11-Oct-21	FR_FR2 (RG_FOUKI)	1.2	NA	0.42	0.00321	0.00313	<0.0005	<0.0005
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	2.3	NA	0.44	0.00326	0.00309	<0.0005	<0.0005
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	1.3	NA	0.28	0.00492	0.00533	<0.0005	<0.0005
12-Oct-21	FR_FR2 (RG_FOUKI)	2.5	NA	0.37	0.00337	0.0032	<0.0005	<0.0005
12-Oct-21	FR_FR4 (RG_FOBSC)	<1	NA	0.3	0.00516	0.00499	<0.0005	<0.0005
12-Oct-21	FR_FRABCH (RG_FO22)	2.2	NA	0.38	0.00394	0.00417	<0.0005	<0.0005
12-Oct-21	FR_FRCP1 (RG_FOBCP)	<1	0.84	0.35	0.00505	0.00531	<0.0005	<0.0005
12-Oct-21	FR_FRRD (RG_FRUPO)	3.2	NA	0.17	0.00486	0.00463	<0.0005	<0.0005
12-Oct-21	FR_MULTIPLATE (RG_MP1)	7.6	NA	0.46	0.00345	0.00323	<0.0005	<0.0005
13-Oct-21	FR_FR2 (RG_FOUKI)	1.2	NA	0.73	0.00336	0.00353	<0.0005	<0.0005
13-Oct-21	FR_FRNTP (RG_FOUSH)	1.8	NA	0.43	0.00342	0.00356	<0.0005	<0.0005
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	0.16	NA	NA	NA	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	1.84	NA	NA	NA	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	0.03	NA	NA	NA	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	1.9	NA	0.34	0.00352	0.00376	<0.0005	<0.0005
19-Oct-21	FR_FR4 (RG_FOBSC)	2.3	NA	0.29	0.00487	0.00522	<0.0005	<0.0005
19-Oct-21	FR_FRABCH (RG_FO22)	<1	NA	0.18	0.0036	0.00416	<0.0005	<0.0005
19-Oct-21	FR_FRCP1 (RG_FOBCP)	<1	NA	0.3	0.00478	0.00567	<0.0005	<0.0005
19-Oct-21	FR_FRNTP (RG_FOUSH)	<1	0.75	0.3	0.00336	0.00379	<0.0005	<0.0005
19-Oct-21	FR_FRRD (RG_FRUPO)	1.2	NA	0.1225	0.00469	0.00479	<0.0005	<0.0005
19-Oct-21	FR_MULTIPLATE (RG_MP1)	1.8	NA	0.26	0.00333	0.00337	<0.0005	<0.0005
19-Oct-21	FR_UFR1 (RG_URF1)	<1	NA	0.115	0.000473	0.000528	<0.0005	<0.0005
20-Oct-21	FR_FR2 (RG_FOUKI)	<1	NA	0.32	0.00353	0.00386	<0.0005	<0.0005
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.35	0.0051	0.00492	<0.0005	<0.0005
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	1.5	NA	0.5	0.0034	0.004	<0.0005	<0.0005
26-Oct-21	FR_FR4 (RG_FOBSC)	9.5	NA	1.59	0.00546	0.00577	<0.0005	0.00054
26-Oct-21	FR_FRABCH (RG_FO22)	2.3	-0.34	0.13	0.00355	0.00413	<0.0005	<0.0005
26-Oct-21	FR_FRCP1 (RG_FOBCP)	<1	-0.23	0.24	0.00541	0.00548	<0.0005	<0.0005
26-Oct-21	FR_FRNTP (RG_FOUSH)	1.9	1.97	1.14	0.0039	0.00382	<0.0005	<0.0005
26-Oct-21	FR_FRRD (RG_FRUPO)	<1	NA	<0.1	0.00477	0.0055	<0.0005	<0.0005
26-Oct-21	FR_MULTIPLATE (RG_MP1)	2.5	NA	0.61	0.00321	0.00386	<0.0005	<0.0005
26-Oct-21	FR_UFR1 (RG_URF1)	<1	0.19	<0.1	0.000544	0.000535	<0.0005	<0.0005
27-Oct-21	FR_FOUCL (RG_FOUCL)	2.2	NA	<0.1	0.00152	0.00159	<0.0005	<0.0005
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	1.6	NA	0.3	0.00346	0.00359	<0.0005	<0.0005
28-Oct-21	FR_FRABCH (RG_FO22)	<3	NA	0.21	0.00382	0.00408	<0.0005	<0.0005
28-Oct-21	FR_FRRD (RG_FRUPO)	<3	NA	0.14	0.00473	0.00503	<0.0005	<0.0005
29-Oct-21	FR_FR4 (RG_FOBSC)	<3	NA	0.5	0.00519	0.00541	<0.0005	<0.0005
29-Oct-21	FR_FRCP1 (RG_FOBCP)	<3	NA	0.46	0.00521	0.00554	<0.0005	<0.0005
2-Nov-21	FR_FR2 (RG_FOUKI)	1.3	NA	0.42	0.00386	0.00384	<0.0005	<0.0005
2-Nov-21	FR_FR4 (RG_FOBSC)	1.2	NA	0.39	0.00525	0.00546	<0.0005	<0.0005
2-Nov-21	FR_FRABCH (RG_FO22)	1.6	0.59	0.18	0.00375	0.00398	<0.0005	<0.0005
2-Nov-21	FR_FRCP1 (RG_FOBCP)	<1	0.43	0.32	0.00525	0.0055	<0.0005	<0.0005
2-Nov-21	FR_FRRD (RG_FRUPO)	1.1	NA	<0.1	0.00511	0.00476	<0.0005	<0.0005
2-Nov-21	FR_MULTIPLATE (RG_MP1)	1.9	NA	0.48	0.00382	0.00381	<0.0005	<0.0005
2-Nov-21	FR_UFR1 (RG_URF1)	1.2	0.48	0.34	0.000458	0.000505	<0.0005	<0.0005
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	1.2	0.23	0.62	0.00386	0.00405	<0.0005	0.00058
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	<1	NA	0.4	0.00559	0.00566	<0.0005	<0.0005
8-Nov-21	FR_FR3 (RG_FOBKS)	1.2	-0.3	0.46	0.00384	0.00423	<0.0005	<0.0005
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	1.4	0.44	0.39	0.00523	0.0055	<0.0005	0.00054
8-Nov-21	GH_PC2 (RG_FODPO)	10.9	-0.44	1.09	0.00423	0.00445	<0.0005	0.00052
9-Nov-21	FR_FR2 (RG_FOUKI)	2.1	NA	0.31	0.00418	0.00405	<0.0005	<0.0005
9-Nov-21	FR_FR4 (RG_FOBSC)	1.3	NA	0.27	0.00565	0.00554	<0.0005	<0.0005
9-Nov-21	FR_FRABCH (RG_FO22)	1.2	NA	0.11	0.00395	0.00434	<0.0005	<0.0005
9-Nov-21	FR_FRCP1 (RG_FOBCP)	2.1	NA	0.48	0.00547	0.00566	<0.0005	<0.0005
9-Nov-21	FR_FRRD (RG_FRUPO)	1.3	NA	<0.1	0.00509	0.00498	<0.0005	<0.0005
9-Nov-21	FR_MULTIPLATE (RG_MP1)	1.7	NA	0.3	0.0041	0.00405	<0.0005	<0.0005
9-Nov-21	FR_UFR1 (RG_URF1)	<1	NA	0.16	0.000512	0.000503	<0.0005	<0.0005
10-Nov-21	FR_FR4 (RG_FOBSC)	<1	-0.63	0.41	0.00504	0.0057	<0.0005	<0.0005
10-Nov-21	FR_HC3 (RG_HENUP)	<1	-0.07	<0.1	0.000854	0.000853	<0.0005	<0.0005
12-Nov-21	FR_FR2 (RG_FOUKI)	1.8	NA	0.34	0.00405	0.00381	<0.0005	<0.0005
12-Nov-21	FR_FR4 (RG_FOBSC)	<1	1.26	0.15	0.000686	0.000654	<0.0005	<0.0005
12-Nov-21	FR_FRNTP (RG_FOUSH)	1.2	NA	0.4	0.00404	0.00392	<0.0005	<0.0005
15-Nov-21	FR_FR5	1.4	-0.14	0.52	0.00303	0.00326	<0.0005	<0.0005
15-Nov-21	FR_FRABCH (RG_FO22)	1.1	2.17	0.53	0.0039	0.00402	<0.0005	<0.0005
16-Nov-21	FR_FR1 (RG_FODHE)	1	-0.15	0.58	0.00104	0.00108	<0.0005	<0.0005
17-Nov-21	FR_FR2 (RG_FOUKI)	2.9	1.09	1.8	0.00365	0.00357	<0.0005	<0.0005
17-Nov-21	FR_FRNTP (RG_FOUSH)	1.5	1.25	1.82	0.0037	0.00363	<0.0005	<0.0005
17-Nov-21	FR_MULTIPLATE (RG_MP1)	2	1.27	1.23	0.0038	0.00386	<0.0005	<0.0005
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	<1	NA	0.19	0.0041	0.00401	<0.0005	<0.0005

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Total Suspended Solids_mg/L	Turbidity, Field_NTU	Turbidity, Lab_NTU	Uranium (U)-Dissolved_mg/L	Uranium (U)-Total_mg/L	Vanadium (V)-Dissolved_mg/L	Vanadium (V)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA	NA	NA	NA	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	11.9	NA	2.27	0.00407	0.00398	<0.0005	<0.0005
24-Nov-21	FR_FRNTP (RG_FOUSH)	1.4	NA	0.64	0.00413	0.0039	<0.0005	<0.0005
24-Nov-21	FR_MULTIPLATE (RG_MP1)	1.1	NA	0.43	0.00411	0.00381	<0.0005	<0.0005
29-Nov-21	FR_FR2 (RG_FOUKI)	3.6	NA	1.66	0.00398	0.00373	<0.0005	0.0005
29-Nov-21	FR_FRNTP (RG_FOUSH)	11	NA	2.49	0.00397	0.00378	<0.0005	<0.0005
29-Nov-21	FR_MULTIPLATE (RG_MP1)	1.8	NA	0.43	0.00379	0.00356	<0.0005	<0.0005
1-Dec-21	FR_FRABCH (RG_FO22)	1.3	NA	0.38	0.00389	0.00403	<0.0005	<0.0005
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	7.8	NA	9.16	0.00373	0.00393	<0.0005	0.0008
7-Dec-21	FR_FR2 (RG_FOUKI)	2.7	1.82	1.4	0.00386	0.00384	<0.0005	<0.0005
7-Dec-21	FR_FRNTP (RG_FOUSH)	1.5	3.05	0.86	0.00389	0.00414	<0.0005	<0.0005
7-Dec-21	FR_MULTIPLATE (RG_MP1)	<1	0.45	0.58	0.00405	0.00387	<0.0005	<0.0005
8-Dec-21	FR_FR3 (RG_FOBKS)	3.3	1.58	1.74	0.00398	0.00406	<0.0005	<0.0005
8-Dec-21	FR_FRABCH (RG_FO22)	<1	NA	0.29	0.00403	0.00389	<0.0005	<0.0005
8-Dec-21	FR_FRRD (RG_FRUPO)	<1	0.69	0.16	0.00504	0.00475	<0.0005	<0.0005
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	1.9	1.33	1.46	0.00511	0.00516	<0.0005	<0.0005
9-Dec-21	FR_FR1 (RG_FODHE)	<1	0.2	0.11	0.00156	0.00165	<0.0005	<0.0005
9-Dec-21	FR_FR4 (RG_FOBSC)	4.3	NA	0.61	0.00495	0.00563	<0.0005	<0.0005
9-Dec-21	FR_HC3 (RG_HENUP)	<1	-0.27	<0.1	0.000887	0.000934	<0.0005	<0.0005
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA	NA	NA	NA	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	<1	2.7	0.78	0.00494	0.00528	<0.0005	<0.0005
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
13-Dec-21	RG_FOUEW	<1	NA	0.19	0.00396	0.00377	<0.0005	<0.0005
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	1.1	-0.18	0.15	0.00412	0.00382	<0.0005	<0.0005
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	2.1	NA	0.4	0.00407	0.00411	<0.0005	<0.0005
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA	NA	NA	NA	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	<1	NA	1.44	0.00047	0.000471	<0.0005	<0.0005
17-Dec-21	FR_FOUCL (RG_FOUCL)	<1	NA	<0.1	0.00148	0.00152	<0.0005	<0.0005
17-Dec-21	FR_FR1 (RG_FODHE)	<1	NA	0.12	0.00173	0.0018	<0.0005	<0.0005
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	1.9	NA	0.39	0.00416	0.00419	<0.0005	<0.0005
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	<1	NA	0.16	0.00395	0.0041	<0.0005	<0.0005
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	2	NA	1.43	0.00507	0.00572	<0.0005	<0.0005
17-Dec-21	FR_UFR1 (RG_URF1)	<1	NA	0.86	0.000481	0.000499	<0.0005	0.0005
17-Dec-21	RG_FOUEW	NA	NA	NA	NA	NA	NA	NA
17-Dec-21	RG_FOUNGD	<1	NA	0.16	0.00371	0.00393	<0.0005	<0.0005
20-Dec-21	FR_FRABCH (RG_FO22)	8.5	NA	1.82	0.00367	0.00371	<0.0005	<0.0005
21-Dec-21	GH_PC2 (RG_FODPO)	<1	NA	0.1	0.00422	0.00361	<0.0005	<0.0005
22-Dec-21	FR_FR5	<1	0.1	0.2	0.00324	0.0035	<0.0005	<0.0005
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA	NA	NA	NA	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	5.9	NA	0.62	0.00339	0.00384	<0.0005	<0.0005
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	1.8	NA	0.39	0.0066	0.00705	<0.0005	<0.0005
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA	NA	NA	NA	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
6-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA
6-Jan-21	FR_FRCP1 (RG_FOBCP)	0.0044	0.0048
6-Jan-21	FR_FRNTP (RG_FOUSH)	0.0026	0.0036
6-Jan-21	FR_MULTIPLATE (RG_MP1)	0.003	0.004
8-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA
8-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA
8-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA
8-Jan-21	FR_UFR1 (RG_URF1)	0.0068	<0.003
11-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	0.0039	0.0045
12-Jan-21	FR_FR2 (RG_FOUKI)	0.0034	<0.003
12-Jan-21	FR_FR3 (RG_FOBKS)	0.0021	<0.003
12-Jan-21	FR_FR5	0.0023	<0.003
12-Jan-21	FR_FRNTP (RG_FOUSH)	0.0031	0.0035
12-Jan-21	FR_HC3 (RG_HENUP)	0.0024	<0.003
12-Jan-21	FR_MULTIPLATE (RG_MP1)	0.0038	0.0037
12-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
14-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA
14-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA
14-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA
18-Jan-21	FR_FRRD (RG_FRUPO)	0.0014	<0.003
19-Jan-21	FR_FR2 (RG_FOUKI)	0.0026	<0.003
19-Jan-21	FR_FRABCH (RG_FO22)	0.0017	<0.003
19-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA
19-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA
21-Jan-21	FR_FR4 (RG_FOBSC)	0.0052	0.0049
21-Jan-21	GH_PC2 (RG_FODPO)	0.0013	<0.003
22-Jan-21	FR_FR2 (RG_FOUKI)	NA	NA
22-Jan-21	FR_FRNTP (RG_FOUSH)	NA	NA
22-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA
23-Jan-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
27-Jan-21	FR_FR2 (RG_FOUKI)	0.003	<0.003
27-Jan-21	FR_FRNTP (RG_FOUSH)	0.0029	<0.003
27-Jan-21	FR_MULTIPLATE (RG_MP1)	0.003	0.0035
28-Jan-21	FR_MULTIPLATE (RG_MP1)	NA	NA
2-Feb-21	FR_FR2 (RG_FOUKI)	0.002	<0.003
2-Feb-21	FR_FRNTP (RG_FOUSH)	0.0026	<0.003
2-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0027	<0.003
3-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA
3-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA
4-Feb-21	FR_HC3 (RG_HENUP)	0.0014	<0.003
5-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA
8-Feb-21	FR_FR3 (RG_FOBKS)	0.0027	<0.003
8-Feb-21	FR_FR5	0.0016	<0.003
8-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	0.0055	0.0048
9-Feb-21	FR_FR2 (RG_FOUKI)	0.0024	<0.003
9-Feb-21	FR_FRNTP (RG_FOUSH)	0.0031	<0.003
9-Feb-21	FR_MULTIPLATE (RG_MP1)	0.003	0.0031
11-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA
11-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA
11-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA
16-Feb-21	FR_FR2 (RG_FOUKI)	0.0022	<0.003
16-Feb-21	FR_FRNTP (RG_FOUSH)	0.003	<0.003
16-Feb-21	FR_MULTIPLATE (RG_MP1)	0.0032	<0.003
16-Feb-21	GH_PC2 (RG_FODPO)	0.0071	<0.003
19-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA
19-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA
19-Feb-21	FR_FRRD (RG_FRUPO)	0.0012	<0.003
19-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA
22-Feb-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
23-Feb-21	FR_FR2 (RG_FOUKI)	0.0037	<0.003
23-Feb-21	FR_FR4 (RG_FOBSC)	0.0051	0.0052
23-Feb-21	FR_FRABCH (RG_FO22)	<0.001	<0.003
23-Feb-21	FR_FRCP1 (RG_FOBCP)	0.0041	0.0115
23-Feb-21	FR_FRRD (RG_FRUPO)	0.001	<0.003
23-Feb-21	FR_MULTIPLATE (RG_MP1)	0.003	0.0035
23-Feb-21	FR_UFR1 (RG_URF1)	0.0022	<0.003
24-Feb-21	FR_FRNTP (RG_FOUSH)	0.0034	0.004
24-Feb-21	FR_MULTIPLATE (RG_MP1)	NA	NA
25-Feb-21	FR_FR2 (RG_FOUKI)	NA	NA
25-Feb-21	FR_FRNTP (RG_FOUSH)	NA	NA
2-Mar-21	FR_FR2 (RG_FOUKI)	0.0026	<0.003
2-Mar-21	FR_FR4 (RG_FOBSC)	0.0045	0.0047
2-Mar-21	FR_FRABCH (RG_FO22)	0.0014	0.0041
2-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0042	0.0086
2-Mar-21	FR_FRNTP (RG_FOUSH)	0.0034	0.0033
2-Mar-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
2-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0028	0.0036
2-Mar-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
3-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA
4-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA
4-Mar-21	FR_FR3 (RG_FOBKS)	0.0024	0.0044
4-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA
5-Mar-21	FR_FR1 (RG_FODHE)	0.0021	0.0103
5-Mar-21	FR_FR5	<0.001	<0.003
5-Mar-21	FR_HC3 (RG_HENUP)	0.0013	<0.003
7-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0053	0.0055
8-Mar-21	FR_FRNTP (RG_FOUSH)	0.0042	0.0039
9-Mar-21	FR_FR2 (RG_FOUKI)	0.0024	0.0034
9-Mar-21	FR_FR4 (RG_FOBSC)	0.0037	0.0066
9-Mar-21	FR_FRABCH (RG_FO22)	<0.001	<0.003
9-Mar-21	FR_FRCP1 (RG_FOBCP)	0.005	0.0058
9-Mar-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
9-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0042	0.0052
9-Mar-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
11-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
11-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA
11-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA
11-Mar-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
15-Mar-21	FR_HC3 (RG_HENUP)	NA	NA
15-Mar-21	GH_PC2 (RG_FODPO)	<0.001	<0.003
16-Mar-21	FR_FR1 (RG_FODHE)	NA	NA
16-Mar-21	FR_FR2 (RG_FOUKI)	0.0028	0.0068
16-Mar-21	FR_FR4 (RG_FOBSC)	0.0036	0.0067
16-Mar-21	FR_FRABCH (RG_FO22)	<0.001	<0.003
16-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0044	0.0067
16-Mar-21	FR_FRNTP (RG_FOUSH)	0.0047	0.0069
16-Mar-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
16-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0045	0.0074
16-Mar-21	FR_UFR1 (RG_URF1)	<0.001	0.0033
17-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA
17-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA
17-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA
17-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0062	0.0083
18-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
21-Mar-21	FR_FR3 (RG_FOBKS)	NA	NA
21-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
22-Mar-21	FR_FR1 (RG_FODHE)	NA	NA
22-Mar-21	FR_HC3 (RG_HENUP)	NA	NA
23-Mar-21	FR_FR2 (RG_FOUKI)	0.0058	0.0138
23-Mar-21	FR_FR4 (RG_FOBSC)	0.0061	0.0106
23-Mar-21	FR_FRABCH (RG_FO22)	0.0019	<0.003
23-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0069	0.01
23-Mar-21	FR_FRNTP (RG_FOUSH)	0.0069	0.0087
23-Mar-21	FR_FRRD (RG_FRUPO)	0.0022	0.0045
23-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0088	0.01
23-Mar-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
24-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0064	0.0077
25-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA
25-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA
25-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA
29-Mar-21	FR_FR1 (RG_FODHE)	NA	NA
29-Mar-21	FR_HC3 (RG_HENUP)	NA	NA
30-Mar-21	FR_FR2 (RG_FOUKI)	0.0044	0.0068
30-Mar-21	FR_FR4 (RG_FOBSC)	0.0057	0.0084
30-Mar-21	FR_FRABCH (RG_FO22)	<0.001	<0.003
30-Mar-21	FR_FRCP1 (RG_FOBCP)	0.0082	0.0085
30-Mar-21	FR_FRNTP (RG_FOUSH)	NA	NA
30-Mar-21	FR_FRRD (RG_FRUPO)	0.0022	0.0045
30-Mar-21	FR_MULTIPLATE (RG_MP1)	0.0074	0.0084
30-Mar-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
31-Mar-21	FR_FR2 (RG_FOUKI)	NA	NA
31-Mar-21	FR_FRNTP (RG_FOUSH)	0.0056	0.0073
31-Mar-21	FR_MULTIPLATE (RG_MP1)	NA	NA
31-Mar-21	FR_SCOUTDS (RG_SCOUTDS)	0.0097	0.008
4-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA
4-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0122	0.0084
6-Apr-21	FR_FR1 (RG_FODHE)	0.0014	<0.003
6-Apr-21	FR_FR2 (RG_FOUKI)	0.007	0.0078
6-Apr-21	FR_FRNTP (RG_FOUSH)	0.0087	0.0093
6-Apr-21	FR_HC3 (RG_HENUP)	0.0018	<0.003
6-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0085	0.0094
6-Apr-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
7-Apr-21	FR_FR3 (RG_FOBKS)	0.0044	0.0061
7-Apr-21	FR_FR5	<0.001	<0.003
7-Apr-21	FR_FRABCH (RG_FO22)	0.0021	<0.003
7-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0061	0.0082
7-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0099	0.0077
8-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA
8-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA
8-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA
8-Apr-21	GH_PC2 (RG_FODPO)	0.003	0.0043
9-Apr-21	FR_FR4 (RG_FOBSC)	0.0095	0.0099
12-Apr-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
12-Apr-21	FR_HC3 (RG_HENUP)	NA	NA
13-Apr-21	FR_FR2 (RG_FOUKI)	0.0046	0.0053
13-Apr-21	FR_FR4 (RG_FOBSC)	0.007	0.0086
13-Apr-21	FR_FRABCH (RG_FO22)	0.0022	<0.003
13-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0076	0.0079
13-Apr-21	FR_FRRD (RG_FRUPO)	0.0029	0.0031
13-Apr-21	FR_MULTIPLATE (RG_MP1)	0.0079	0.0081
13-Apr-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
14-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA
14-Apr-21	FR_FRNTP (RG_FOUSH)	0.0058	0.0065
14-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0058	0.0068
15-Apr-21	FR_FR4 (RG_FOBSC)	0.0064	0.0072
15-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA
15-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA
18-Apr-21	FR_FR3 (RG_FOBKS)	NA	NA
18-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
19-Apr-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
19-Apr-21	FR_HC3 (RG_HENUP)	NA	NA
20-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0051	0.0067
20-Apr-21	FR_FRNTP (RG_FOUSH)	0.0054	0.0069
20-Apr-21	FR_MULTIPLATE (RG_MP1)	0.006	0.0068
20-Apr-21	FR_UFR1 (RG_URF1)	NA	NA
21-Apr-21	FR_FR4 (RG_FOBSC)	0.0048	0.0068
21-Apr-21	FR_FRABCH (RG_FO22)	0.0023	0.0038
21-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0061	0.0068
22-Apr-21	FR_FR2 (RG_FOUKI)	0.0052	0.006
26-Apr-21	FR_FR1 (RG_FODHE)	<0.001	<0.003

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
26-Apr-21	FR_HC3 (RG_HENUP)	NA	NA
26-Apr-21	FR_UFR1 (RG_URF1)	NA	NA
27-Apr-21	FR_FR2 (RG_FOUKI)	0.0042	0.0048
27-Apr-21	FR_FRCP1 (RG_FOBCP)	0.0056	0.0073
27-Apr-21	FR_FRNTP (RG_FOUSH)	0.0055	0.0054
27-Apr-21	FR_MULTIPLATE (RG_MP1)	0.006	0.0064
28-Apr-21	FR_FR2 (RG_FOUKI)	NA	NA
28-Apr-21	FR_FRABCH (RG_FO22)	0.002	<0.003
28-Apr-21	FR_FRNTP (RG_FOUSH)	NA	NA
28-Apr-21	FR_MULTIPLATE (RG_MP1)	NA	NA
28-Apr-21	FR_SCOUTDS (RG_SCOUTDS)	0.0058	0.0073
30-Apr-21	FR_FR4 (RG_FOBSC)	0.0053	0.0068
2-May-21	FR_FR3 (RG_FOBKS)	NA	NA
2-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0051	0.0054
3-May-21	FR_HC3 (RG_HENUP)	0.0011	<0.003
3-May-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
4-May-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
4-May-21	FR_FR2 (RG_FOUKI)	0.0042	0.005
4-May-21	FR_FR3 (RG_FOBKS)	0.0042	0.0049
4-May-21	FR_FRNTP (RG_FOUSH)	0.0047	0.0053
4-May-21	FR_MULTIPLATE (RG_MP1)	0.0044	0.0053
4-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0052	0.0063
5-May-21	FR_FR2 (RG_FOUKI)	NA	NA
5-May-21	FR_FR5	0.0018	<0.003
5-May-21	FR_FRABCH (RG_FO22)	0.0025	0.0043
5-May-21	FR_FRCP1 (RG_FOBCP)	0.0055	0.0067
5-May-21	FR_FRNTP (RG_FOUSH)	NA	NA
5-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA
5-May-21	GH_PC2 (RG_FODPO)	0.0026	0.0039
7-May-21	FR_FR4 (RG_FOBSC)	0.0038	0.0063
10-May-21	FR_HC3 (RG_HENUP)	NA	NA
10-May-21	FR_UFR1 (RG_URF1)	NA	NA
11-May-21	FR_FR1 (RG_FODHE)	0.0013	<0.003
11-May-21	FR_FR2 (RG_FOUKI)	0.003	0.0034
11-May-21	FR_FRCP1 (RG_FOBCP)	0.0042	0.0043
11-May-21	FR_FRNTP (RG_FOUSH)	0.0031	0.0039
11-May-21	FR_MULTIPLATE (RG_MP1)	0.0039	0.0042
13-May-21	FR_FR2 (RG_FOUKI)	NA	NA
13-May-21	FR_FRABCH (RG_FO22)	0.0027	0.0043
13-May-21	FR_FRNTP (RG_FOUSH)	NA	NA
13-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA
13-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0045	0.0058
15-May-21	FR_FR3 (RG_FOBKS)	NA	NA
15-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
17-May-21	FR_FR1 (RG_FODHE)	NA	NA
17-May-21	FR_HC3 (RG_HENUP)	NA	NA
17-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0024	0.0088
18-May-21	FR_FR2 (RG_FOUKI)	0.0017	0.0068
18-May-21	FR_FR4 (RG_FOBSC)	0.0031	0.0121
18-May-21	FR_FRABCH (RG_FO22)	0.0031	0.0095
18-May-21	FR_FRCP1 (RG_FOBCP)	0.0026	0.0179
18-May-21	FR_FRRD (RG_FRUPO)	0.0018	0.0093
18-May-21	FR_MULTIPLATE (RG_MP1)	0.0019	0.0052
18-May-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
20-May-21	FR_FR2 (RG_FOUKI)	NA	NA
20-May-21	FR_FR4 (RG_FOBSC)	0.0037	0.0041
20-May-21	FR_FRNTP (RG_FOUSH)	0.0022	0.0052
20-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA
25-May-21	FR_FR2 (RG_FOUKI)	0.0029	0.0042
25-May-21	FR_FR4 (RG_FOBSC)	0.0055	0.0068
25-May-21	FR_FRABCH (RG_FO22)	0.0031	0.0039
25-May-21	FR_FRCP1 (RG_FOBCP)	0.0031	0.0041
25-May-21	FR_FRRD (RG_FRUPO)	0.0027	0.0035
25-May-21	FR_MULTIPLATE (RG_MP1)	0.0031	0.0037
25-May-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
26-May-21	FR_FR1 (RG_FODHE)	0.0014	<0.003
26-May-21	FR_HC3 (RG_HENUP)	NA	NA
26-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.0046	0.0052
27-May-21	FR_FR4 (RG_FOBSC)	0.0037	0.0042
27-May-21	FR_FRNTP (RG_FOUSH)	0.0027	<0.003
28-May-21	FR_FR2 (RG_FOUKI)	NA	NA
28-May-21	FR_FRNTP (RG_FOUSH)	NA	NA
28-May-21	FR_MULTIPLATE (RG_MP1)	NA	NA
29-May-21	FR_FR3 (RG_FOBKS)	NA	NA
29-May-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
31-May-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
31-May-21	FR_HC3 (RG_HENUP)	NA	NA
31-May-21	FR_SCOUTDS (RG_SCOUTDS)	0.004	0.0047
1-Jun-21	FR_FR2 (RG_FOUKI)	0.0015	0.0041
1-Jun-21	FR_FR4 (RG_FOBSC)	0.0022	0.0064
1-Jun-21	FR_FRABCH (RG_FO22)	0.0024	0.0049
1-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0019	0.0049
1-Jun-21	FR_FRNTP (RG_FOUSH)	0.0093	0.0043
1-Jun-21	FR_FRRD (RG_FRUPO)	0.0014	0.0055
1-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0076	0.0031
1-Jun-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
3-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA
3-Jun-21	FR_FR4 (RG_FOBSC)	0.0036	0.0096
3-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0116	0.0064
7-Jun-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
7-Jun-21	FR_HC3 (RG_HENUP)	0.0011	<0.003
7-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0035	0.004
7-Jun-21	GH_PC2 (RG_FODPO)	0.0038	0.005
8-Jun-21	FR_FR2 (RG_FOUKI)	0.0021	0.0038
8-Jun-21	FR_FR4 (RG_FOBSC)	0.0038	0.0078

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
8-Jun-21	FR_FRABCH (RG_FO22)	0.0065	0.0045
8-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0036	0.0046
8-Jun-21	FR_FRRD (RG_FRUPO)	0.0028	0.0082
8-Jun-21	FR_MULTIPLATE (RG_MP1)	0.002	<0.003
8-Jun-21	FR_UFR1 (RG_URF1)	0.0036	0.0038
9-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA
9-Jun-21	FR_FRNTP (RG_FOUSH)	0.002	0.0033
9-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0138	0.0038
10-Jun-21	FR_FR4 (RG_FOBSC)	0.0044	0.0048
11-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA
11-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA
12-Jun-21	FR_FR4 (RG_FOBSC)	0.0041	0.0045
14-Jun-21	FR_FOUCL (RG_FOUCL)	0.0014	<0.003
14-Jun-21	FR_FR1 (RG_FODHE)	0.0013	<0.003
14-Jun-21	FR_FR3 (RG_FOBKS)	0.0027	<0.003
14-Jun-21	FR_FR5	0.0012	<0.003
14-Jun-21	FR_HC3 (RG_HENUP)	NA	NA
14-Jun-21	FR_MULTIPLATE (RG_MP1)	0.002	<0.003
14-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0023	0.0032
14-Jun-21	RG_FO26	<0.001	0.0376
15-Jun-21	FR_FR2 (RG_FOUKI)	0.0015	<0.003
15-Jun-21	FR_FR4 (RG_FOBSC)	0.002	<0.003
15-Jun-21	FR_FRABCH (RG_FO22)	0.0016	<0.003
15-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0017	<0.003
15-Jun-21	FR_FRNTP (RG_FOUSH)	0.0022	0.0031
15-Jun-21	FR_FRRD (RG_FRUPO)	0.0018	<0.003
15-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0015	<0.003
15-Jun-21	FR_UFR1 (RG_URF1)	0.00135	<0.003
15-Jun-21	RG_FOUNGD	<0.001	<0.003
16-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA
16-Jun-21	FR_FR3 (RG_FOBKS)	0.0018	<0.003
16-Jun-21	FR_FR4 (RG_FOBSC)	0.0023	0.0038
16-Jun-21	FR_FRABEC1 (RG_FODNGD)	0.0013	<0.003
16-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA
16-Jun-21	FR_HC3 (RG_HENUP)	0.001	<0.003
16-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA
16-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.00615	0.00335
17-Jun-21	FR_FR2 (RG_FOUKI)	0.0019	<0.003
17-Jun-21	FR_FR4 (RG_FOBSC)	0.0022	<0.003
17-Jun-21	FR_FRCP1 (RG_FOBCP)	0.002	<0.003
17-Jun-21	FR_FRCP1SW (RG_FRCP1SW)	0.0032	<0.003
17-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0059	0.0044
17-Jun-21	GH_PC2 (RG_FODPO)	0.0016	0.0039
18-Jun-21	FR_FRABCH (RG_FO22)	0.0017	<0.003
18-Jun-21	FR_FRRD (RG_FRUPO)	0.0022	<0.003
18-Jun-21	RG_FOUEW	0.0016	<0.003
21-Jun-21	FR_FR1 (RG_FODHE)	0.00175	<0.003
21-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA
21-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA
21-Jun-21	FR_HC3 (RG_HENUP)	NA	NA
21-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA
21-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0023	<0.003
21-Jun-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
22-Jun-21	FR_FR2 (RG_FOUKI)	0.0026	<0.003
22-Jun-21	FR_FRABCH (RG_FO22)	0.0019	<0.003
22-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0026	<0.003
22-Jun-21	FR_FRNTP (RG_FOUSH)	0.0018	<0.003
22-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0016	<0.003
23-Jun-21	FR_FR4 (RG_FOBSC)	0.0027	<0.003
28-Jun-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
28-Jun-21	FR_FR3 (RG_FOBKS)	NA	NA
28-Jun-21	FR_HC3 (RG_HENUP)	NA	NA
28-Jun-21	FR_SCOUTDS (RG_SCOUTDS)	0.0023	0.0032
29-Jun-21	FR_FR2 (RG_FOUKI)	0.0134	0.0138
29-Jun-21	FR_FR4 (RG_FOBSC)	0.0031	0.0073
29-Jun-21	FR_FRABCH (RG_FO22)	0.0017	<0.003
29-Jun-21	FR_FRCP1 (RG_FOBCP)	0.0021	0.0046
29-Jun-21	FR_FRNTP (RG_FOUSH)	0.0018	<0.003
29-Jun-21	FR_FRRD (RG_FRUPO)	0.0012	<0.003
29-Jun-21	FR_MULTIPLATE (RG_MP1)	0.0016	<0.003
29-Jun-21	FR_UFR1 (RG_URF1)	0.0013	<0.003
30-Jun-21	FR_FR1 (RG_FODHE)	NA	NA
30-Jun-21	FR_FR2 (RG_FOUKI)	NA	NA
30-Jun-21	FR_FR4 (RG_FOBSC)	0.0032	0.0034
30-Jun-21	FR_FRNTP (RG_FOUSH)	NA	NA
30-Jun-21	FR_MULTIPLATE (RG_MP1)	NA	NA
30-Jun-21	FR_UFR1 (RG_URF1)	NA	NA
1-Jul-21	FR_FR1 (RG_FODHE)	NA	NA
1-Jul-21	FR_UFR1 (RG_URF1)	NA	NA
2-Jul-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
2-Jul-21	FR_UFR1 (RG_URF1)	0.0048	<0.003
4-Jul-21	FR_FR2 (RG_FOUKI)	0.0016	<0.003
4-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA
4-Jul-21	FR_FRNTP (RG_FOUSH)	0.0015	<0.003
4-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.003	0.003
5-Jul-21	FR_HC3 (RG_HENUP)	0.0012	<0.003
6-Jul-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
6-Jul-21	FR_FR4 (RG_FOBSC)	0.0028	0.0032
6-Jul-21	FR_FRABCH (RG_FO22)	0.0018	<0.003
6-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0116	0.0046
6-Jul-21	FR_FRRD (RG_FRUPO)	0.0019	<0.003
6-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0016	<0.003
6-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0025	0.0047
6-Jul-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
7-Jul-21	FR_FR2 (RG_FOUKI)	0.0018	<0.003

Table B.7: **Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021**

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
7-Jul-21	FR_FRNTP (RG_FOUSH)	0.0013	<0.003
7-Jul-21	GH_PC2 (RG_FODPO)	0.0034	0.0033
8-Jul-21	FR_FR3 (RG_FOBKS)	0.0011	<0.003
8-Jul-21	FR_FR5	0.0014	<0.003
9-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA
9-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA
12-Jul-21	FR_FR1 (RG_FODHE)	0.0019	<0.003
12-Jul-21	FR_HC3 (RG_HENUP)	NA	NA
12-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	0.0042	0.0044
13-Jul-21	FR_FR2 (RG_FOUKI)	0.0062	0.0033
13-Jul-21	FR_FR4 (RG_FOBSC)	0.0049	0.0048
13-Jul-21	FR_FRABCH (RG_FO22)	0.0018	<0.003
13-Jul-21	FR_FRCP1 (RG_FOBCP)	0.0028	0.0032
13-Jul-21	FR_FRNTP (RG_FOUSH)	0.0015	<0.003
13-Jul-21	FR_FRRD (RG_FRUPO)	0.0017	<0.003
13-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0019	<0.003
13-Jul-21	FR_UFR1 (RG_URF1)	0.0021	<0.003
14-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA
14-Jul-21	FR_FRNTP (RG_FOUSH)	NA	NA
14-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA
15-Jul-21	FR_FR4 (RG_FOBSC)	0.0045	0.0046
18-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA
18-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
19-Jul-21	FR_FR2 (RG_FOUKI)	NA	NA
19-Jul-21	FR_FRNTP (RG_FOUSH)	0.0013	<0.003
19-Jul-21	FR_MULTIPLATE (RG_MP1)	NA	NA
20-Jul-21	FR_FR2 (RG_FOUKI)	0.0015	<0.003
20-Jul-21	FR_FR4 (RG_FOBSC)	0.0052	0.006
20-Jul-21	FR_FRRD (RG_FRUPO)	0.0014	<0.003
20-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0014	<0.003
20-Jul-21	FR_UFR1 (RG_URF1)	0.0011	<0.003
22-Jul-21	FR_FRABCH (RG_FO22)	0.0014	<0.003
26-Jul-21	FR_FRABCH (RG_FO22)	0.0014	<0.003
27-Jul-21	FR_FR2 (RG_FOUKI)	0.002	<0.003
27-Jul-21	FR_FRNTP (RG_FOUSH)	0.0018	<0.003
27-Jul-21	FR_MULTIPLATE (RG_MP1)	0.0022	<0.003
31-Jul-21	FR_FR3 (RG_FOBKS)	NA	NA
31-Jul-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
1-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0075	0.0074
4-Aug-21	FR_FR2 (RG_FOUKI)	0.0031	<0.003
4-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA
4-Aug-21	FR_FRNTP (RG_FOUSH)	0.0046	0.016
4-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0037	<0.003
5-Aug-21	FR_FRABCH (RG_FO22)	0.0057	0.0034
5-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0073	0.0074
6-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA
6-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA
6-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA
9-Aug-21	FR_FRNTP (RG_FOUSH)	0.0014	<0.003
10-Aug-21	FR_FR1 (RG_FODHE)	0.003	<0.003
10-Aug-21	FR_FR2 (RG_FOUKI)	0.0013	<0.003
10-Aug-21	FR_FR4 (RG_FOBSC)	0.0074	0.0094
10-Aug-21	FR_FRABCH (RG_FO22)	0.0024	<0.003
10-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0064	0.0059
10-Aug-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
10-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0016	<0.003
10-Aug-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
11-Aug-21	FR_FR3 (RG_FOBKS)	0.0022	<0.003
11-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0054	0.0058
12-Aug-21	FR_FR2 (RG_FOUKI)	NA	NA
12-Aug-21	FR_FR3 (RG_FOBKS)	0.0014	<0.003
12-Aug-21	FR_FR4 (RG_FOBSC)	0.0082	0.0107
12-Aug-21	FR_FRNTP (RG_FOUSH)	NA	NA
12-Aug-21	FR_MULTIPLATE (RG_MP1)	NA	NA
12-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0053	0.0062
13-Aug-21	FR_FR3 (RG_FOBKS)	0.0012	<0.003
13-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0056	0.0059
14-Aug-21	FR_FR3 (RG_FOBKS)	0.0015	<0.003
14-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0052	0.0057
15-Aug-21	FR_FR3 (RG_FOBKS)	0.0022	<0.003
15-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0072	0.0076
16-Aug-21	FR_FR3 (RG_FOBKS)	0.0016	<0.003
16-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0054	0.0055
17-Aug-21	FR_FR2 (RG_FOUKI)	0.0017	0.0062
17-Aug-21	FR_FR4 (RG_FOBSC)	0.0062	0.0187
17-Aug-21	FR_FR5	0.0011	<0.003
17-Aug-21	FR_FRABCH (RG_FO22)	0.0016	0.004
17-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0076	0.0143
17-Aug-21	FR_FRRD (RG_FRUPO)	0.0026	<0.003
17-Aug-21	FR_HC3 (RG_HENUP)	0.0021	0.0032
17-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0021	0.0069
17-Aug-21	FR_UFR1 (RG_URF1)	0.0018	<0.003
18-Aug-21	GH_PC2 (RG_FODPO)	0.002	0.0032
19-Aug-21	FR_FR2 (RG_FOUKI)	0.0018	<0.003
19-Aug-21	FR_FRNTP (RG_FOUSH)	0.0017	<0.003
19-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0022	<0.003
24-Aug-21	FR_FR2 (RG_FOUKI)	0.0014	<0.003
24-Aug-21	FR_FR4 (RG_FOBSC)	0.0046	0.0052
24-Aug-21	FR_FRABCH (RG_FO22)	0.0019	0.0035
24-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0041	0.0047
24-Aug-21	FR_FRRD (RG_FRUPO)	0.0013	<0.003
24-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0018	<0.003
24-Aug-21	FR_UFR1 (RG_URF1)	0.0014	<0.003
25-Aug-21	FR_FR2 (RG_FOUKI)	0.0016	<0.003
25-Aug-21	FR_FRNTP (RG_FOUSH)	0.0038	<0.003

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
25-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0018	<0.003
28-Aug-21	FR_FR3 (RG_FOBKS)	NA	NA
28-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
31-Aug-21	FR_FR2 (RG_FOUKI)	0.0017	<0.003
31-Aug-21	FR_FR4 (RG_FOBSC)	0.0062	0.0067
31-Aug-21	FR_FRABCH (RG_FO22)	0.0015	<0.003
31-Aug-21	FR_FRCP1 (RG_FOBCP)	0.0053	0.0054
31-Aug-21	FR_FRRD (RG_FRUPO)	0.0054	<0.003
31-Aug-21	FR_MULTIPLATE (RG_MP1)	0.0015	<0.003
31-Aug-21	FR_SCOUTDS (RG_SCOUTDS)	0.0054	0.0059
31-Aug-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
1-Sep-21	FR_FRNTP (RG_FOUSH)	0.0019	<0.003
3-Sep-21	FR_FR4 (RG_FOBSC)	0.0064	0.0067
7-Sep-21	FR_FR2 (RG_FOUKI)	0.0013	<0.003
7-Sep-21	FR_FR4 (RG_FOBSC)	0.008	0.0102
7-Sep-21	FR_FRABCH (RG_FO22)	0.0015	<0.003
7-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0057	0.0064
7-Sep-21	FR_FRRD (RG_FRUPO)	0.0017	<0.003
7-Sep-21	FR_MULTIPLATE (RG_MP1)	0.002	<0.003
7-Sep-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
8-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA
8-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA
8-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA
9-Sep-21	FR_FR2 (RG_FOUKI)	0.0012	<0.003
9-Sep-21	FR_FR3 (RG_FOBKS)	0.0014	<0.003
9-Sep-21	FR_FRNTP (RG_FOUSH)	0.0014	<0.003
9-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0012	<0.003
11-Sep-21	GH_PC2 (RG_FODPO)	0.0022	<0.003
11-Sep-21	RG_FOUEW	0.0024	<0.003
12-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA
12-Sep-21	FR_FRABCH (RG_FO22)	0.0018	<0.003
12-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
13-Sep-21	FR_FOUCL (RG_FOUCL)	<0.001	<0.003
13-Sep-21	FR_FR1 (RG_FODHE)	0.0011	<0.003
13-Sep-21	FR_FR4 (RG_FOBSC)	0.0068	0.0076
13-Sep-21	FR_FR5	0.0012	<0.003
13-Sep-21	FR_FRCP1 (RG_FOBCP)	0.0052	0.0057
13-Sep-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
13-Sep-21	FR_HC3 (RG_HENUP)	0.0018	<0.003
13-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0067	0.0069
13-Sep-21	GH_PC2 (RG_FODPO)	0.0018	<0.003
14-Sep-21	FR_FR2 (RG_FOUKI)	0.0014	<0.003
14-Sep-21	FR_FR3 (RG_FOBKS)	0.0012	<0.003
14-Sep-21	FR_FRNTP (RG_FOUSH)	0.0019	<0.003
14-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0028	<0.003
14-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0074	0.0081
15-Sep-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
15-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA
15-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	0.0052	0.0053
15-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA
15-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0026	0.0032
15-Sep-21	RG_FO26	<0.001	0.0126
16-Sep-21	FR_FRABCH (RG_FO22)	0.0016	<0.003
16-Sep-21	FR_FRABEC1 (RG_FODNGD)	0.0018	<0.003
16-Sep-21	FR_FRNTP (RG_FOUSH)	0.0013	<0.003
16-Sep-21	FR_HC3 (RG_HENUP)	0.0018	<0.003
16-Sep-21	RG_FOUNGD	0.0014	<0.003
17-Sep-21	FR_FR4 (RG_FOBSC)	0.0068	0.0202
17-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA
17-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA
19-Sep-21	FR_FRRD (RG_FRUPO)	0.0019	<0.003
20-Sep-21	FR_FOUCL (RG_FOUCL)	NA	NA
20-Sep-21	FR_FR1 (RG_FODHE)	NA	NA
20-Sep-21	FR_FR2 (RG_FOUKI)	0.0016	<0.003
20-Sep-21	FR_FRCP1SW (RG_FRCP1SW)	NA	NA
20-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA
20-Sep-21	FR_FRRD (RG_FRUPO)	NA	NA
20-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA
20-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
20-Sep-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
20-Sep-21	RG_FO26	NA	NA
21-Sep-21	FR_FR2 (RG_FOUKI)	0.0046	<0.003
21-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA
21-Sep-21	FR_FR4 (RG_FOBSC)	NA	NA
21-Sep-21	FR_FRABCH (RG_FO22)	NA	NA
21-Sep-21	FR_FRABEC1 (RG_FODNGD)	NA	NA
21-Sep-21	FR_FRCP1 (RG_FOBCP)	NA	NA
21-Sep-21	FR_FRNTP (RG_FOUSH)	0.0014	<0.003
21-Sep-21	FR_HC3 (RG_HENUP)	NA	NA
21-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0017	<0.003
21-Sep-21	FR_UFR1 (RG_URF1)	NA	NA
21-Sep-21	GH_PC2 (RG_FODPO)	NA	NA
21-Sep-21	RG_FOUEW	NA	NA
21-Sep-21	RG_FOUNGD	NA	NA
22-Sep-21	FR_FR2 (RG_FOUKI)	NA	NA
22-Sep-21	FR_FRABCH (RG_FO22)	0.0055	<0.003
22-Sep-21	FR_FRNTP (RG_FOUSH)	NA	NA
22-Sep-21	FR_MULTIPLATE (RG_MP1)	NA	NA
23-Sep-21	FR_FRABCH (RG_FO22)	NA	NA
26-Sep-21	FR_FR3 (RG_FOBKS)	NA	NA
26-Sep-21	FR_SCOUTDS (RG_SCOUTDS)	0.0079	0.0078
28-Sep-21	FR_FR2 (RG_FOUKI)	0.0015	<0.003
28-Sep-21	FR_FRABCH (RG_FO22)	0.001	0.0035
28-Sep-21	FR_FRNTP (RG_FOUSH)	0.0024	<0.003
28-Sep-21	FR_MULTIPLATE (RG_MP1)	0.0019	0.0038

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

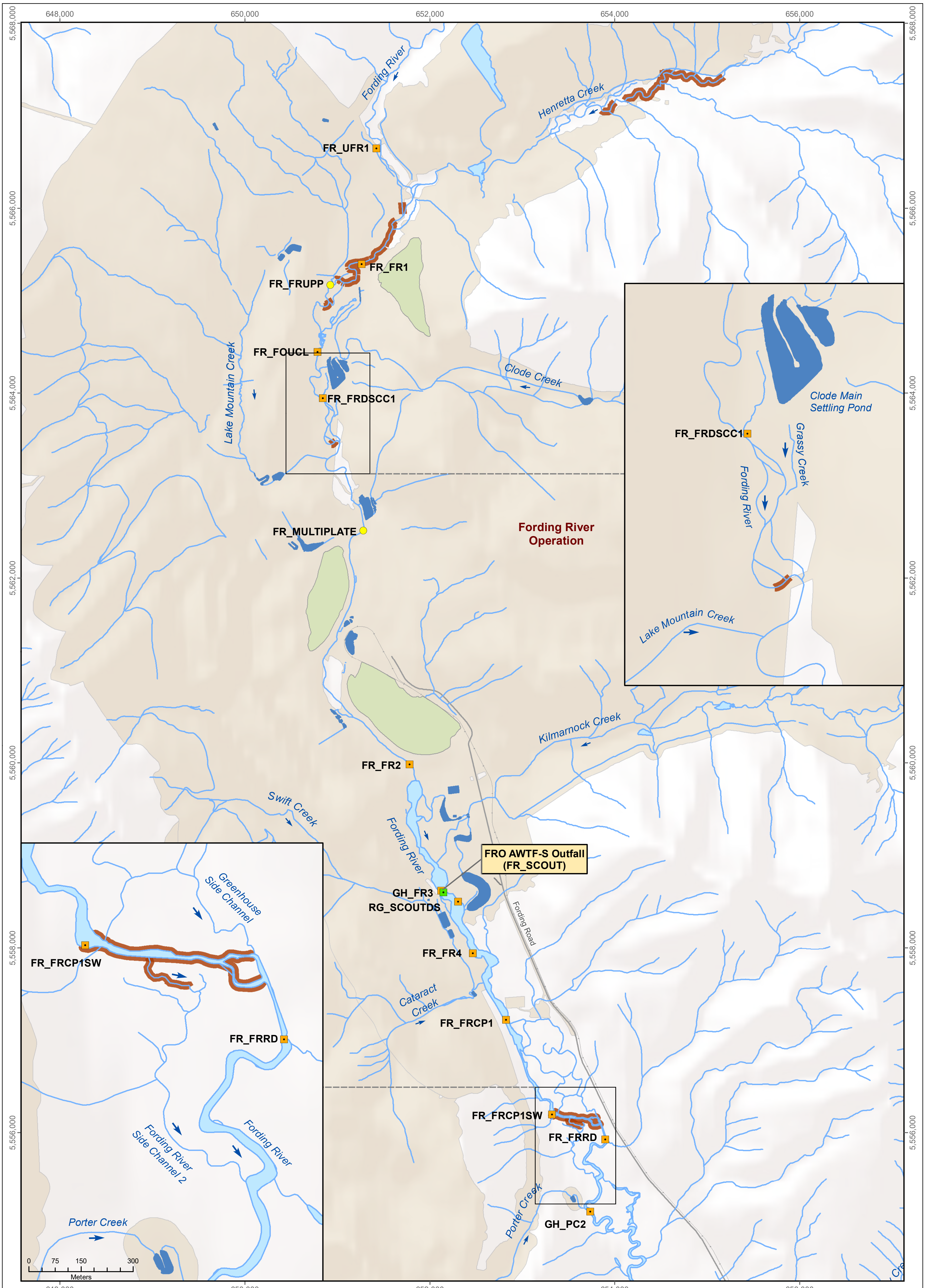
Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
30-Sep-21	FR_FRNTP (RG_FOUSH)	0.0029	0.0037
4-Oct-21	FR_FR1 (RG_FODHE)	0.0013	<0.003
4-Oct-21	FR_HC3 (RG_HENUP)	0.0013	<0.003
5-Oct-21	FR_FR2 (RG_FOUKI)	0.0037	0.0115
5-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0018	<0.003
6-Oct-21	FR_FR3 (RG_FOBKS)	0.0035	0.0112
6-Oct-21	FR_FR5	0.002	0.0185
6-Oct-21	FR_FRABCH (RG_FO22)	0.0015	<0.003
6-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
6-Oct-21	GH_PC2 (RG_FODPO)	0.0025	<0.003
7-Oct-21	FR_FR4 (RG_FOBSC)	0.0106	0.0097
8-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA
8-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA
8-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA
9-Oct-21	FR_FR2 (RG_FOUKI)	0.0014	<0.003
9-Oct-21	FR_FRNTP (RG_FOUSH)	0.0034	<0.003
10-Oct-21	FR_FR2 (RG_FOUKI)	0.0014	<0.003
10-Oct-21	FR_FRNTP (RG_FOUSH)	0.0023	<0.003
11-Oct-21	FR_FR2 (RG_FOUKI)	0.0015	<0.003
11-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA
11-Oct-21	FR_FRNTP (RG_FOUSH)	0.0018	<0.003
11-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.0093	0.0105
12-Oct-21	FR_FR2 (RG_FOUKI)	0.0012	<0.003
12-Oct-21	FR_FR4 (RG_FOBSC)	0.0096	0.009
12-Oct-21	FR_FRABCH (RG_FO22)	0.0026	0.0083
12-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0086	0.01
12-Oct-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
12-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0026	<0.003
13-Oct-21	FR_FR2 (RG_FOUKI)	0.0032	0.0037
13-Oct-21	FR_FRNTP (RG_FOUSH)	0.007	0.004
14-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA
14-Oct-21	FR_FRNTP (RG_FOUSH)	NA	NA
14-Oct-21	FR_MULTIPLATE (RG_MP1)	NA	NA
19-Oct-21	FR_FR2 (RG_FOUKI)	0.002	0.0033
19-Oct-21	FR_FR4 (RG_FOBSC)	0.0078	0.013
19-Oct-21	FR_FRABCH (RG_FO22)	0.0019	0.004
19-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0076	0.017
19-Oct-21	FR_FRNTP (RG_FOUSH)	0.0032	<0.003
19-Oct-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
19-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0016	<0.003
19-Oct-21	FR_UFR1 (RG_URF1)	0.0011	0.0038
20-Oct-21	FR_FR2 (RG_FOUKI)	0.0022	<0.003
20-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	0.0082	0.0083
21-Oct-21	FR_FR2 (RG_FOUKI)	NA	NA
21-Oct-21	FR_FR3 (RG_FOBKS)	NA	NA
21-Oct-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
26-Oct-21	FR_FR2 (RG_FOUKI)	0.0017	0.0033
26-Oct-21	FR_FR4 (RG_FOBSC)	0.0082	0.0104
26-Oct-21	FR_FRABCH (RG_FO22)	0.0015	<0.003
26-Oct-21	FR_FRCP1 (RG_FOBCP)	0.0079	0.0081
26-Oct-21	FR_FRNTP (RG_FOUSH)	0.0025	0.0036
26-Oct-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
26-Oct-21	FR_MULTIPLATE (RG_MP1)	0.0042	<0.003
26-Oct-21	FR_UFR1 (RG_URF1)	0.0013	<0.003
27-Oct-21	FR_FOUCL (RG_FOUCL)	0.0015	<0.003
27-Oct-21	FR_FRABEC1 (RG_FODNGD)	0.0025	0.005
28-Oct-21	FR_FRABCH (RG_FO22)	0.0013	<0.003
28-Oct-21	FR_FRRD (RG_FRUPO)	<0.001	<0.003
29-Oct-21	FR_FR4 (RG_FOBSC)	0.0082	0.0076
29-Oct-21	FR_FRCP1 (RG_FOBCP)	0.008	0.0072
2-Nov-21	FR_FR2 (RG_FOUKI)	0.0021	<0.003
2-Nov-21	FR_FR4 (RG_FOBSC)	0.0085	0.0083
2-Nov-21	FR_FRABCH (RG_FO22)	0.0012	<0.003
2-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0075	0.0081
2-Nov-21	FR_FRRD (RG_FRUPO)	0.0061	<0.003
2-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0023	0.0036
2-Nov-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
3-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA
3-Nov-21	FR_FRNTP (RG_FOUSH)	0.0035	0.0039
3-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
4-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0081	0.0075
8-Nov-21	FR_FR3 (RG_FOBKS)	0.0016	<0.003
8-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	0.0069	0.0093
8-Nov-21	GH_PC2 (RG_FODPO)	0.002	0.0034
9-Nov-21	FR_FR2 (RG_FOUKI)	0.0029	0.004
9-Nov-21	FR_FR4 (RG_FOBSC)	0.0076	0.0091
9-Nov-21	FR_FRABCH (RG_FO22)	0.0018	<0.003
9-Nov-21	FR_FRCP1 (RG_FOBCP)	0.0074	0.008
9-Nov-21	FR_FRRD (RG_FRUPO)	0.0012	0.0038
9-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0041	0.0043
9-Nov-21	FR_UFR1 (RG_URF1)	<0.001	<0.003
10-Nov-21	FR_FR4 (RG_FOBSC)	0.0061	0.0072
10-Nov-21	FR_HC3 (RG_HENUP)	0.0011	0.0071
12-Nov-21	FR_FR2 (RG_FOUKI)	0.0024	0.0031
12-Nov-21	FR_FR4 (RG_FOBSC)	0.0013	<0.003
12-Nov-21	FR_FRNTP (RG_FOUSH)	0.0033	0.0034
15-Nov-21	FR_FR5	0.001	<0.003
15-Nov-21	FR_FRABCH (RG_FO22)	0.003	<0.003
16-Nov-21	FR_FR1 (RG_FODHE)	0.0012	<0.003
17-Nov-21	FR_FR2 (RG_FOUKI)	0.0041	0.0047
17-Nov-21	FR_FRNTP (RG_FOUSH)	0.0059	0.006
17-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0048	0.0056
18-Nov-21	FR_FR3 (RG_FOBKS)	NA	NA
18-Nov-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
23-Nov-21	FR_FRABCH (RG_FO22)	0.0019	<0.003

Table B.7: Raw Water Chemistry Data from Fording River, January to December, FRO LAEMP, 2021

Date	Station	Zinc (Zn)-Dissolved_mg/L	Zinc (Zn)-Total_mg/L
23-Nov-21	FR_FRABEC1 (RG_FODNGD)	NA	NA
24-Nov-21	FR_FR2 (RG_FOUKI)	0.0054	0.0048
24-Nov-21	FR_FRNTP (RG_FOUSH)	0.0061	0.006
24-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0052	0.0044
29-Nov-21	FR_FR2 (RG_FOUKI)	0.0031	0.0044
29-Nov-21	FR_FRNTP (RG_FOUSH)	0.0042	0.0045
29-Nov-21	FR_MULTIPLATE (RG_MP1)	0.0044	0.0043
1-Dec-21	FR_FRABCH (RG_FO22)	0.0015	<0.003
2-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA
2-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
2-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0061	0.0079
7-Dec-21	FR_FR2 (RG_FOUKI)	0.005	0.0061
7-Dec-21	FR_FRNTP (RG_FOUSH)	0.0058	0.006
7-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0072	0.0067
8-Dec-21	FR_FR3 (RG_FOBKS)	0.0051	0.0051
8-Dec-21	FR_FRABCH (RG_FO22)	0.0017	<0.003
8-Dec-21	FR_FRRD (RG_FRUPO)	0.0011	<0.003
8-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0088	0.0083
9-Dec-21	FR_FR1 (RG_FODHE)	<0.001	<0.003
9-Dec-21	FR_FR4 (RG_FOBSC)	0.0067	0.0081
9-Dec-21	FR_HC3 (RG_HENUP)	0.0019	<0.003
9-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
9-Dec-21	FR_UFR1 (RG_URF1)	NA	NA
10-Dec-21	FR_FR4 (RG_FOBSC)	0.0079	0.0076
10-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
13-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
13-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA
13-Dec-21	RG_FOUEW	0.0016	<0.003
14-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA
14-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA
14-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA
14-Dec-21	GH_PC2 (RG_FODPO)	NA	NA
15-Dec-21	FR_FOUCL (RG_FOUCL)	NA	NA
15-Dec-21	FR_FR1 (RG_FODHE)	NA	NA
15-Dec-21	FR_FRABCH (RG_FO22)	0.0012	<0.003
15-Dec-21	FR_FRABEC1 (RG_FODNGD)	0.0048	0.007
15-Dec-21	FR_FRNTP (RG_FOUSH)	NA	NA
15-Dec-21	FR_MULTIPLATE (RG_MP1)	NA	NA
15-Dec-21	RG_FOUNGD	NA	NA
16-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA
16-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
16-Dec-21	FR_UFR1 (RG_URF1)	0.0064	<0.003
17-Dec-21	FR_FOUCL (RG_FOUCL)	0.0023	<0.003
17-Dec-21	FR_FR1 (RG_FODHE)	0.0025	0.004
17-Dec-21	FR_FR2 (RG_FOUKI)	NA	NA
17-Dec-21	FR_FR4 (RG_FOBSC)	NA	NA
17-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
17-Dec-21	FR_FRCP1 (RG_FOBCP)	NA	NA
17-Dec-21	FR_FRNTP (RG_FOUSH)	0.0059	0.0093
17-Dec-21	FR_FRRD (RG_FRUPO)	NA	NA
17-Dec-21	FR_MULTIPLATE (RG_MP1)	0.0064	0.0068
17-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0086	0.0083
17-Dec-21	FR_UFR1 (RG_URF1)	0.0042	<0.003
17-Dec-21	RG_FOUEW	NA	NA
17-Dec-21	RG_FOUNGD	0.0052	0.0056
20-Dec-21	FR_FRABCH (RG_FO22)	0.0021	<0.003
21-Dec-21	GH_PC2 (RG_FODPO)	<0.001	<0.003
22-Dec-21	FR_FR5	0.0014	<0.003
23-Dec-21	FR_FR3 (RG_FOBKS)	NA	NA
23-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
23-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA
26-Dec-21	FR_FRABCH (RG_FO22)	NA	NA
29-Dec-21	FR_FRABCH (RG_FO22)	0.0023	<0.003
30-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	0.0076	0.0072
31-Dec-21	FR_SCOUTDS (RG_SCOUTDS)	NA	NA

Note: Biolgoical monitoring areas associated with water quality moni

APPENDIX C
HYDROLOGY



LEGEND

- Dry Section - January
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, January 2021

0 0.5 1 2
km

N W E S

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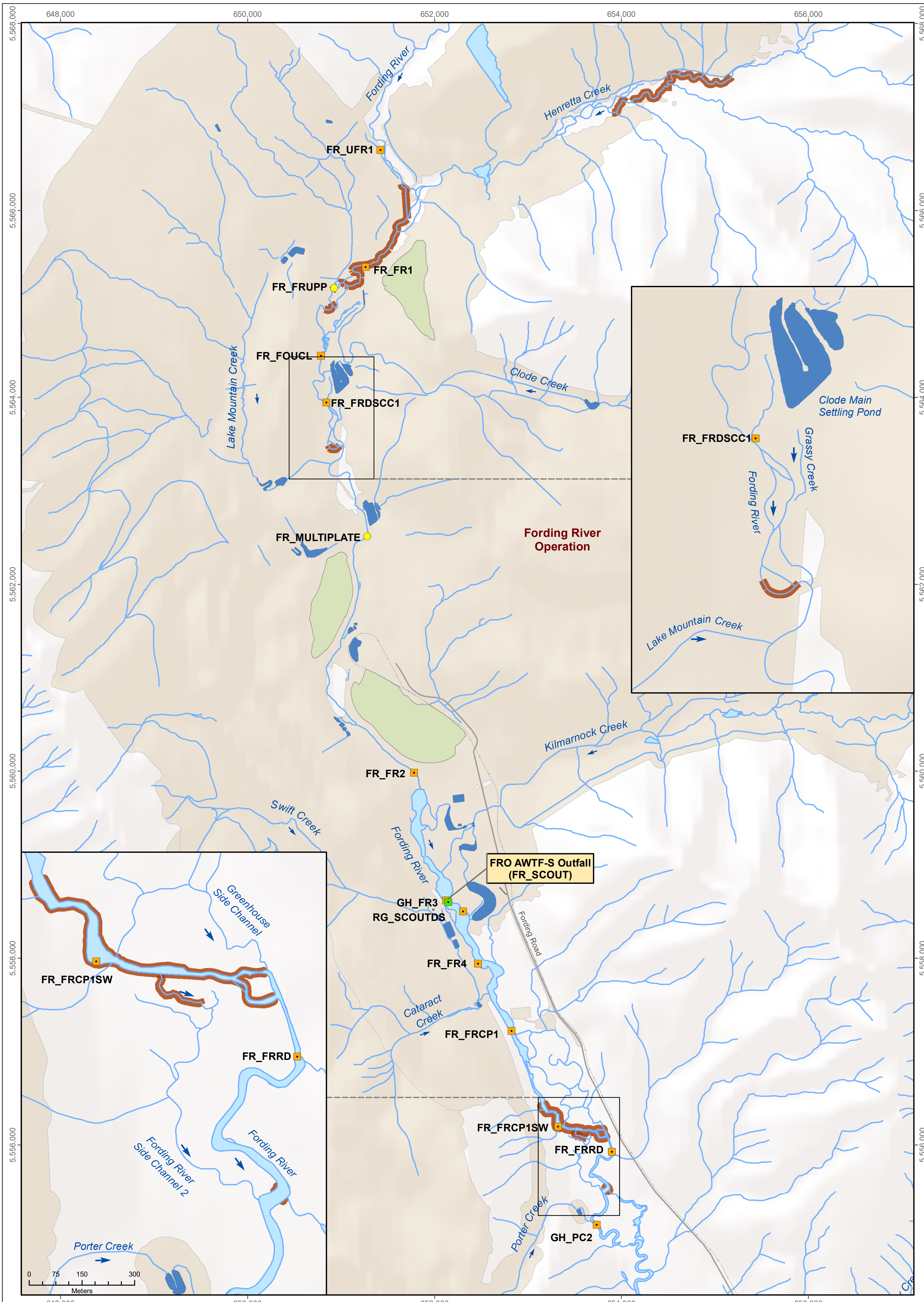
Figure C.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\Drying Surveys\21-11 Figure C.1 FRO Dewatering - JAN.mxd



LEGEND

- Dry Section - February
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, February 2021

Projection: North American Datum 1983 UTM Zone 11 U

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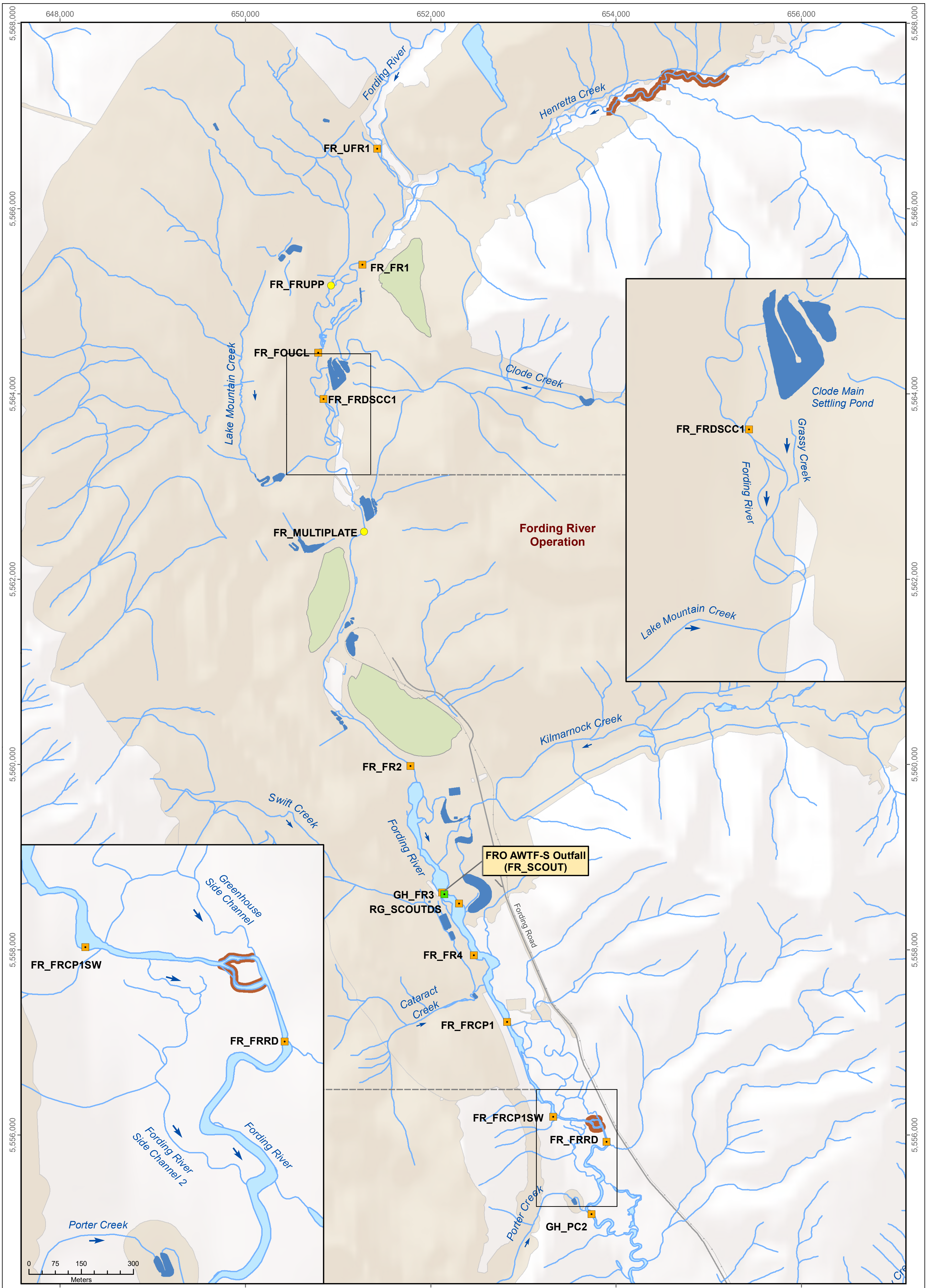
Figure C.2



LEGEND

- Dry Section - March
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, March 2021

0 0.5 1 2 km

N W E S

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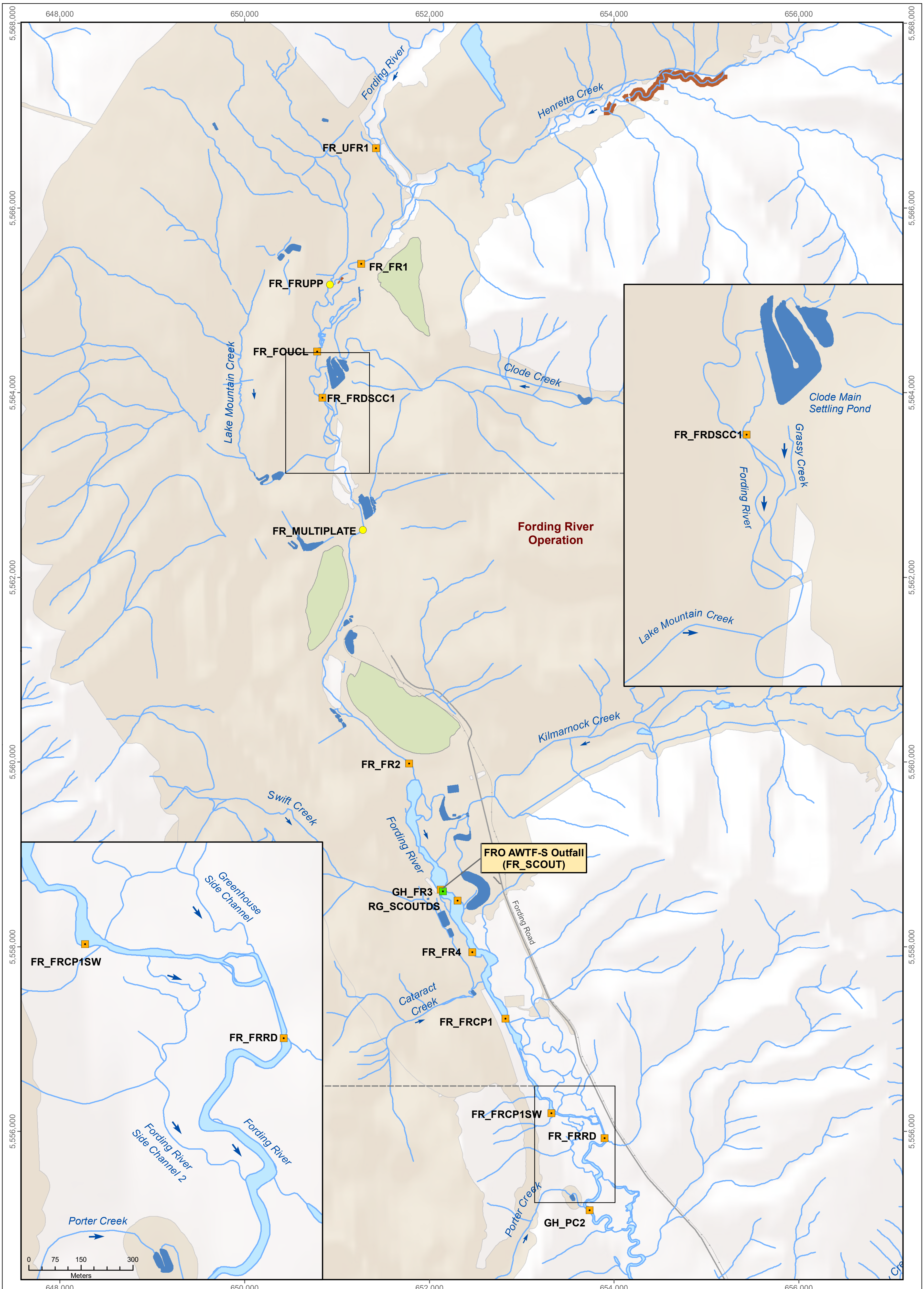
Figure C.3

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\Drying Surveys\21-11 Figure C.3 FRO Dewatering - March NEW.mxd



LEGEND

- Dry Section - April
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, April 2021

0 0.5 1 2
km

N W E S

Projection: North American Datum 1983 UTM Zone 11 U

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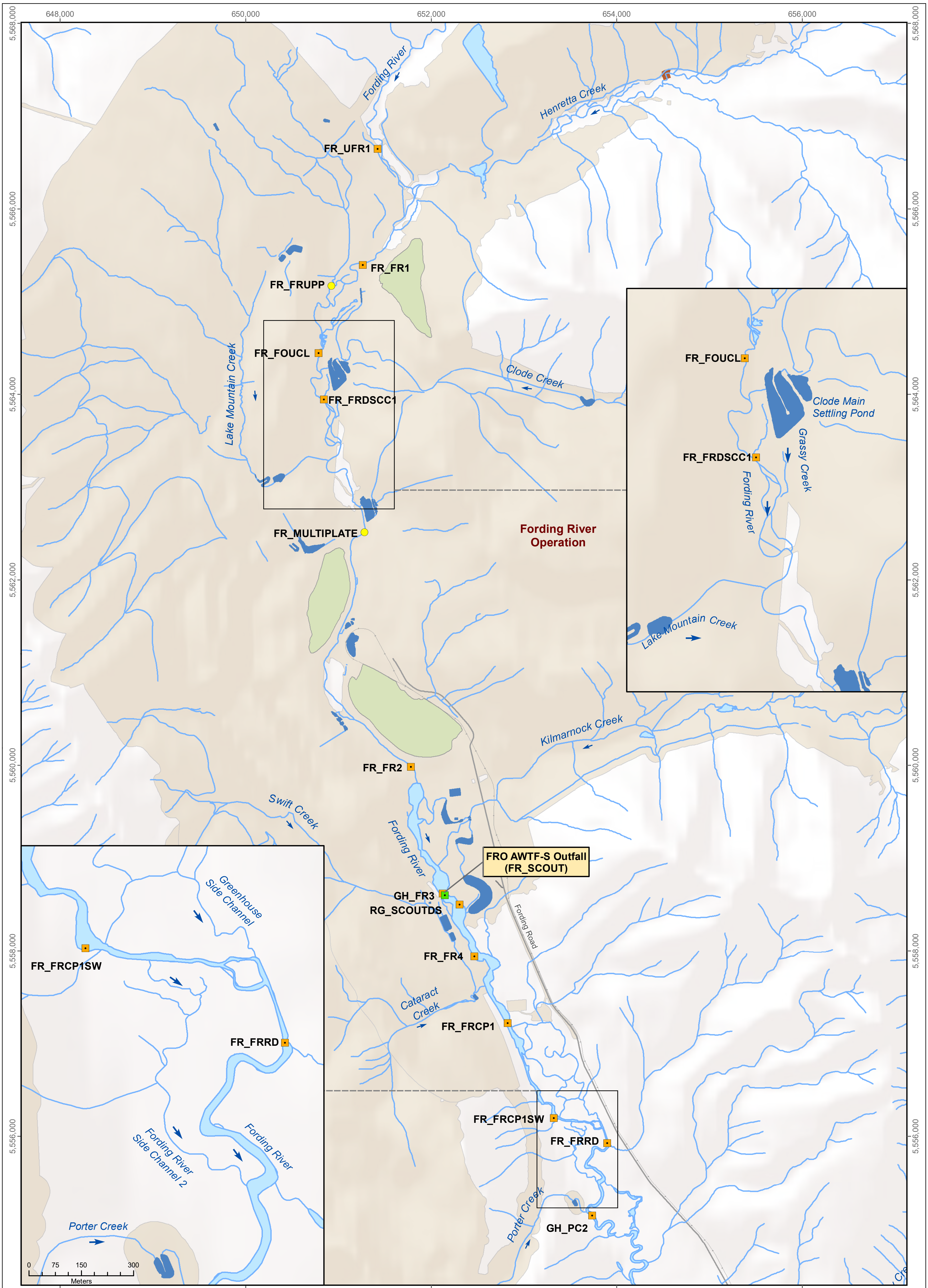
Figure C.4

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\Drying Surveys\21-11 Figure C.4 FRO Dewatering - APRIL NEW.mxd



LEGEND

- Dry Section - August
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, August 2021

0 0.5 1 2
km

N S E W

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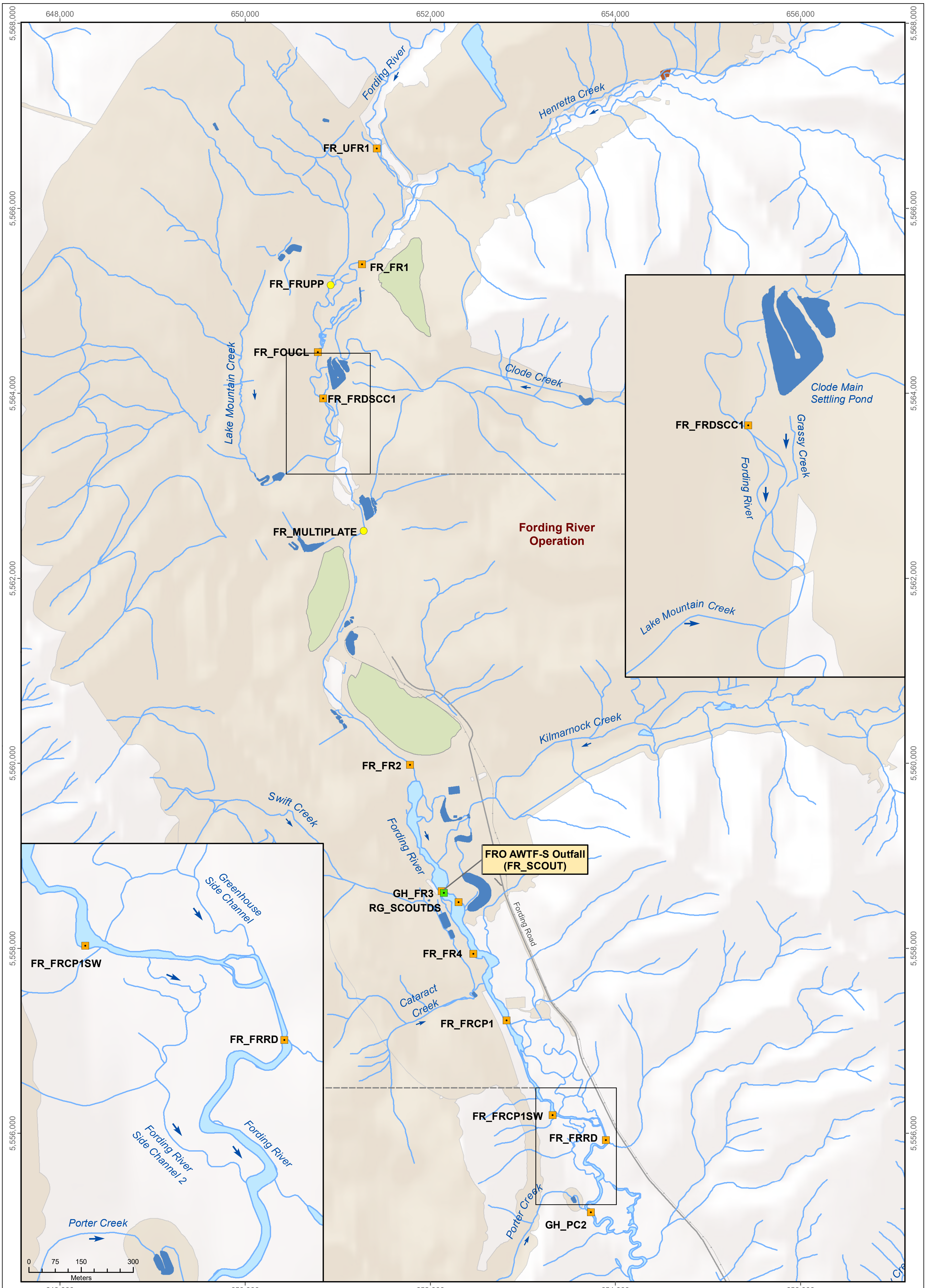
Figure C.5



LEGEND

- Dry Section - September
- Continuous Logger Station
- Water Quality Monitoring Station
- Water Outfall
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, September 2021

0 0.5 1 2 km

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Figure C.6

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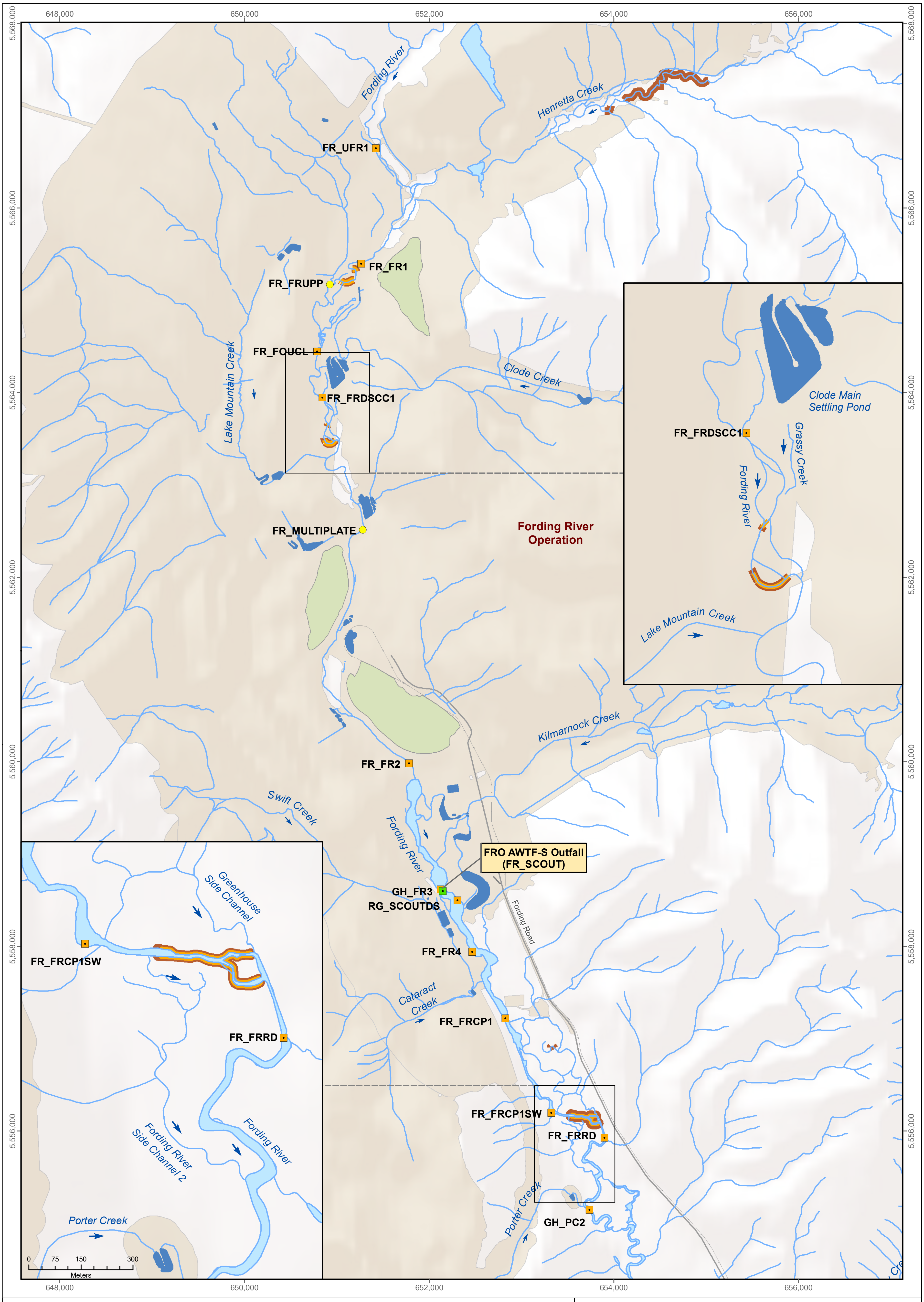


LEGEND

- Dry Section - October 12
- Dry Section - October 25
- Water Outfall
- Continuous Logger Station
- Water Quality Monitoring Station
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, October 2021

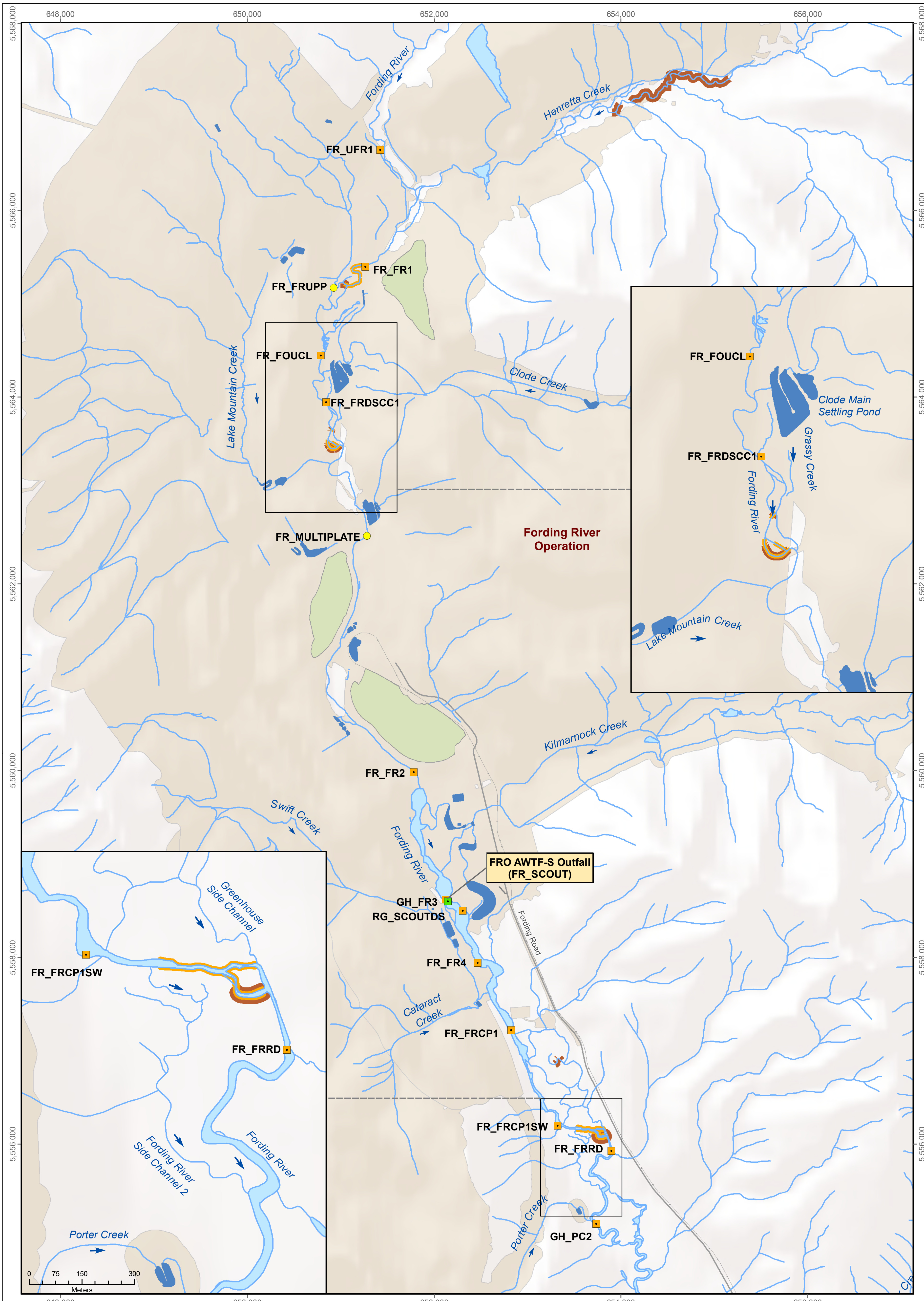
0 0.5 1 2
km

Projection: North American Datum 1983 UTM Zone 11 U

Date: May 2022
Project 217202.0011

minnow environmental inc.

Figure C.7



LEGEND

- Dry Section - November 8
- Dry Section - November 22
- Water Outfall
- Continuous Logger Station
- Water Quality Monitoring Station
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, November 2021

0 0.5 1 2
km

N W E S

Projection: North American Datum 1983 UTM Zone 11 U

Date: May 2022
Project 217202.0011

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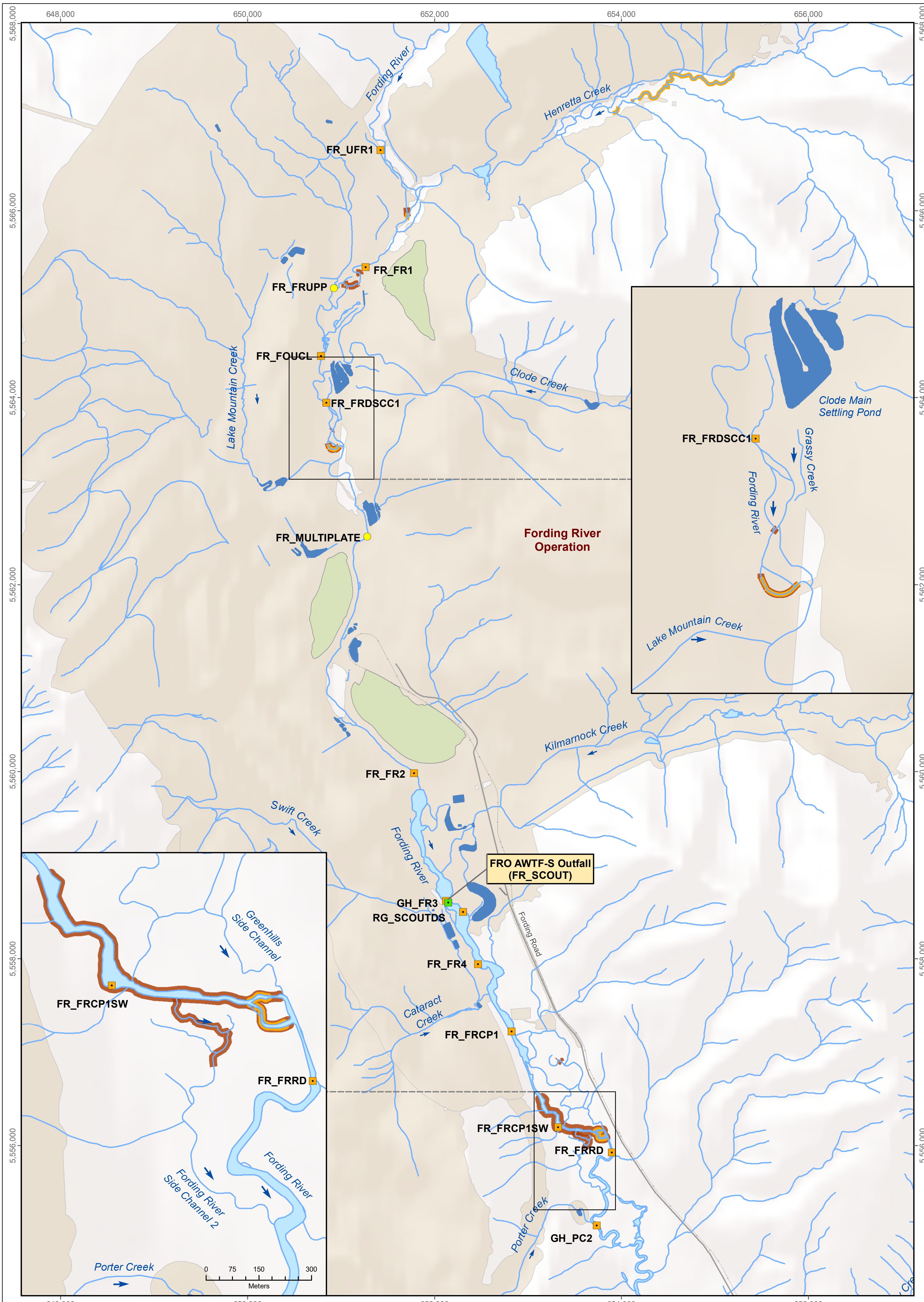
Figure C.8



LEGEND

- Dry Section - December 7
- Dry Section - December 20
- Water Outfall
- Continuous Logger Station
- Water Quality Monitoring Station
- Settling Pond
- Tailings Pond
- Teck Coal Mine Operation

Drying Surveys in the Fording River, FRO LAEMP, December 2021

0 0.5 1 2
km

N
W E
S

Projection: North American Datum 1983 UTM Zone 11 U

Date: May 2022
Project 217202.0011

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Figure C.9

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0011 - Teck FRO LAEMP 2021\D - GIS\Report\Drying Surveys\21-11 Figure C.9 FRO Dewatering - DEC NEW.mxd

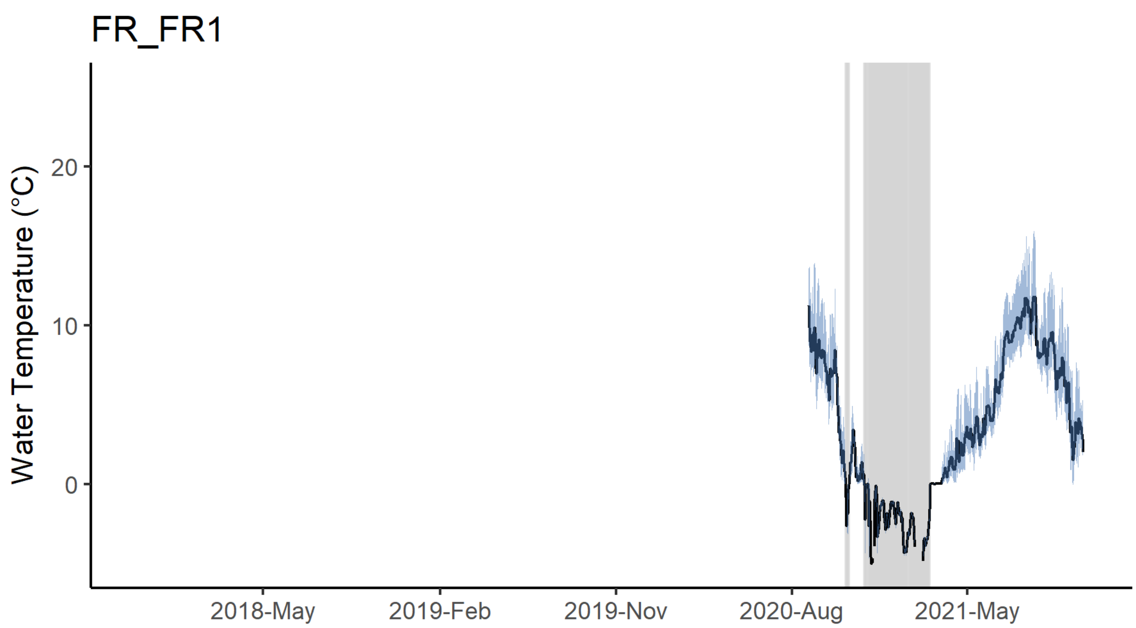
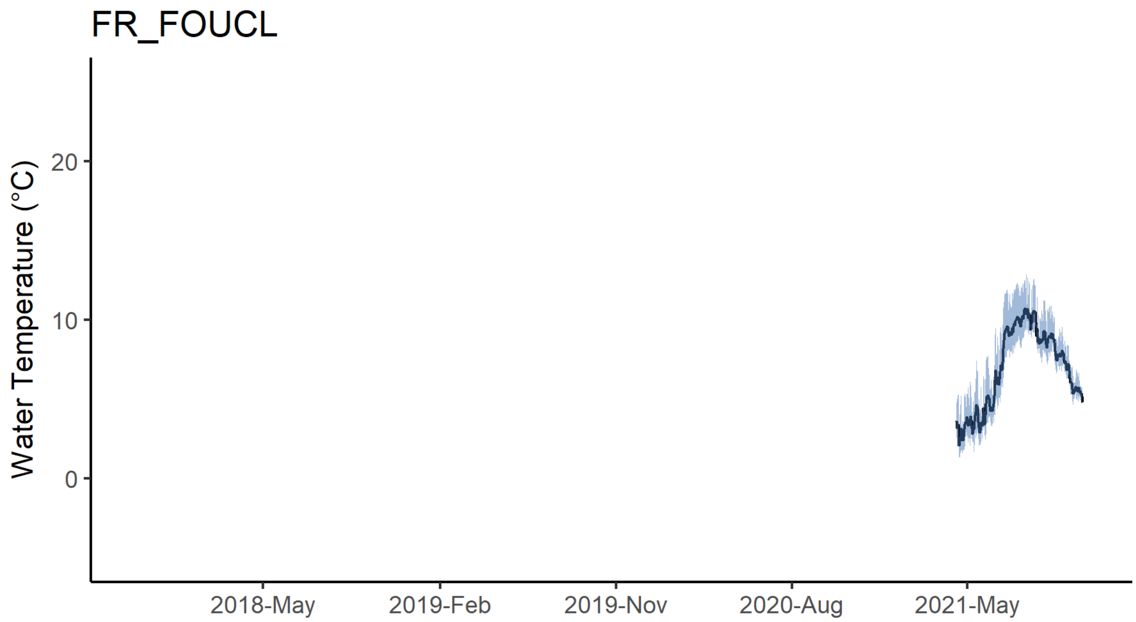
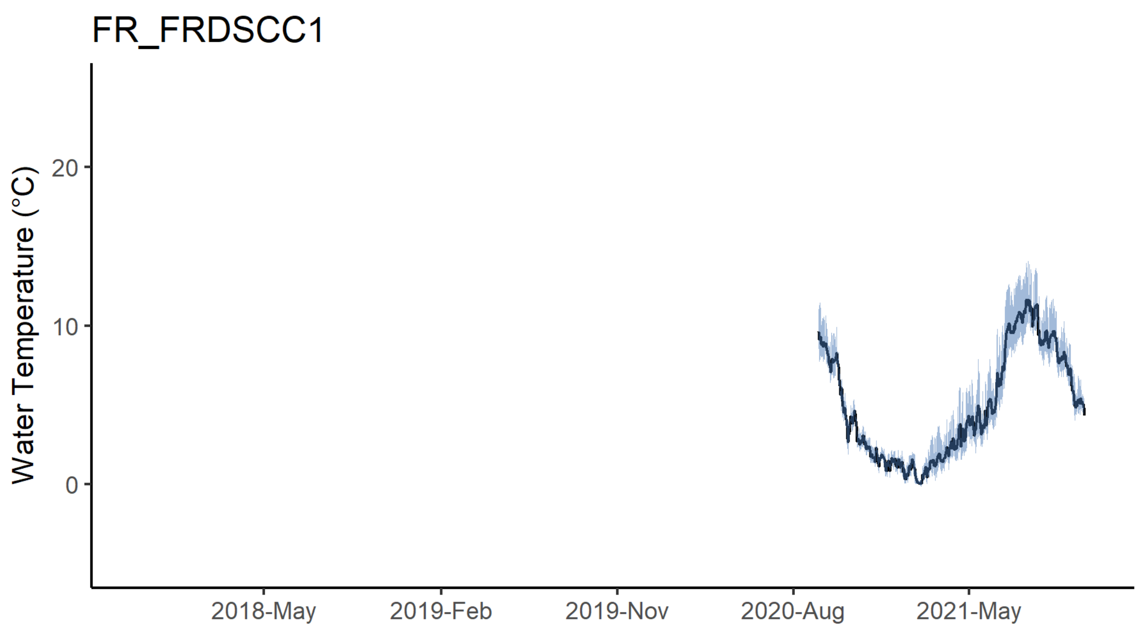


Figure C.10: Continuous Water Temperature Logging in the Fording River, 2021

Notes: Black line represents average daily water temperature. Blue line represents maximum and minimum daily water temperature. Gray highlighted area represents average daily water temperature below 0°C. Gaps in data are due to logger corruption or loss of logger due to environmental conditions. Areas with a constant temperature of ~0°C during the winter represent periods where the loggers were entombed in ice. Data loggers were installed at FR_UFR1, FR_FR1, FR_FRDSCC1, and FR_SCOUTDS in summer of 2020 and the data logger at FR_FOUCL was installed in the spring of 2021.





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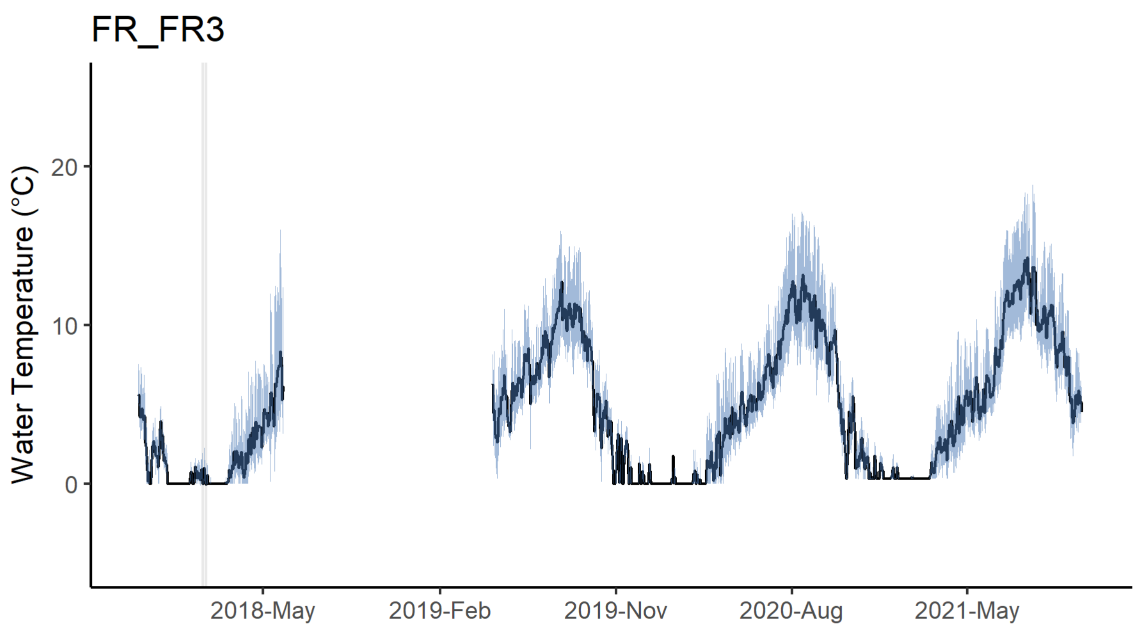

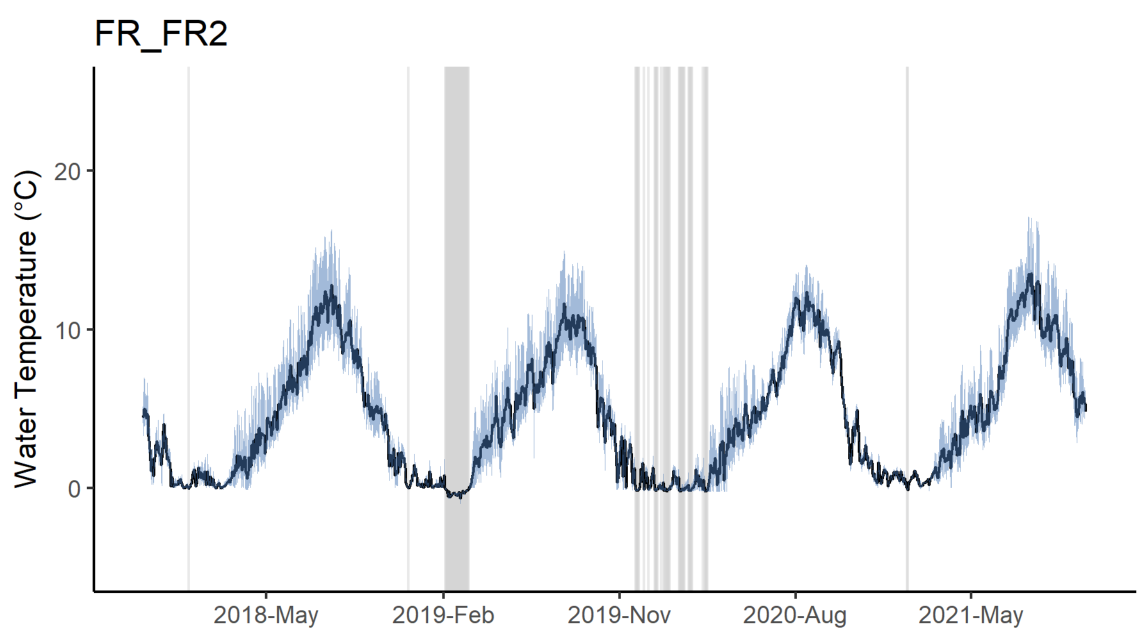

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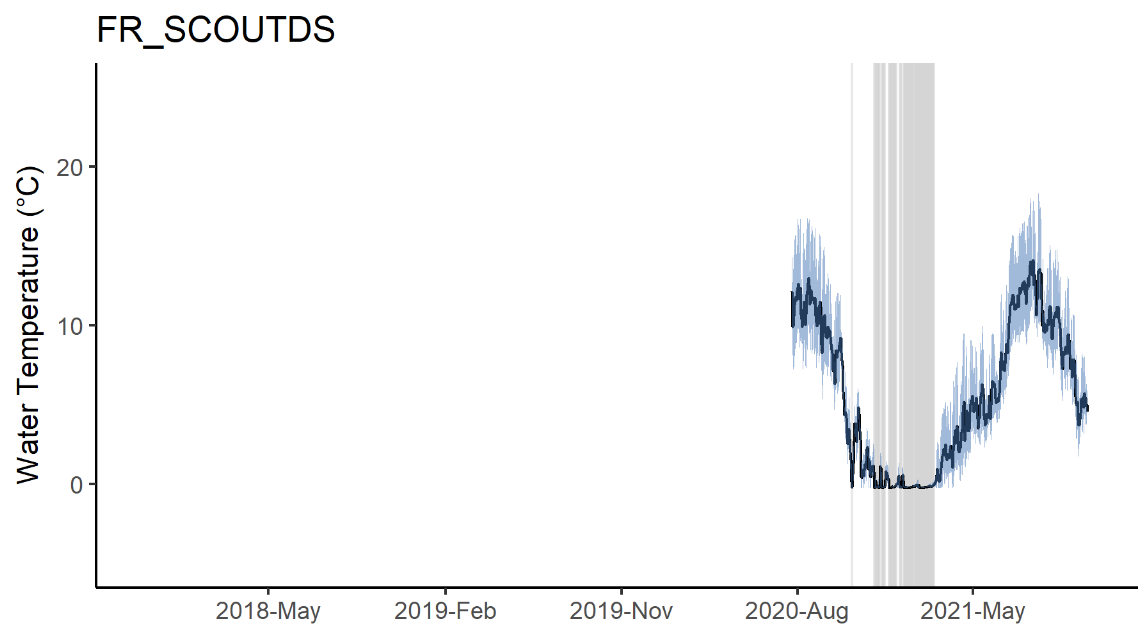

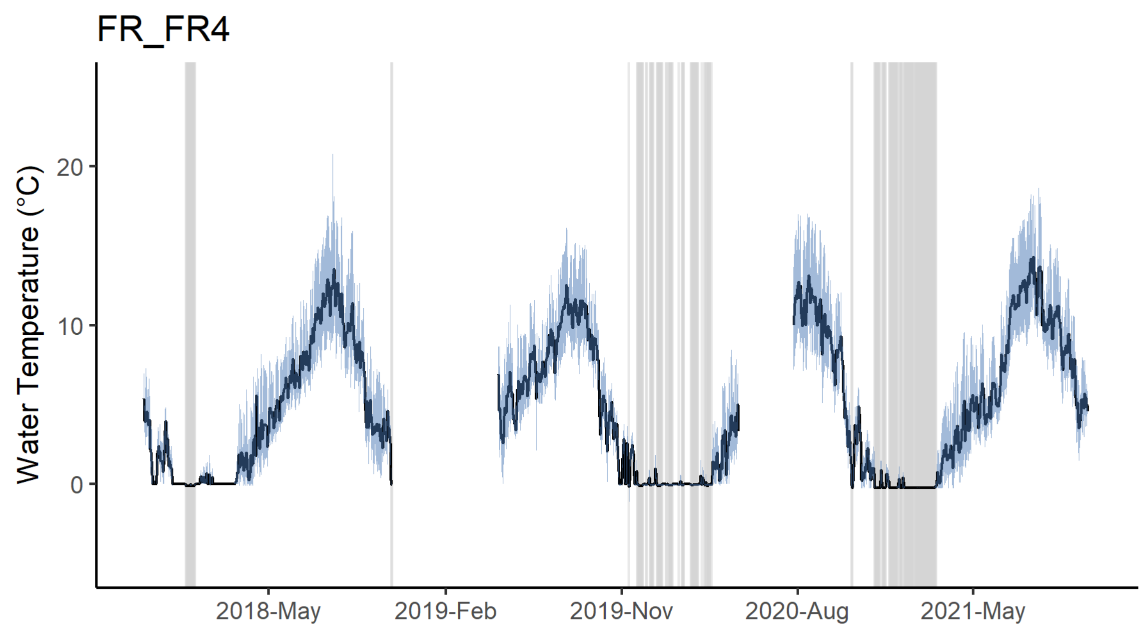

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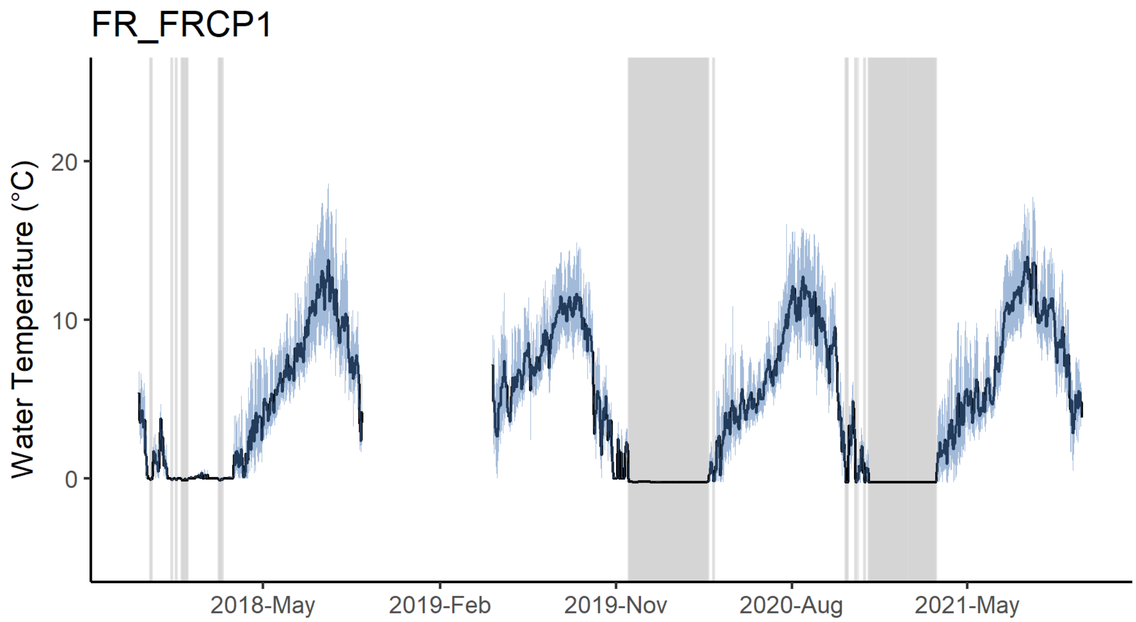

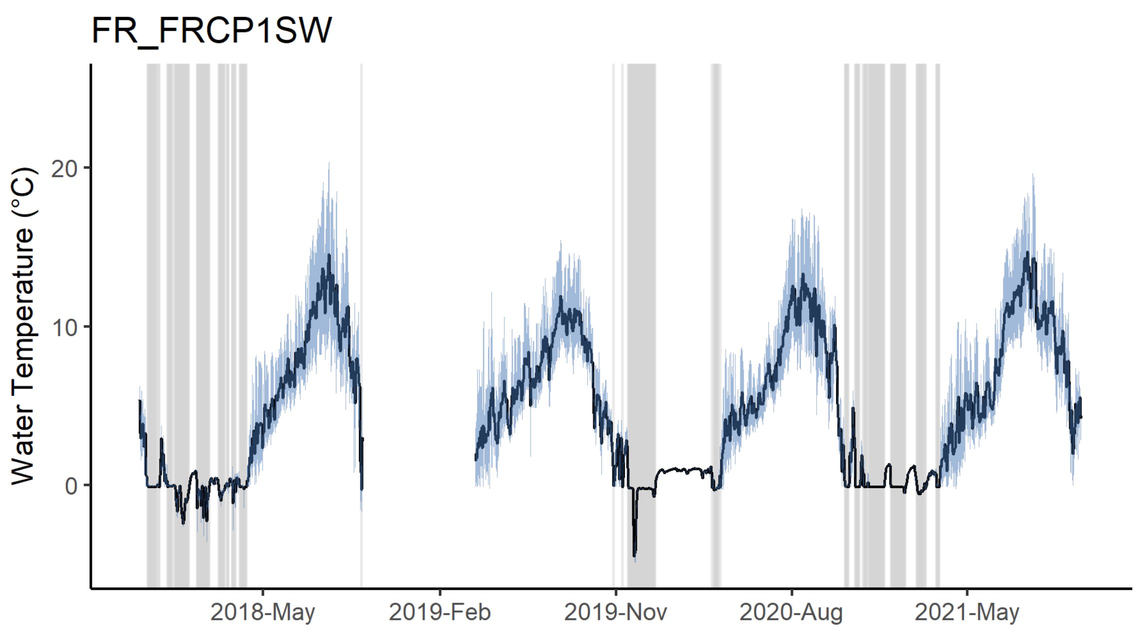

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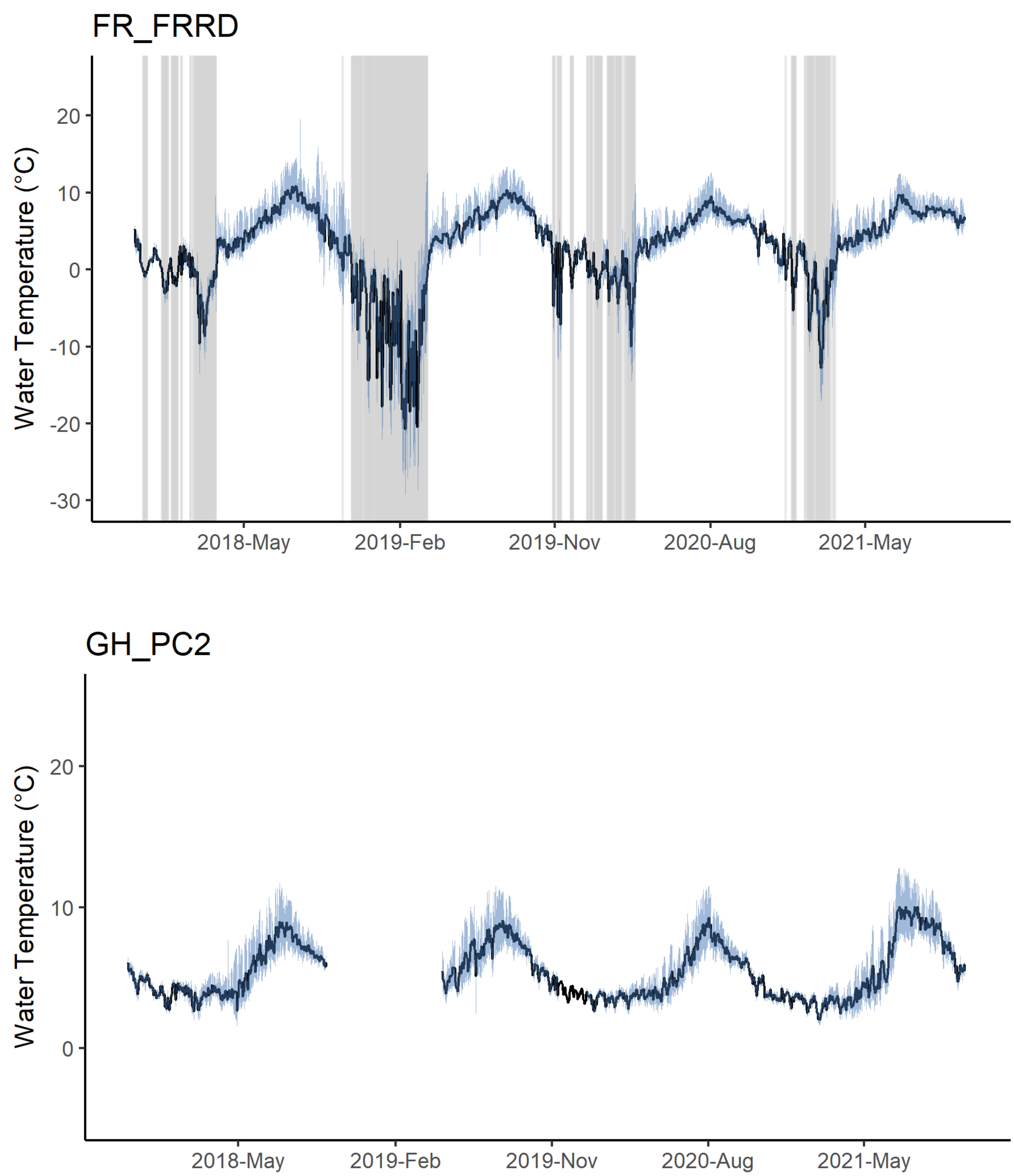

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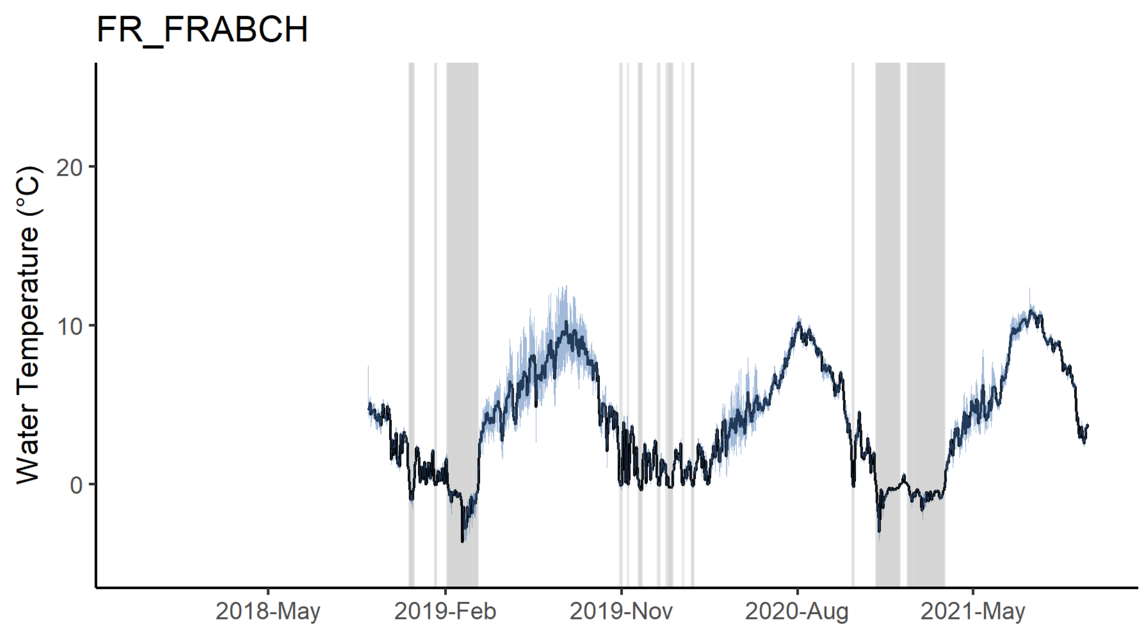

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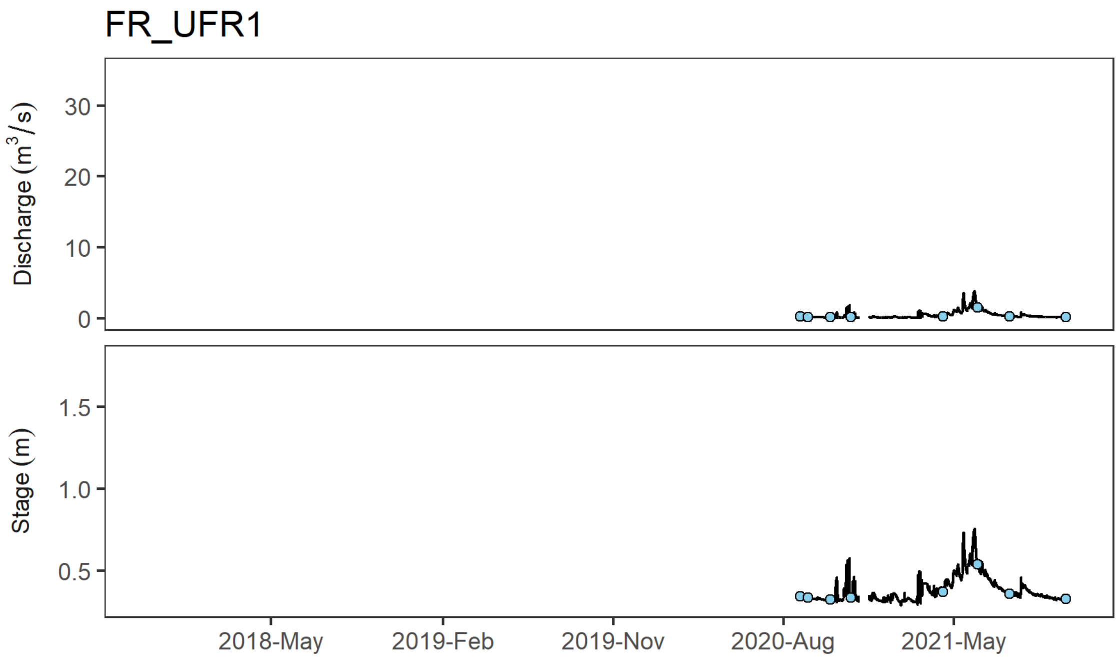


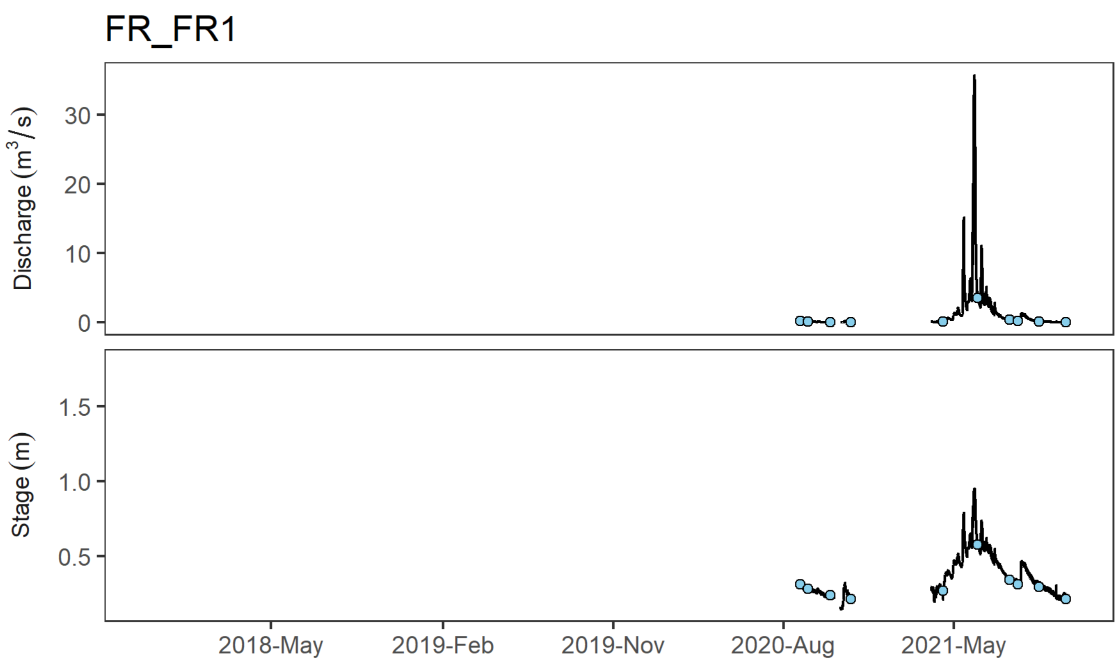
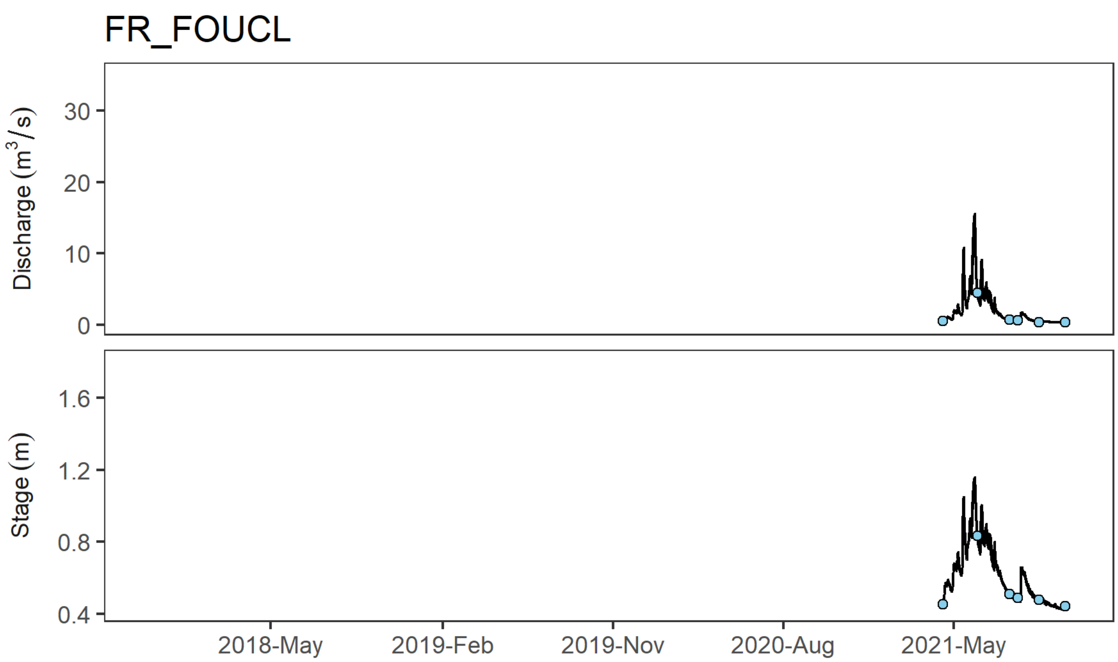
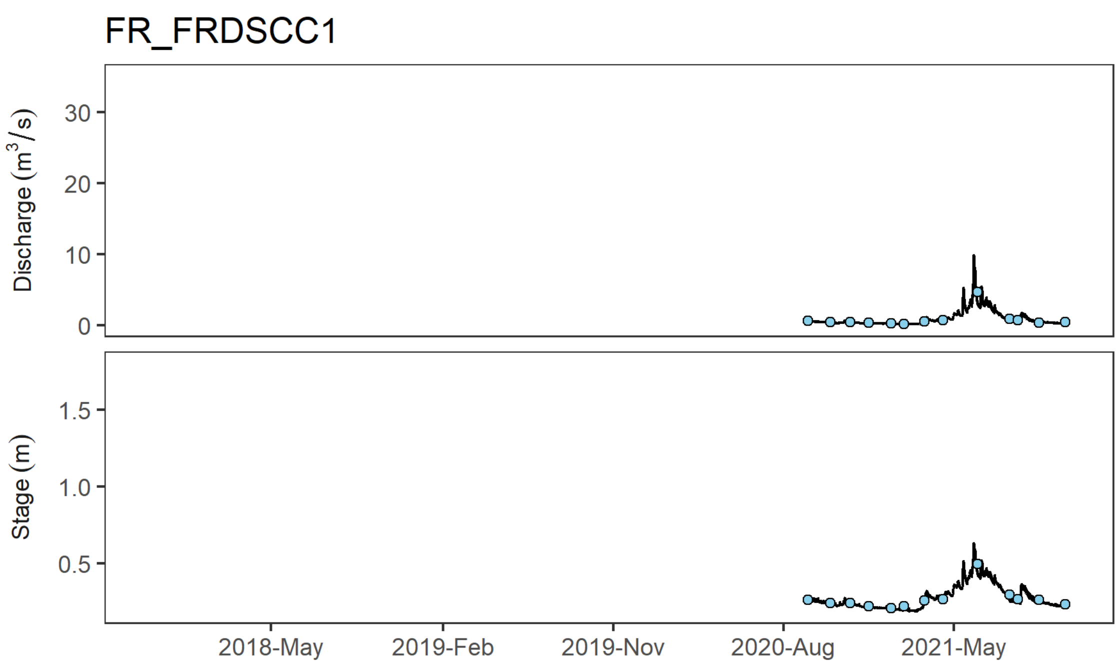


Figure C.11: Continuous Stage and Discharge Logging in the Fording River, 2021

Notes: Black line represents stage and calculated discharge record. Blue dots represent manual stage and discharge measurements. Data gaps represent loss of logger data or removed data due to ice effects. Data loggers were installed at FR_UFR1, FR_FR1, FR_FRDSCC1, and FR_SCOUTDS in summer of 2020 and the data logger at FR_FOUCL was installed in the spring of 2021.





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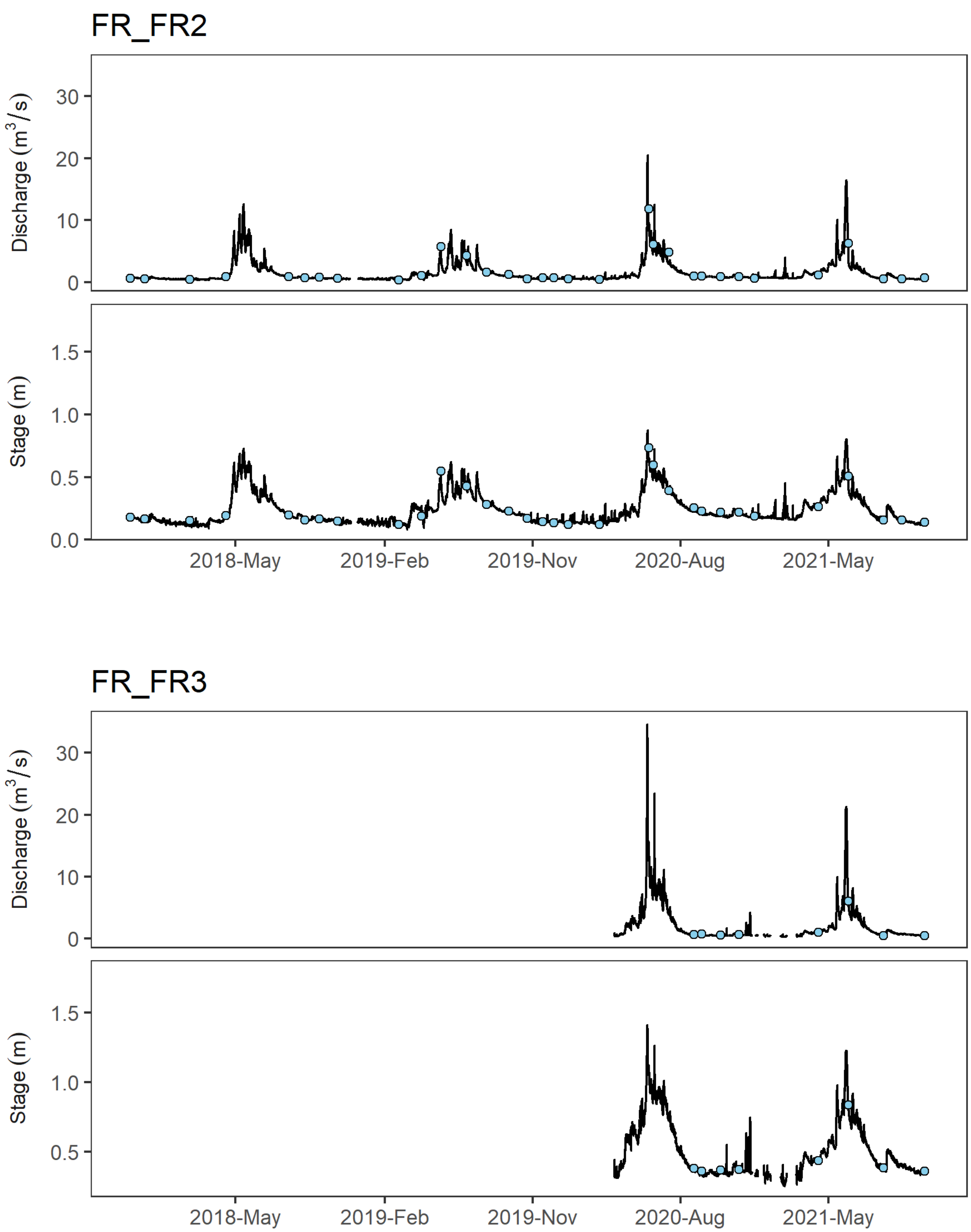

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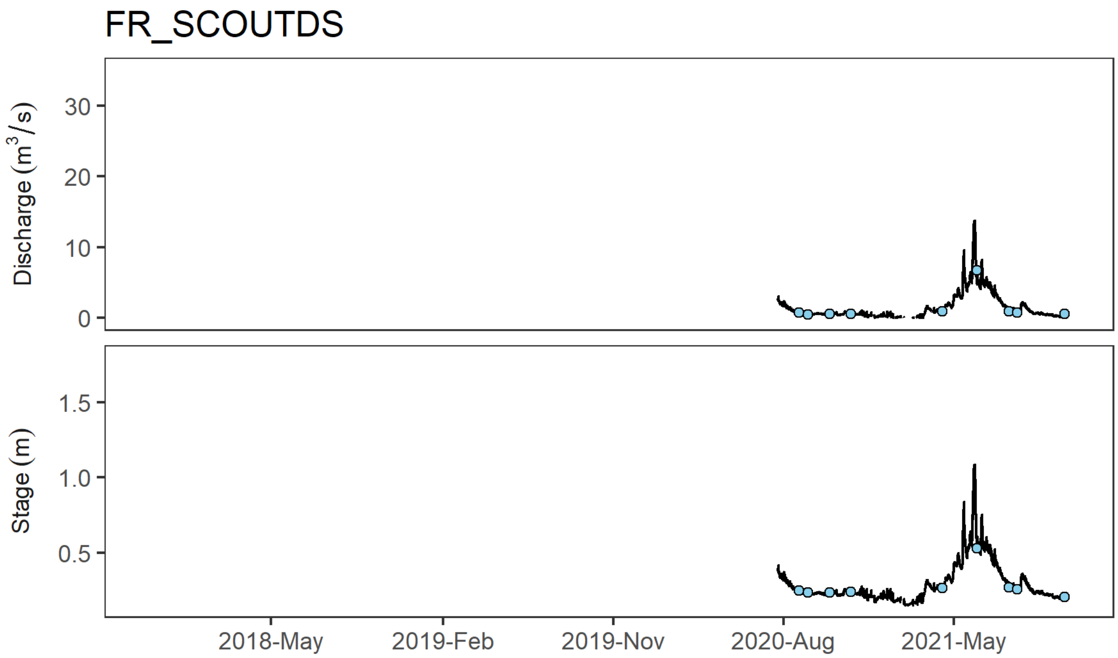

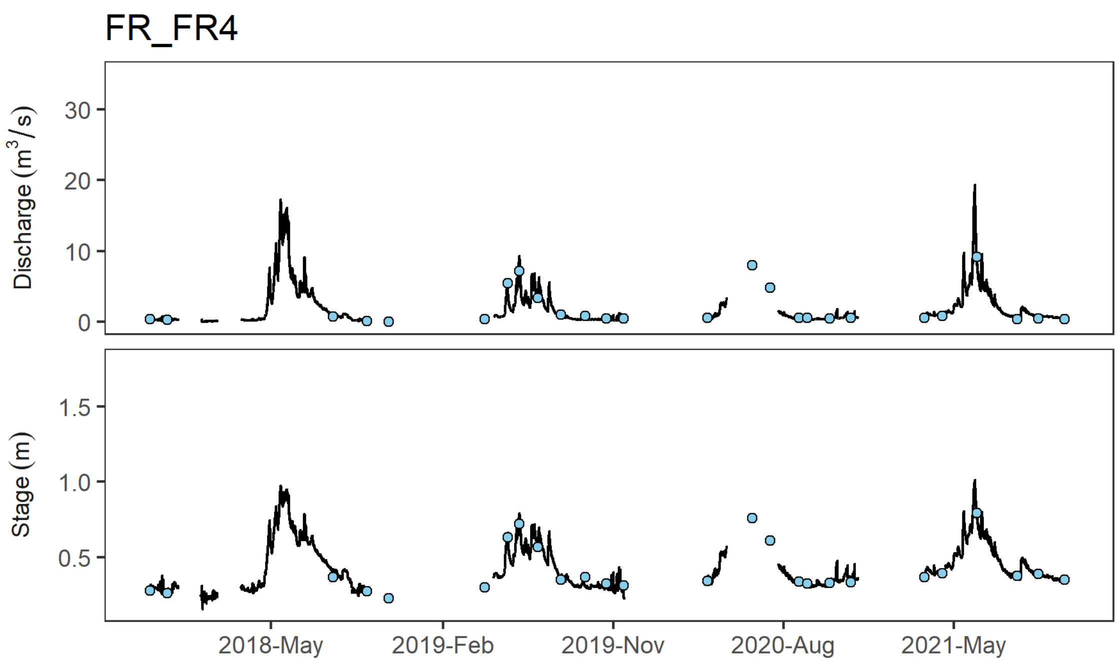

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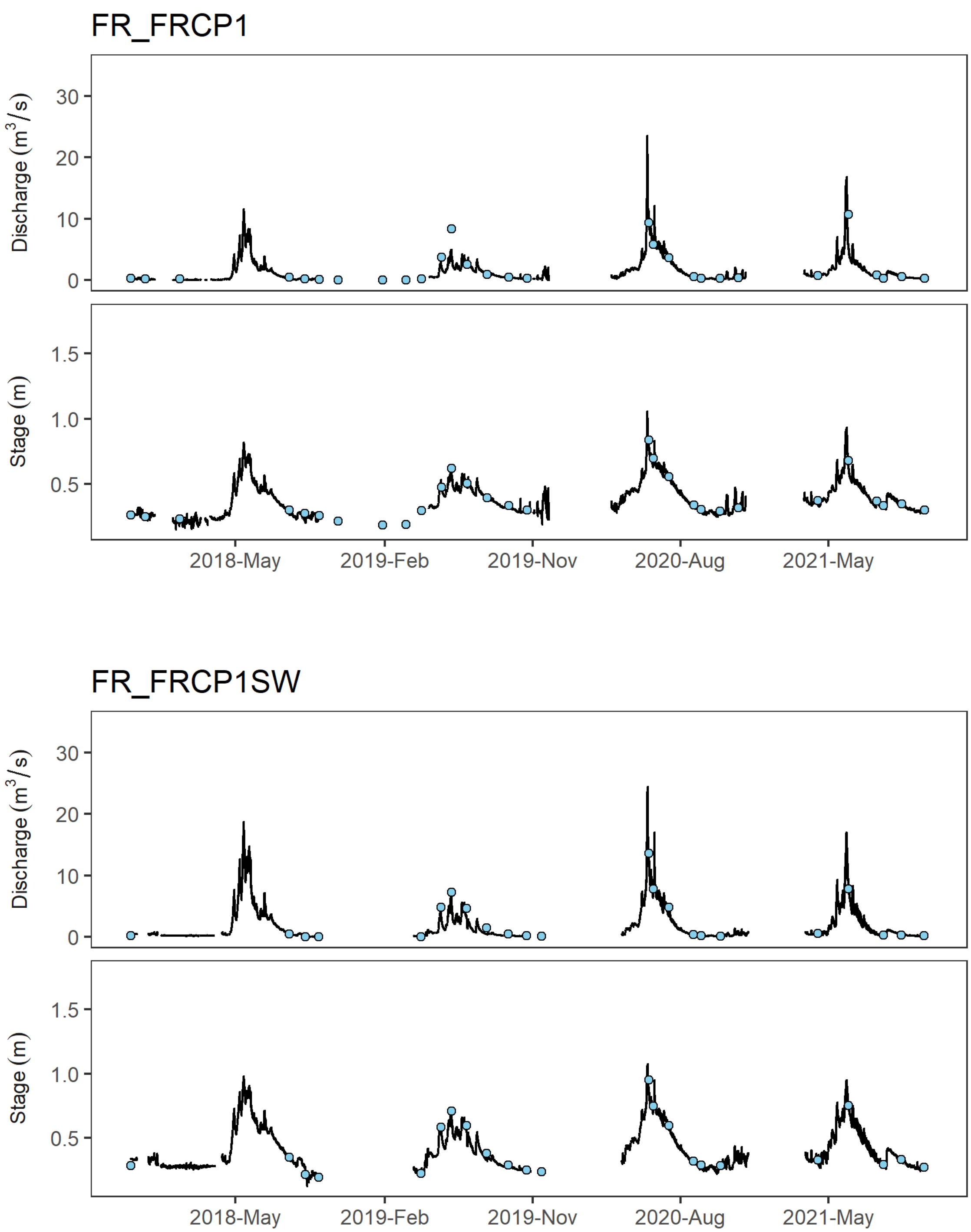

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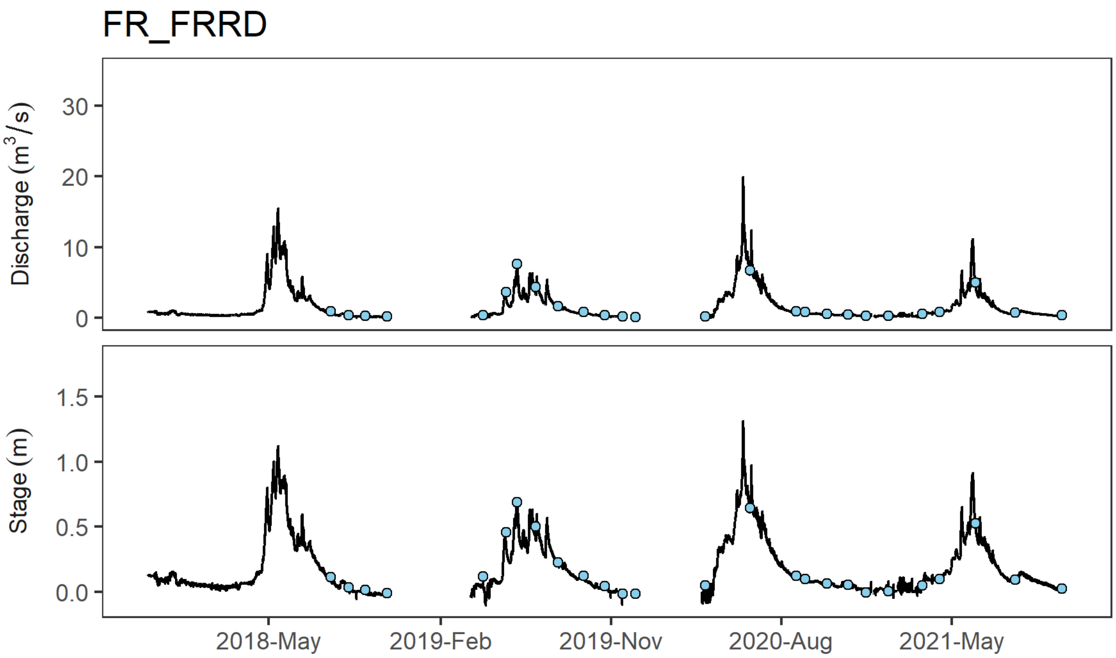

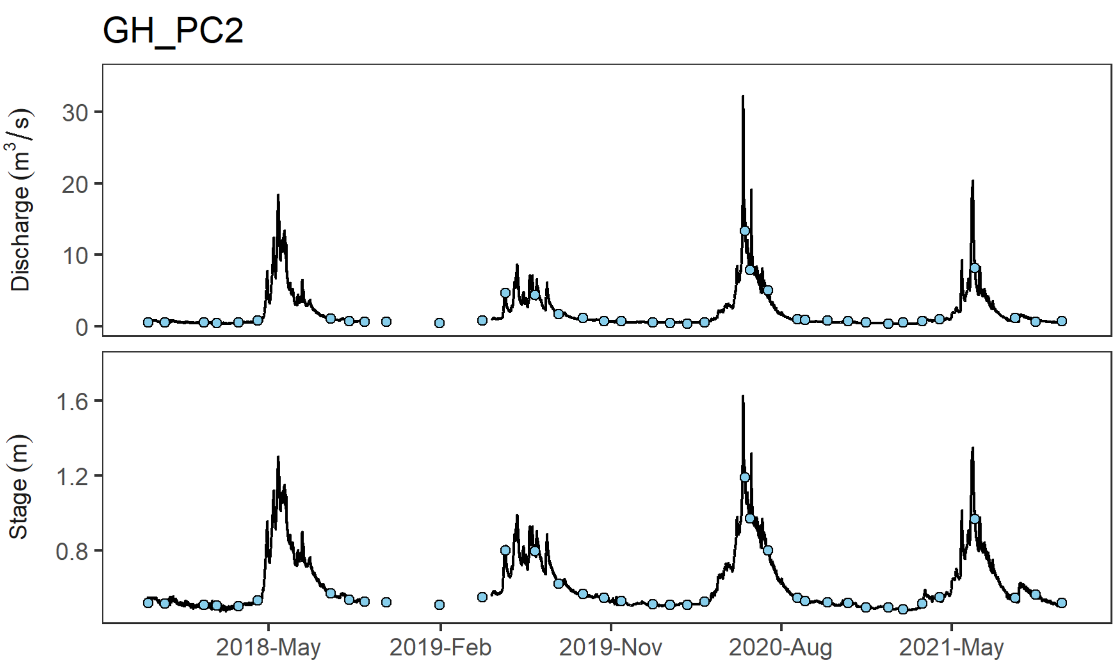

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APPENDIX D
SUBSTRATE QUALITY

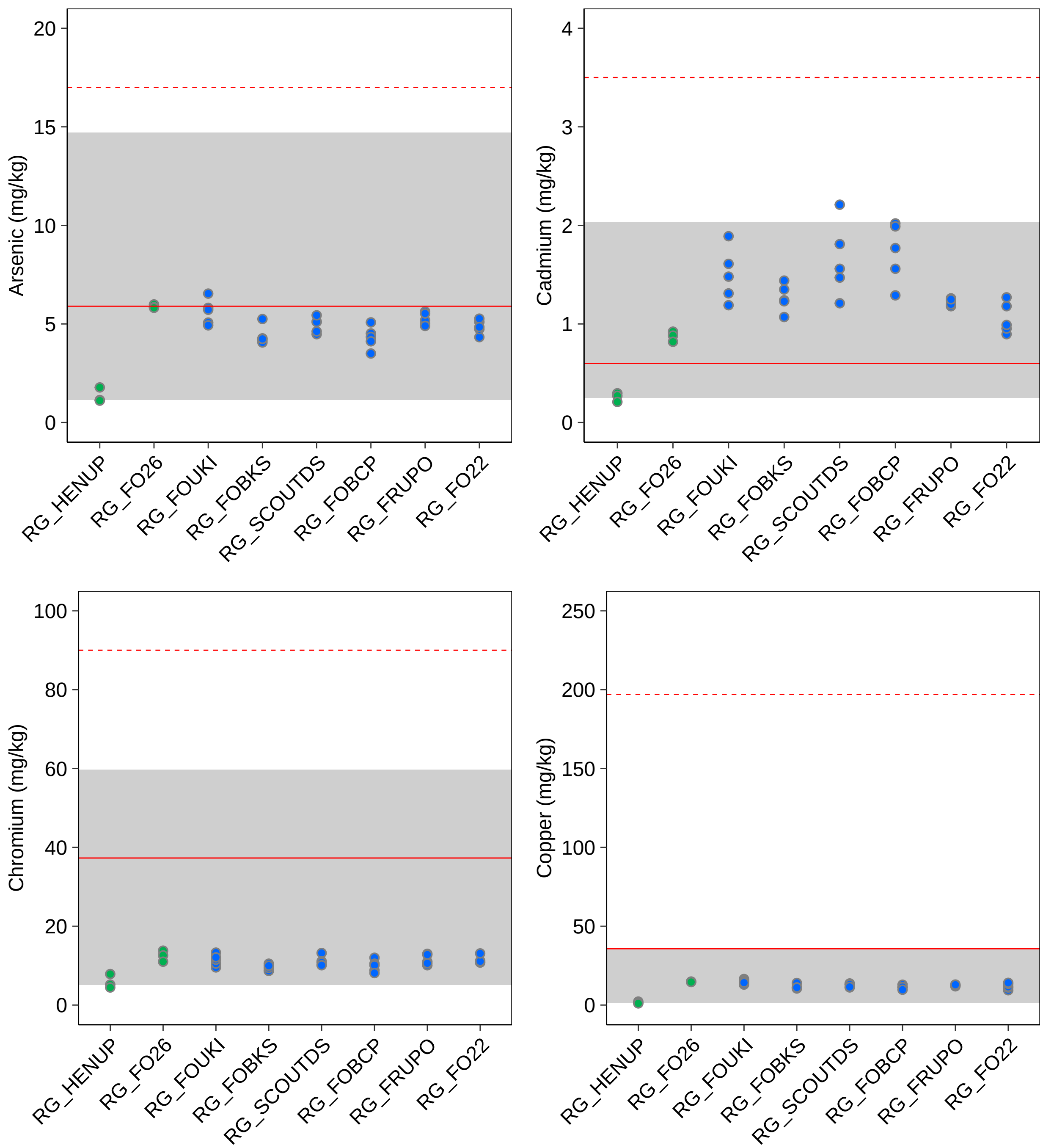
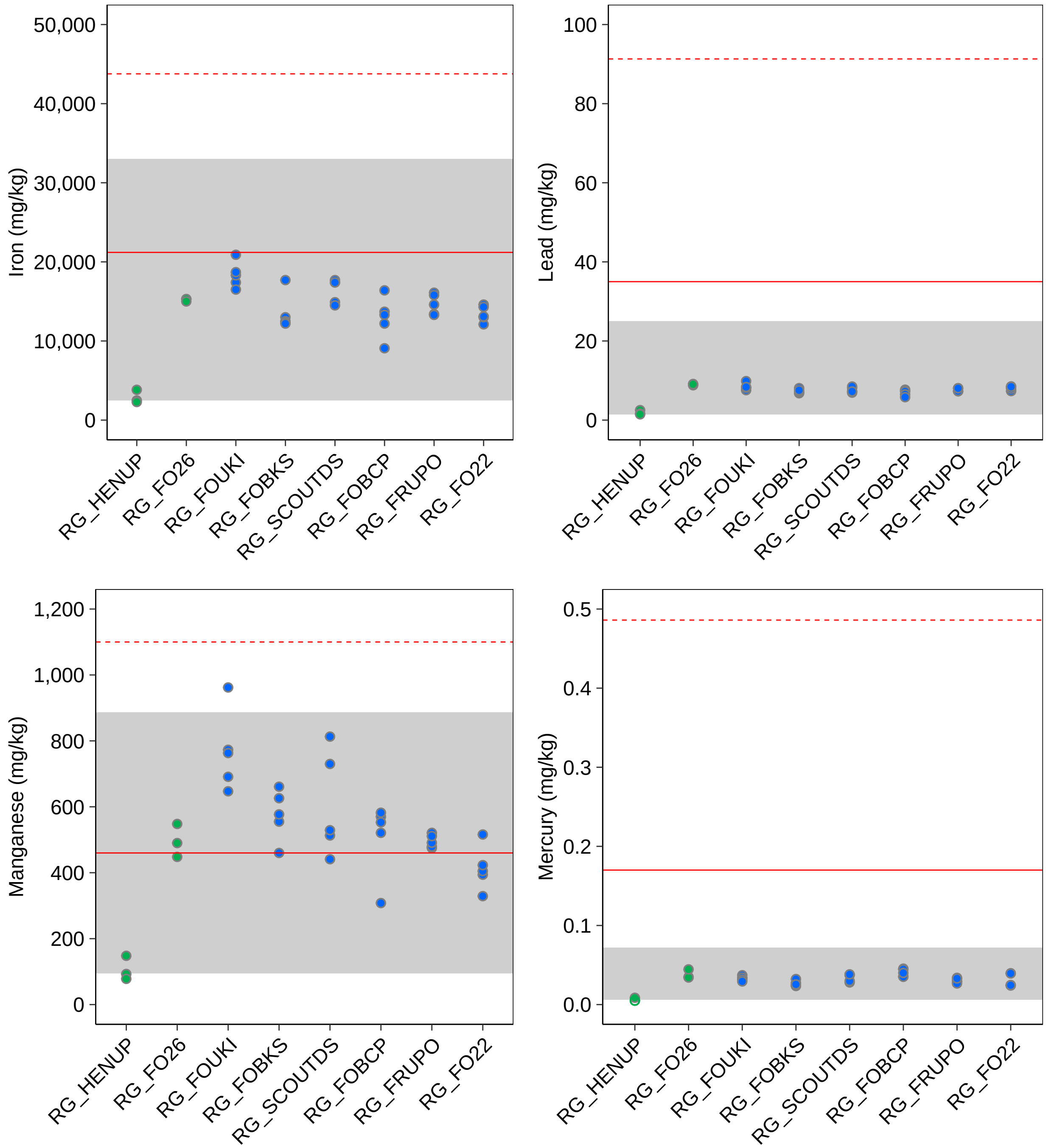


Figure D.1: Sediment Metal Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, September 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).



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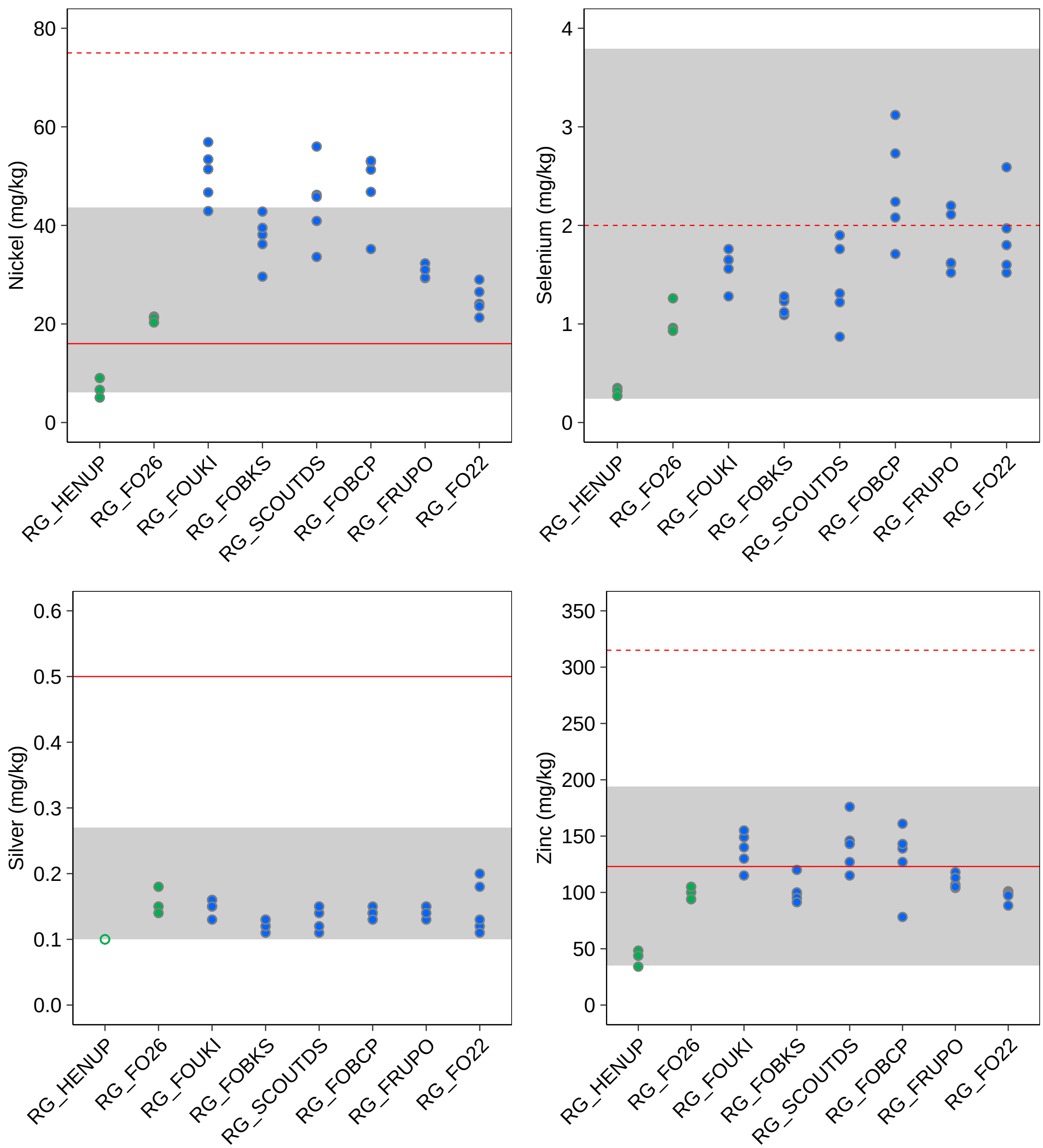

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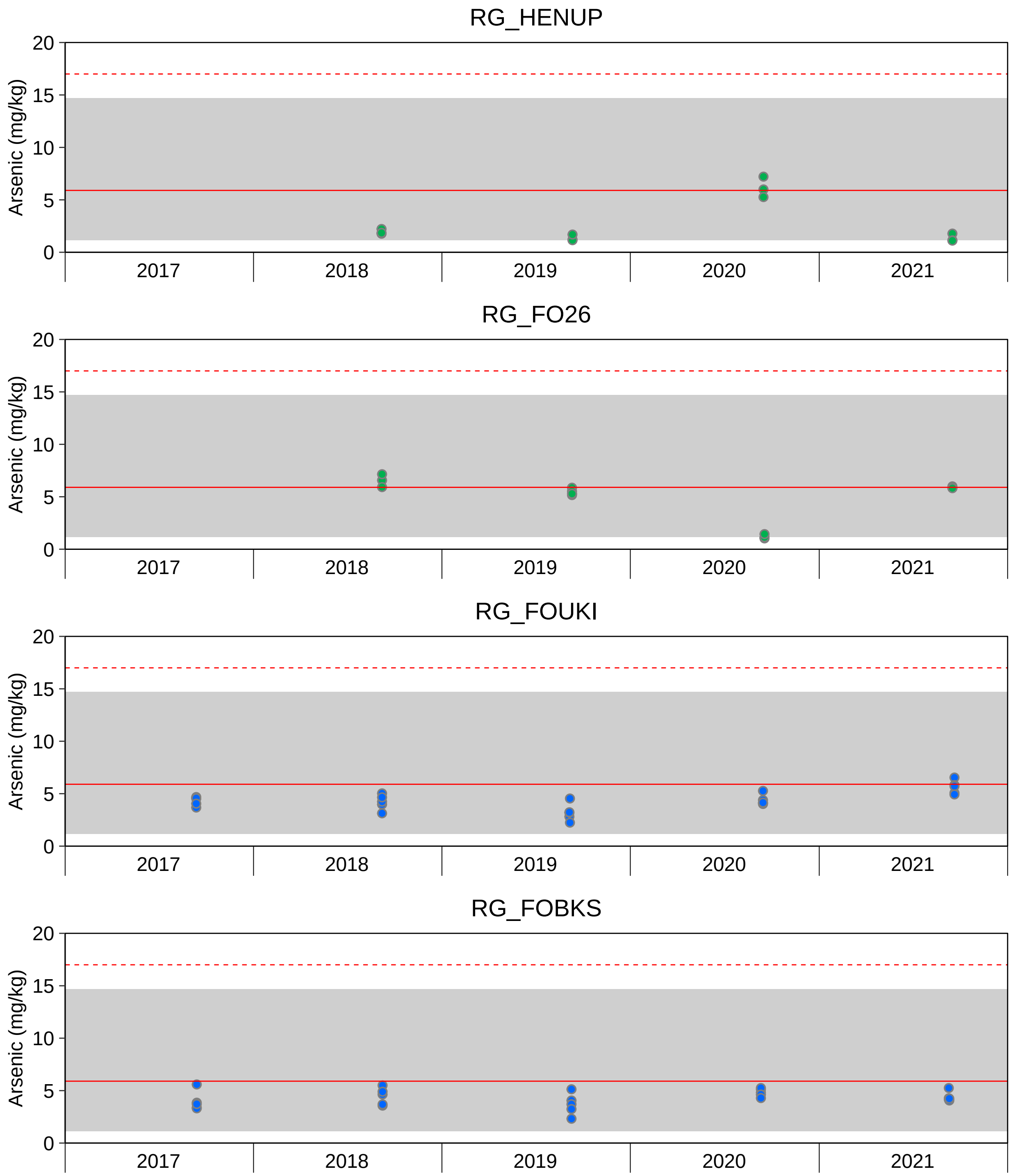

Figure D.2: Arsenic Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

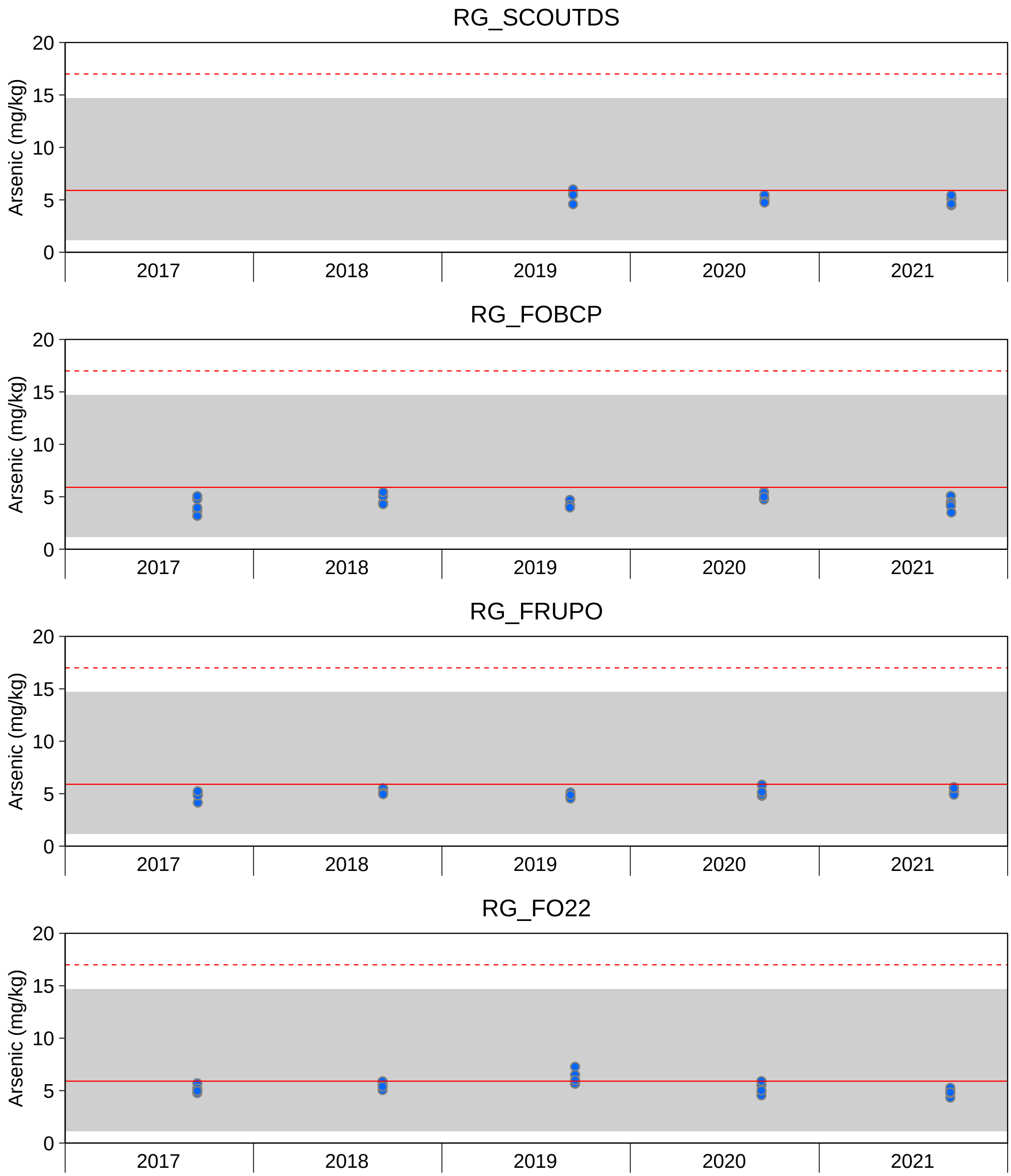

Figure D.2: Arsenic Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

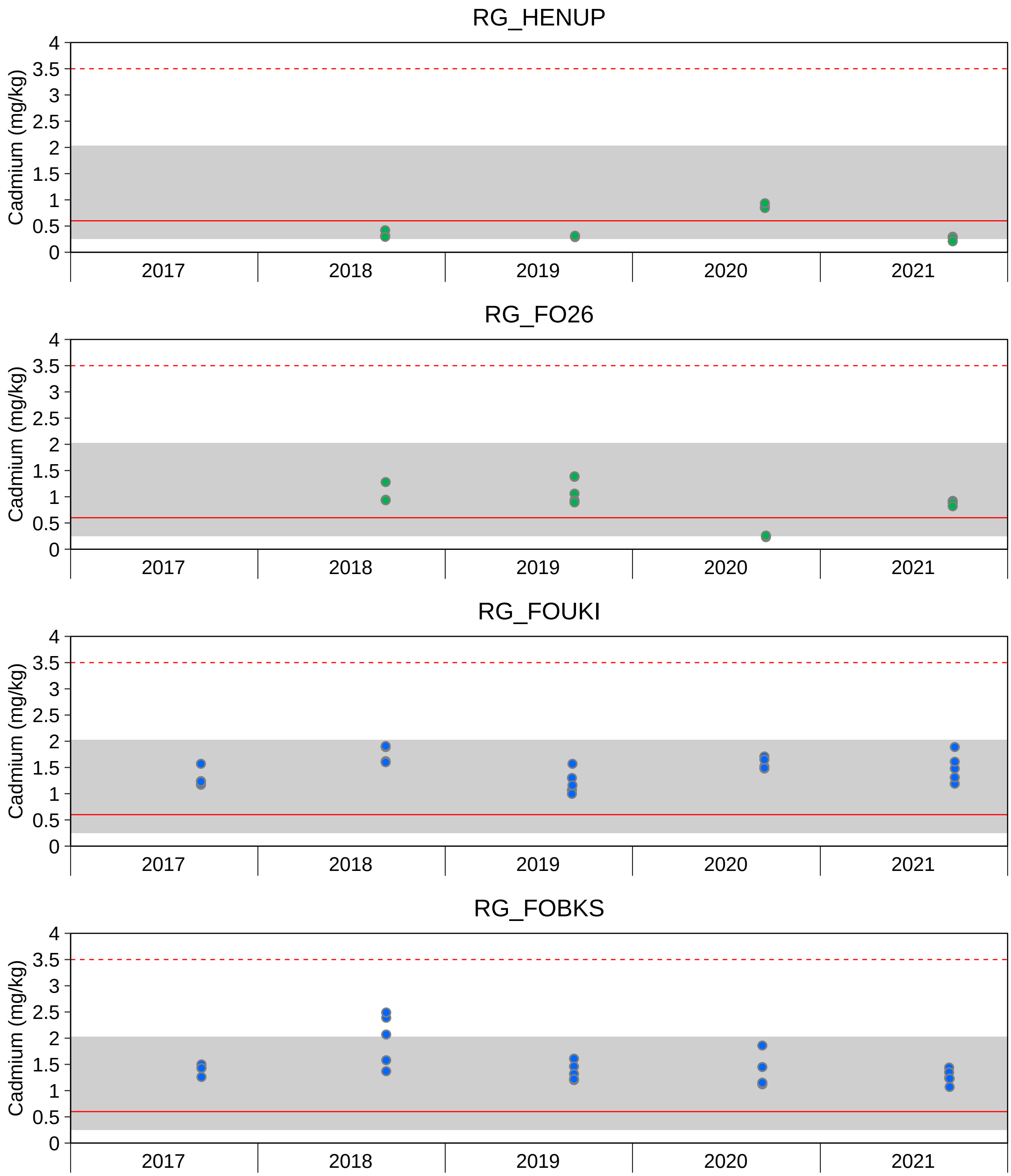

Figure D.3: Cadmium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

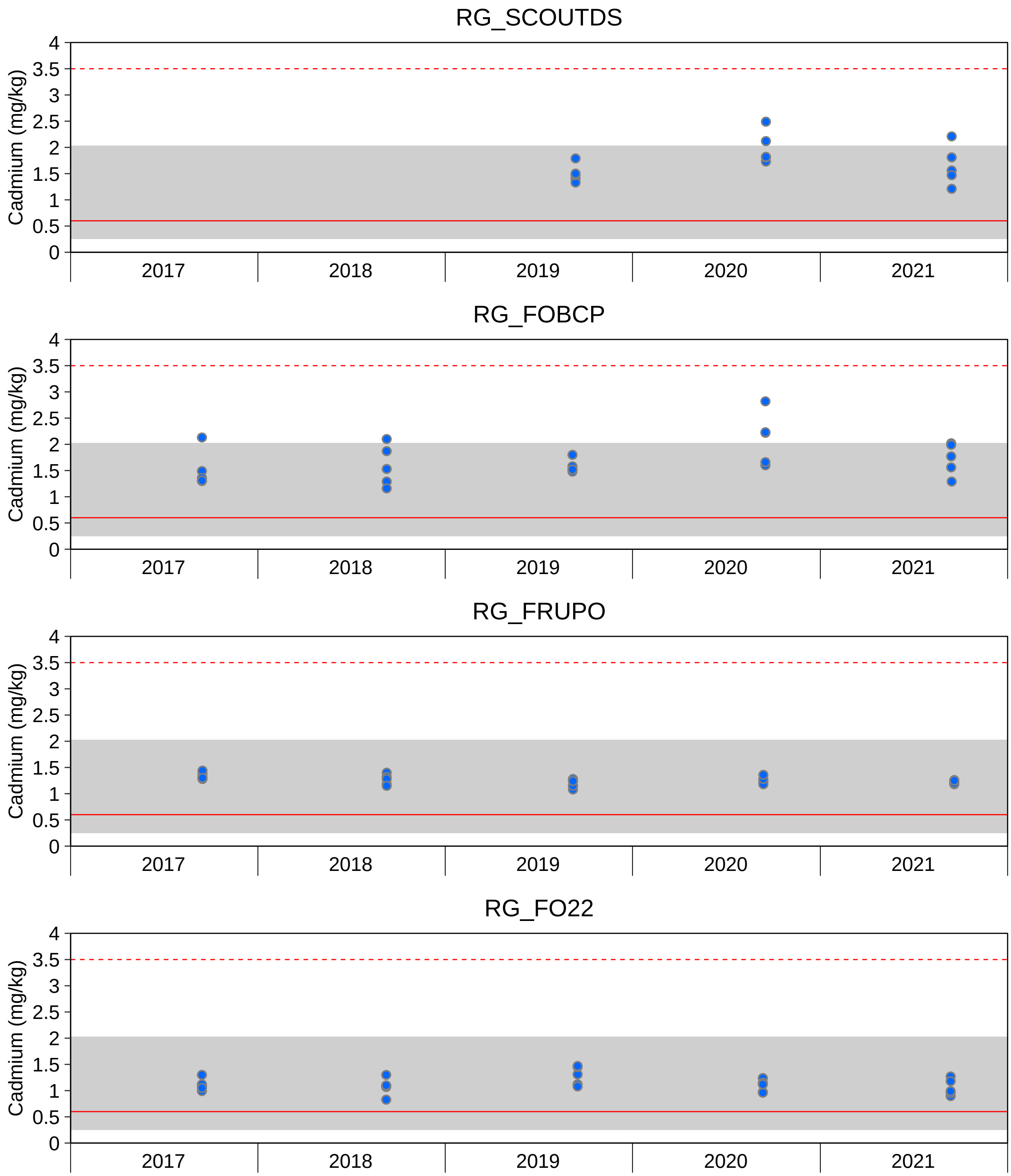

Figure D.3: Cadmium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

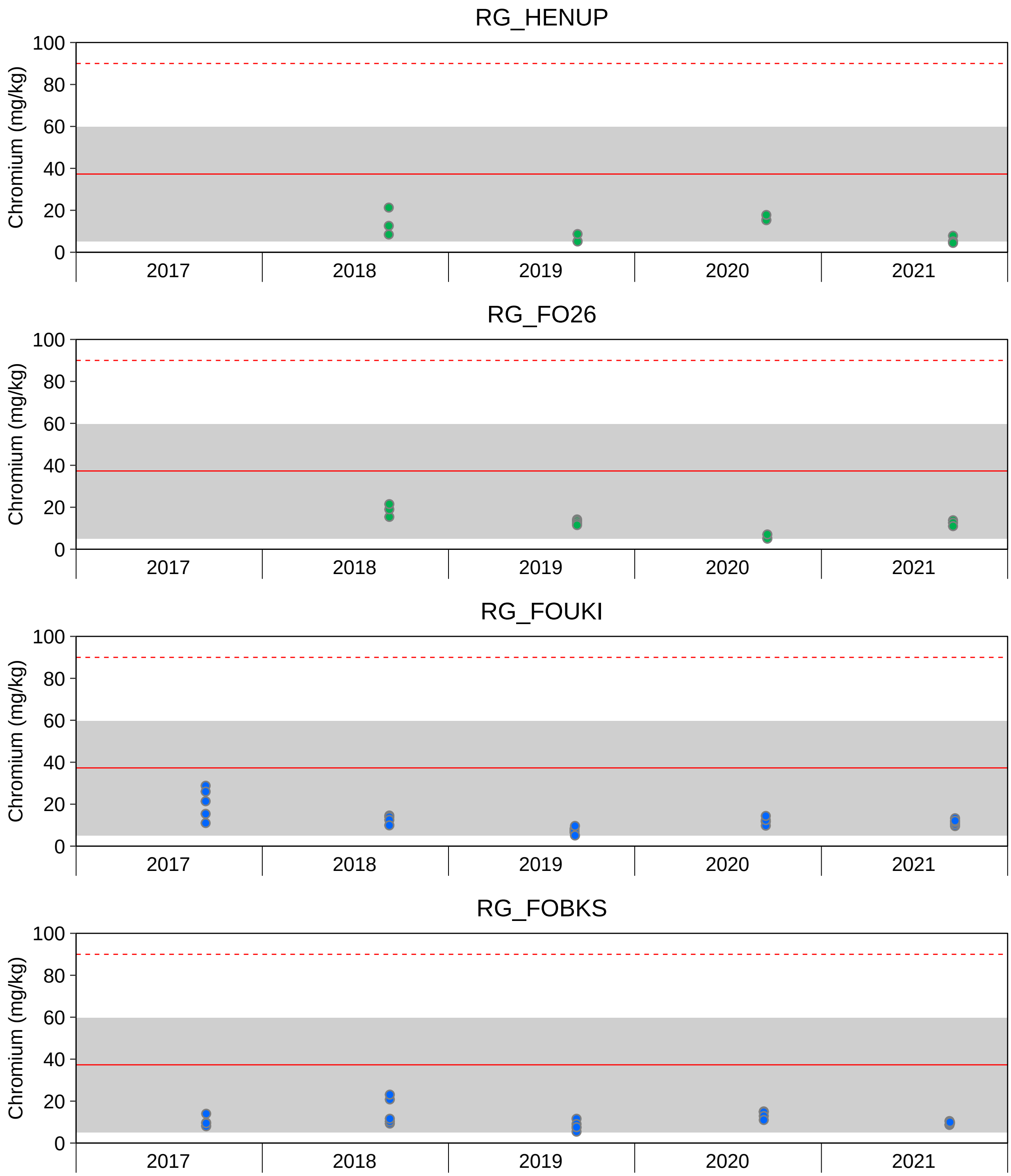

Figure D.4: Chromium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

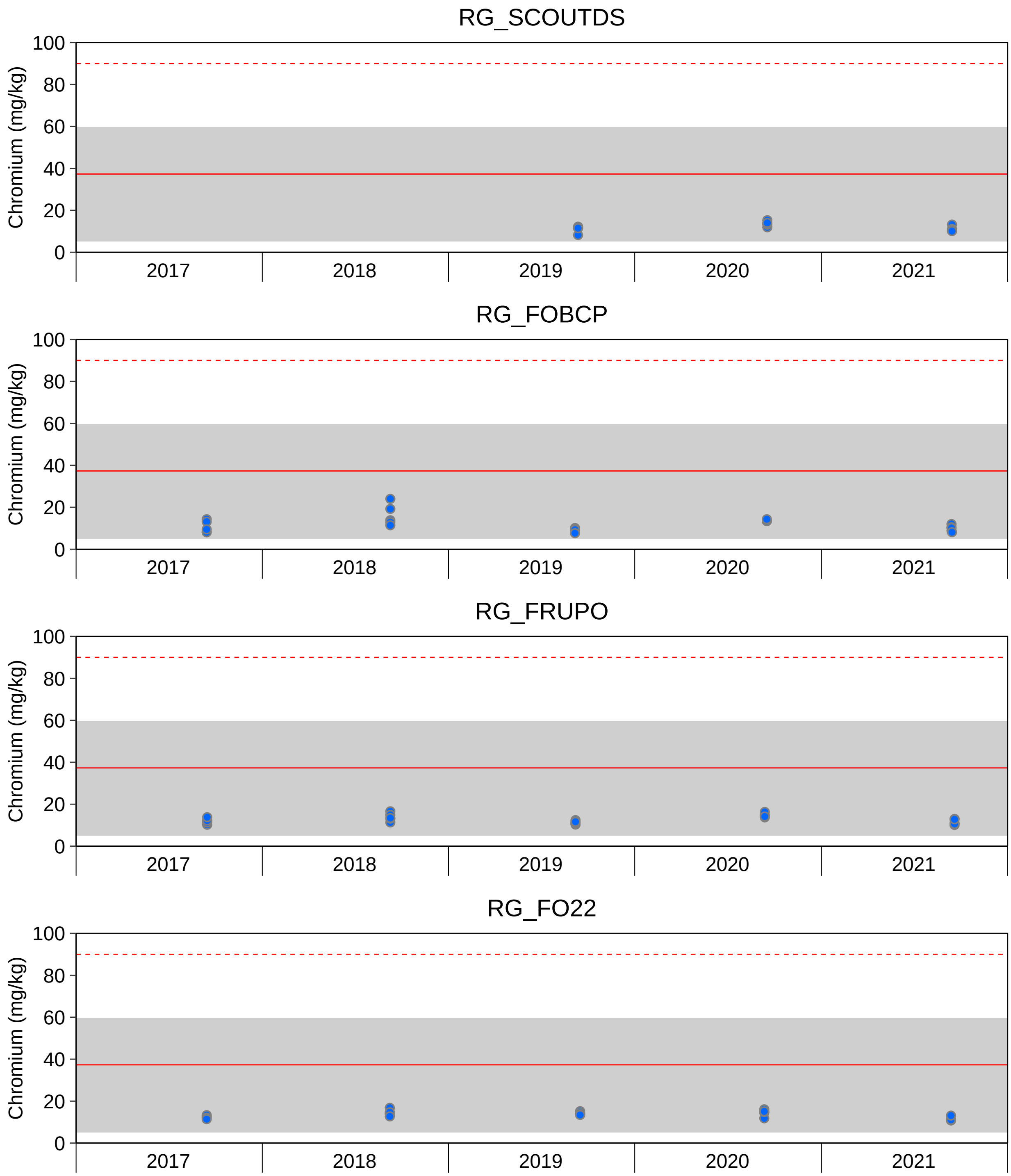

Figure D.4: Chromium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

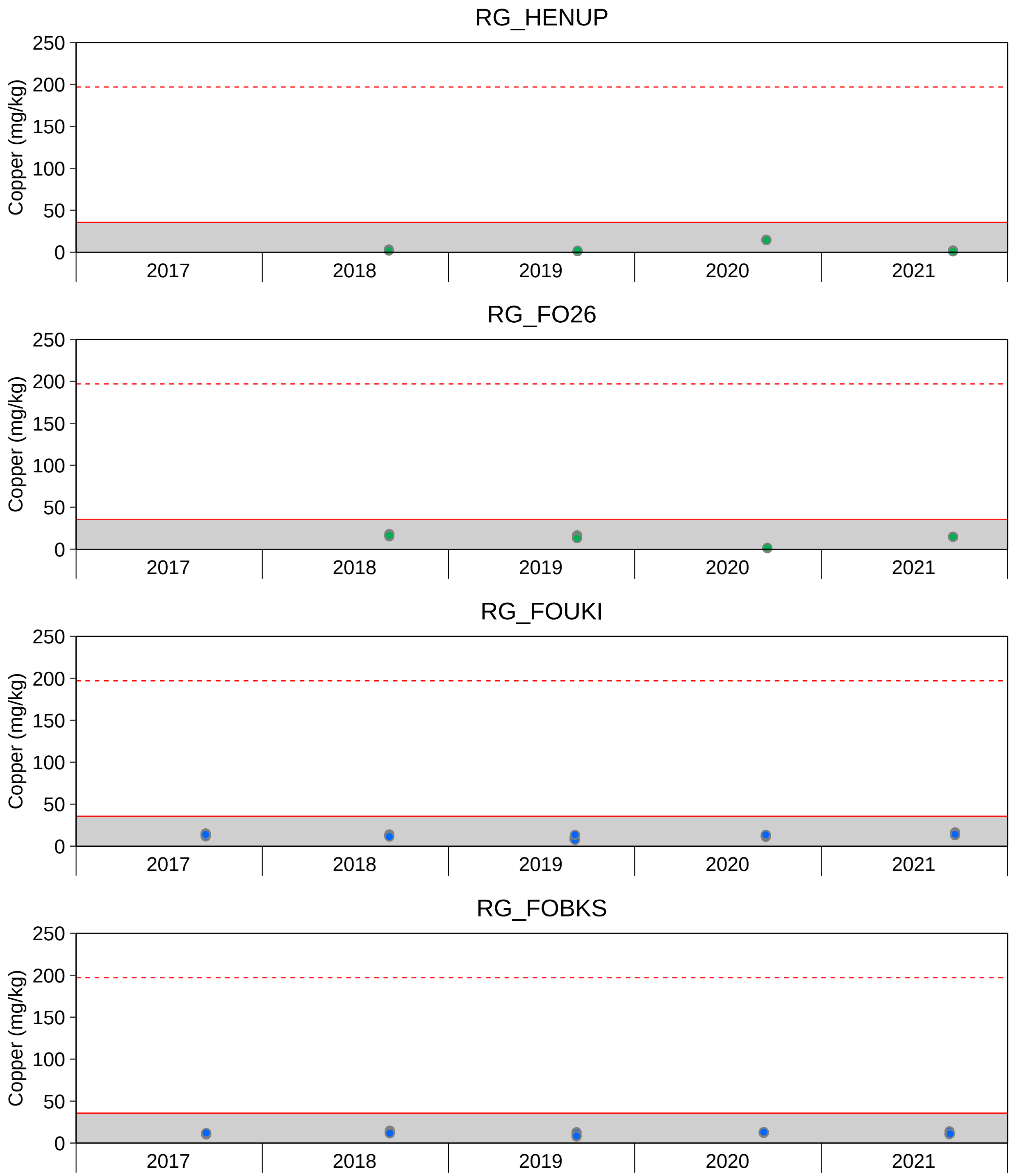

Figure D.5: Copper Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

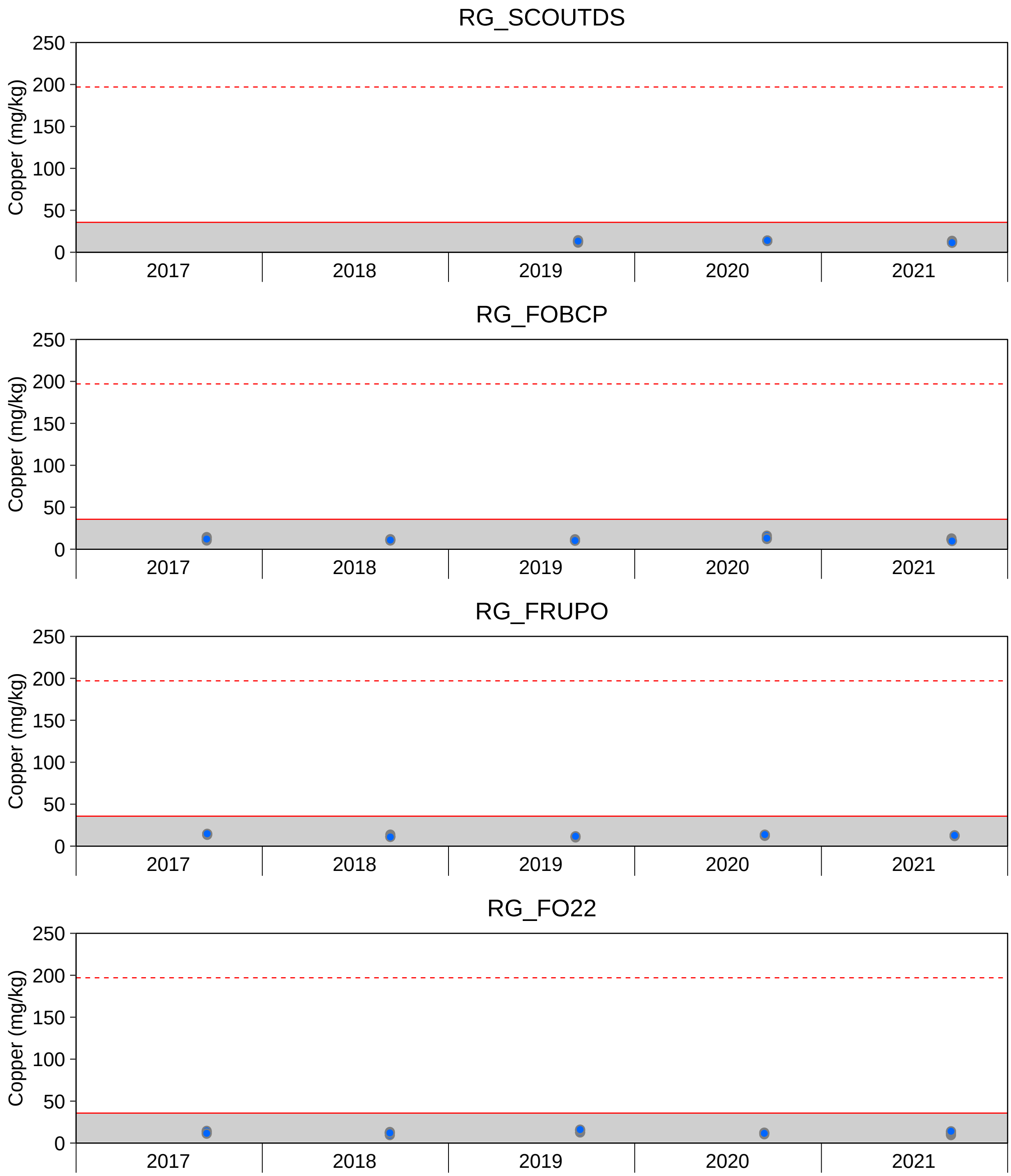

Figure D.5: Copper Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

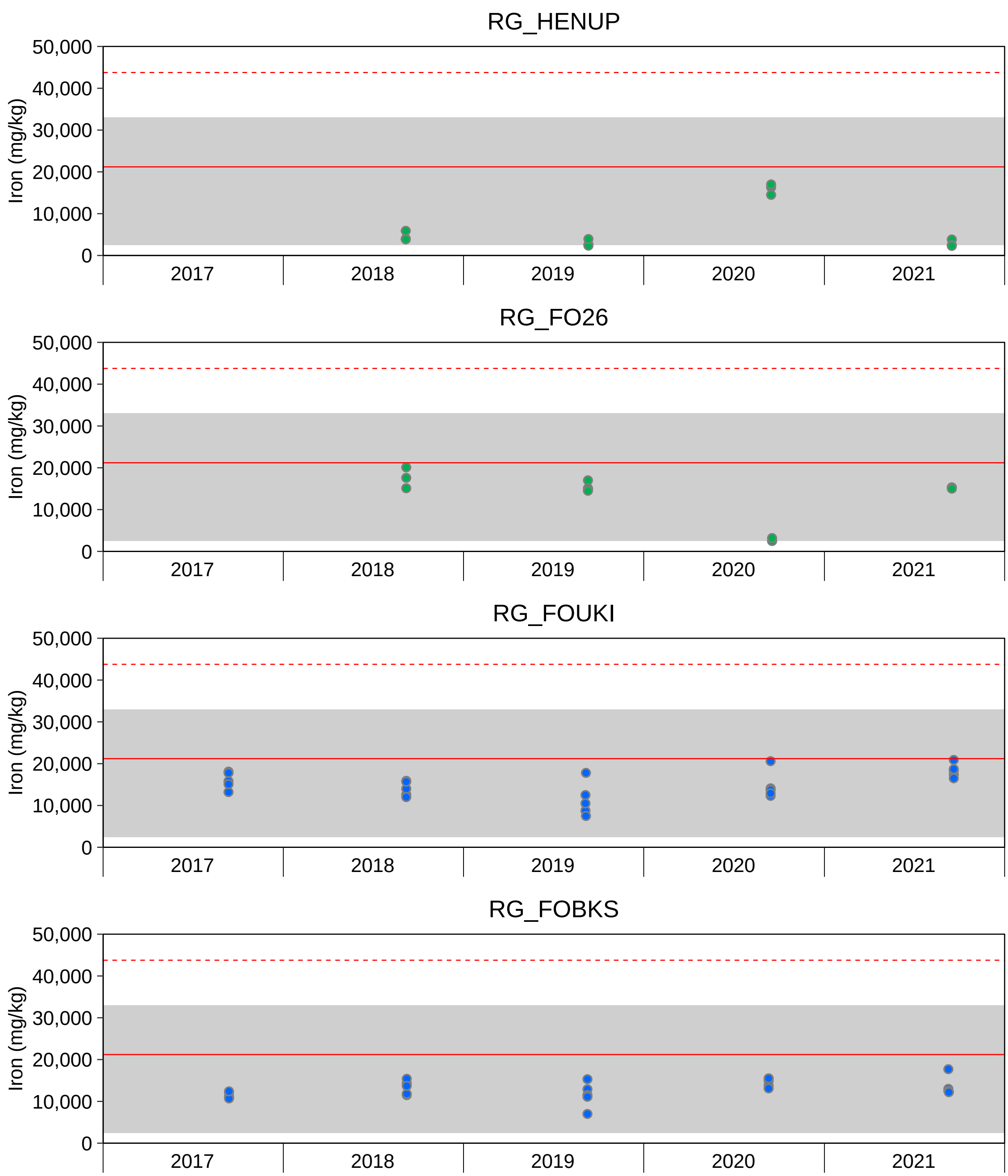

Figure D.6: Iron Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

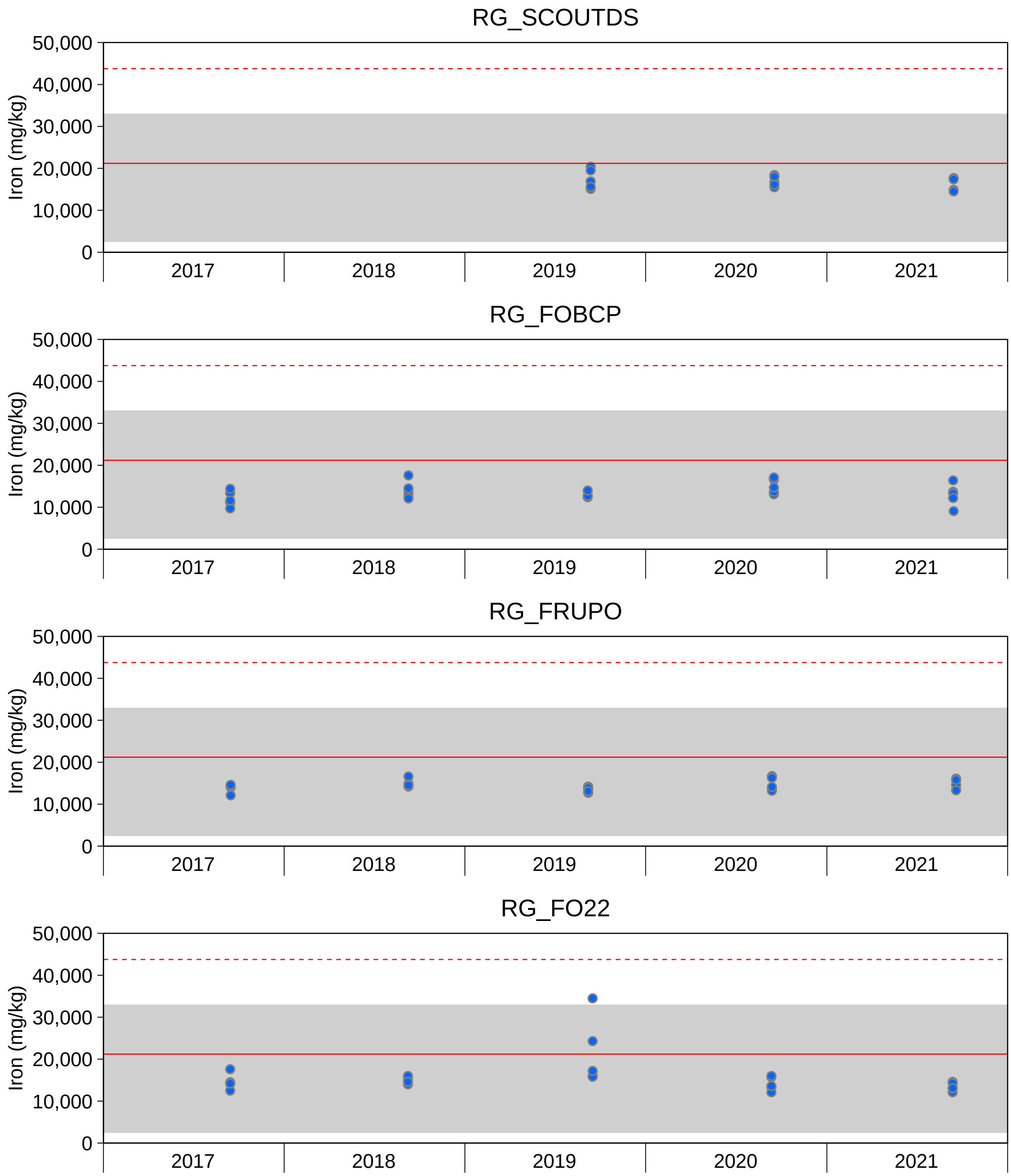

Figure D.6: Iron Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

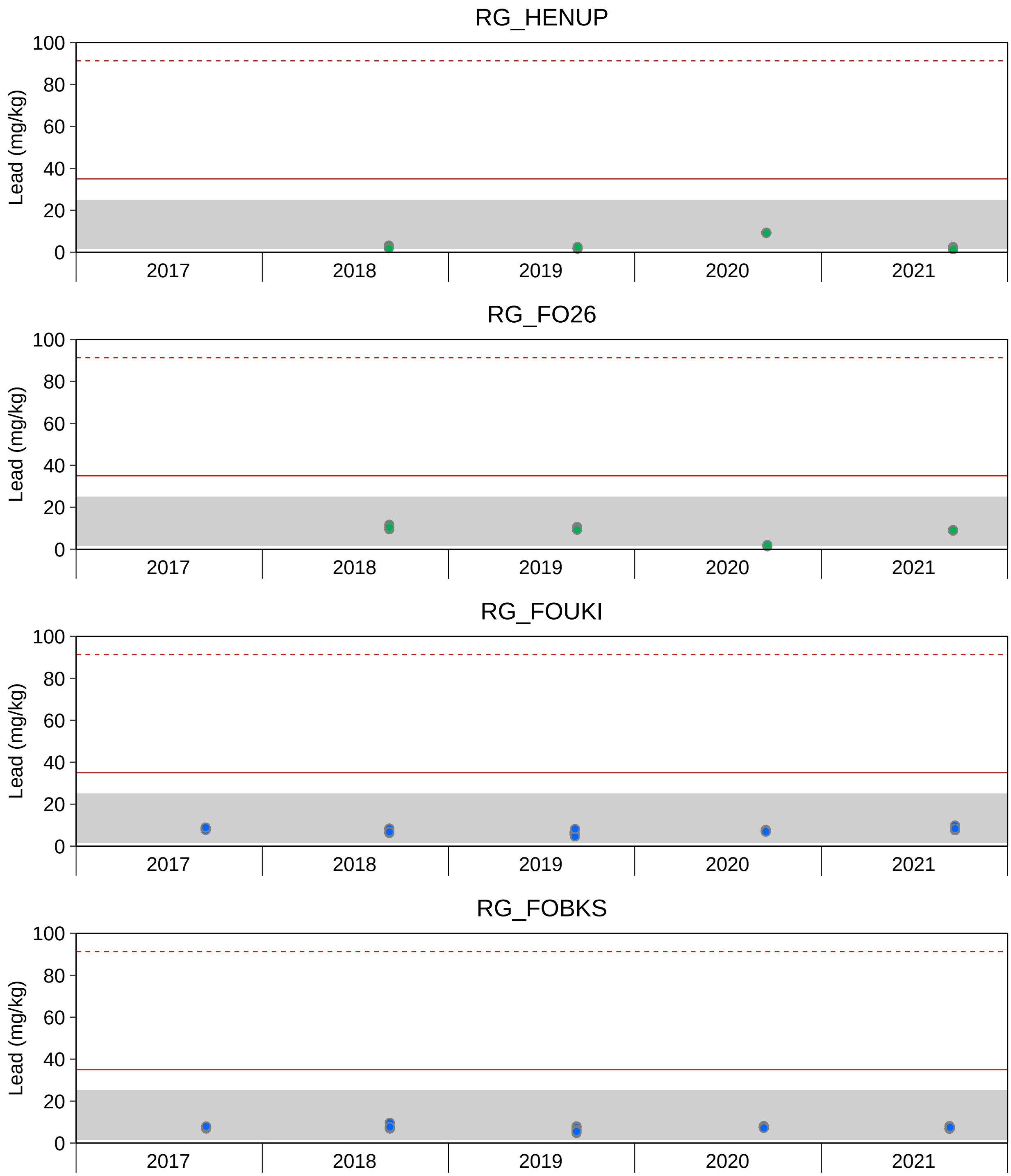

Figure D.7: Lead Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

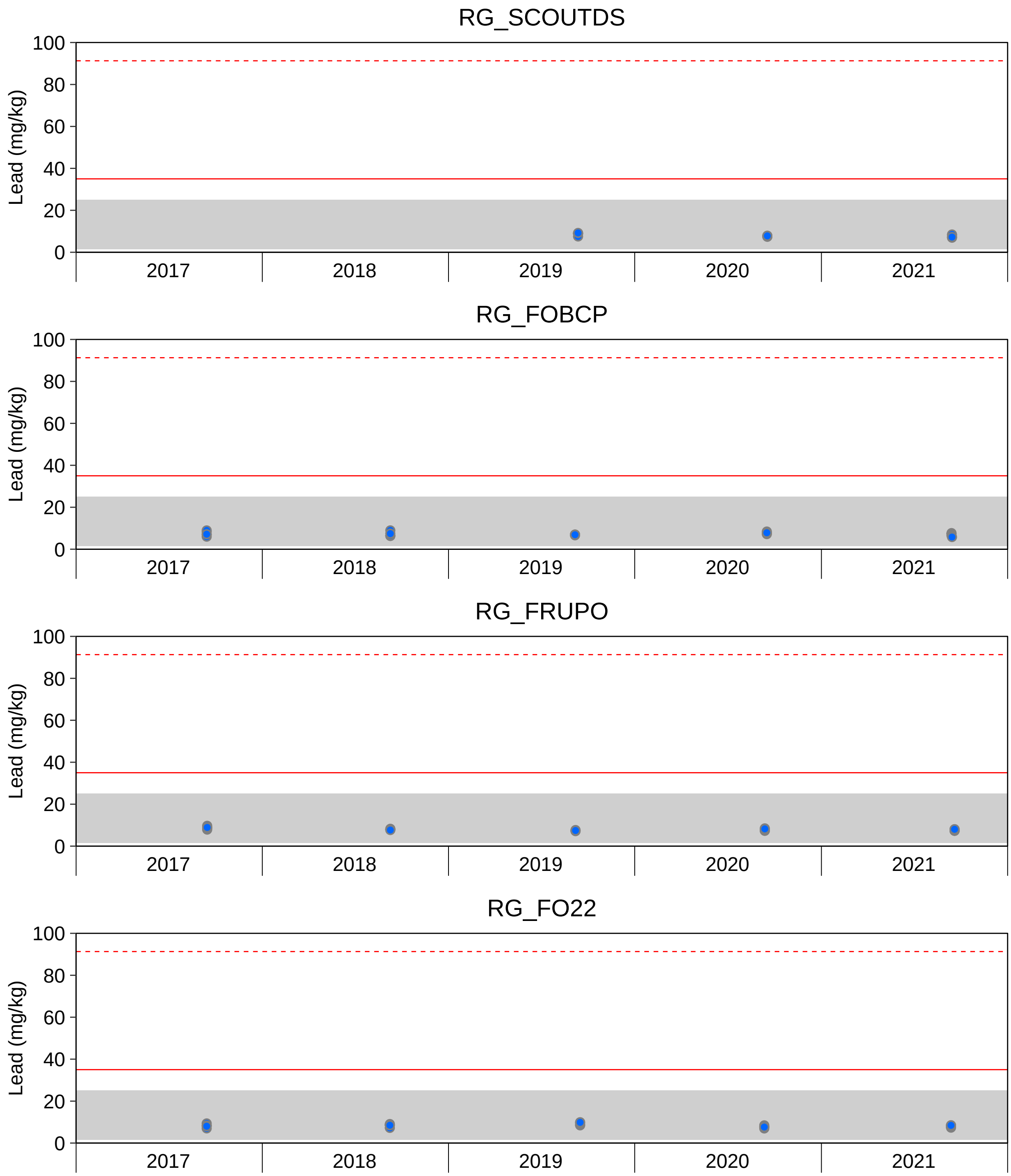

Figure D.7: Lead Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

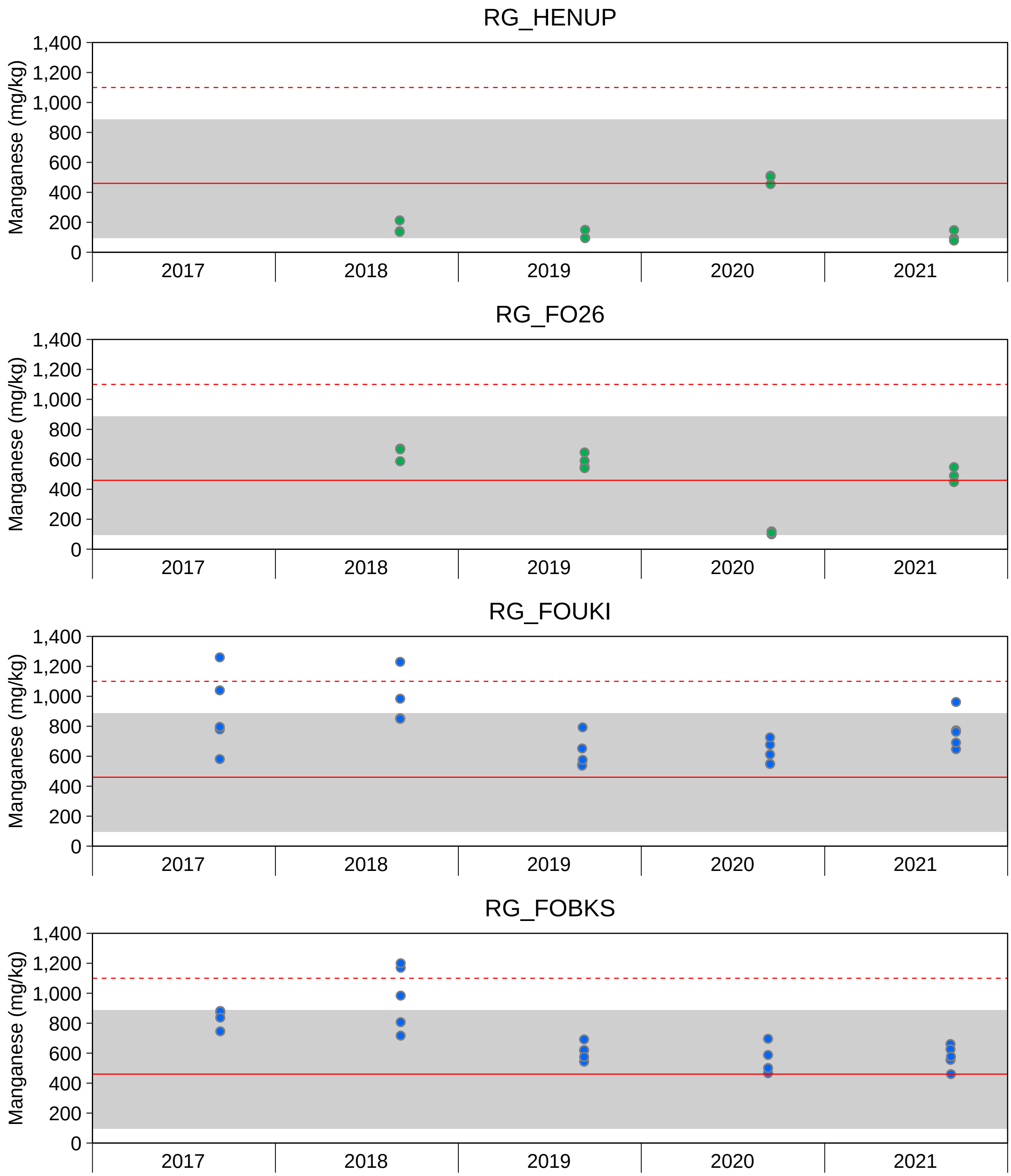

Figure D.8: Manganese Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

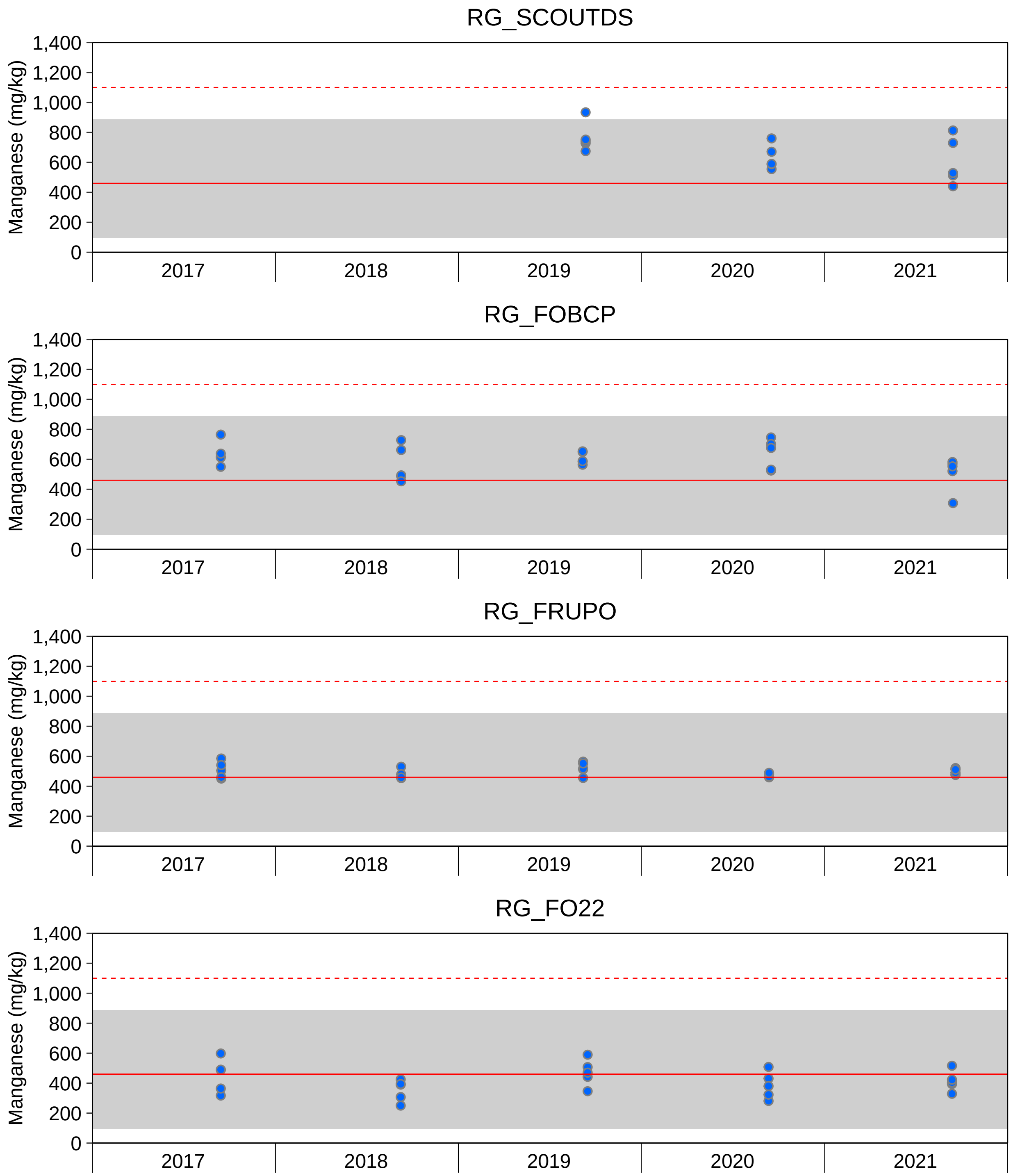

Figure D.8: Manganese Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

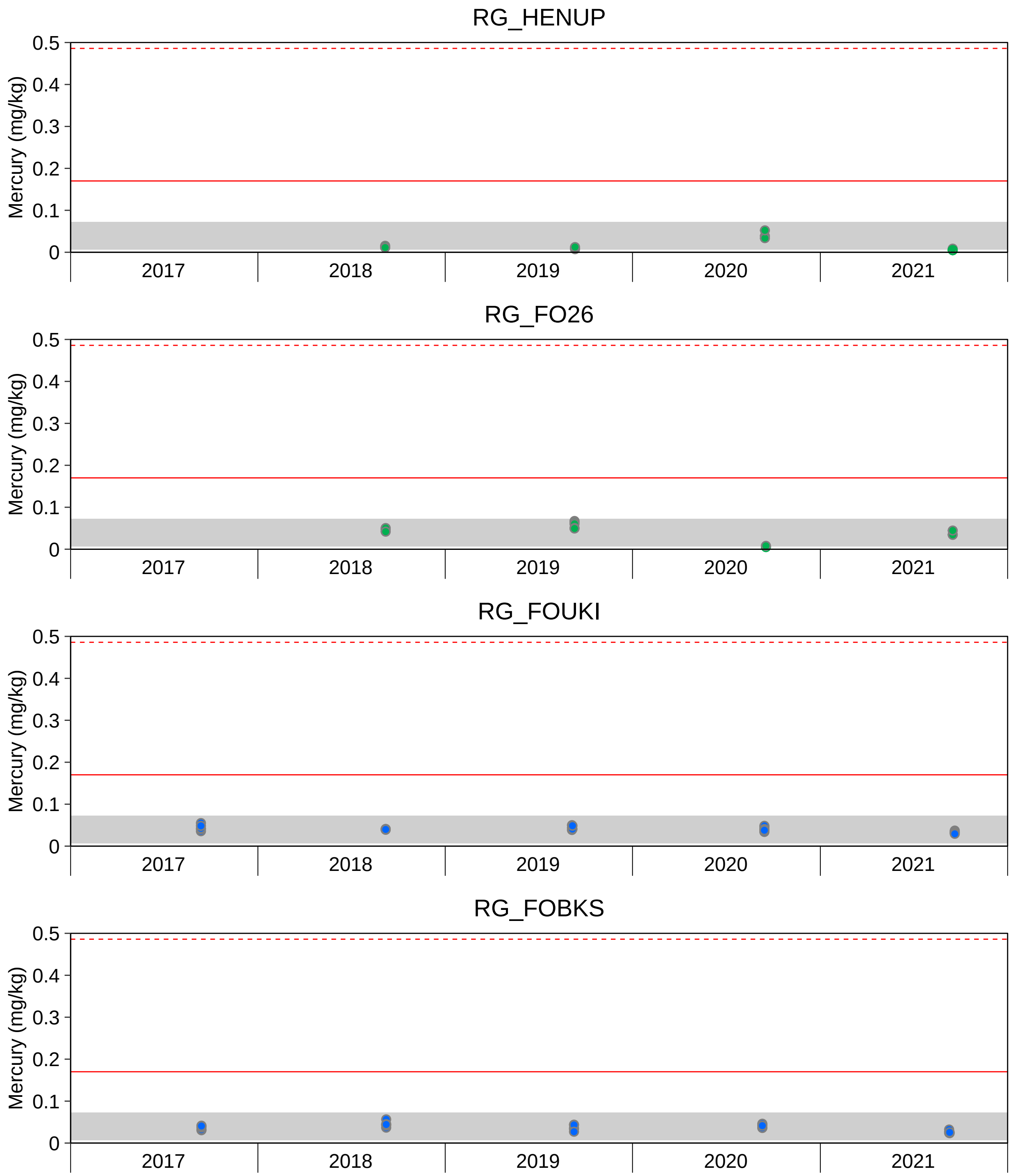

Figure D.9: Mercury Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

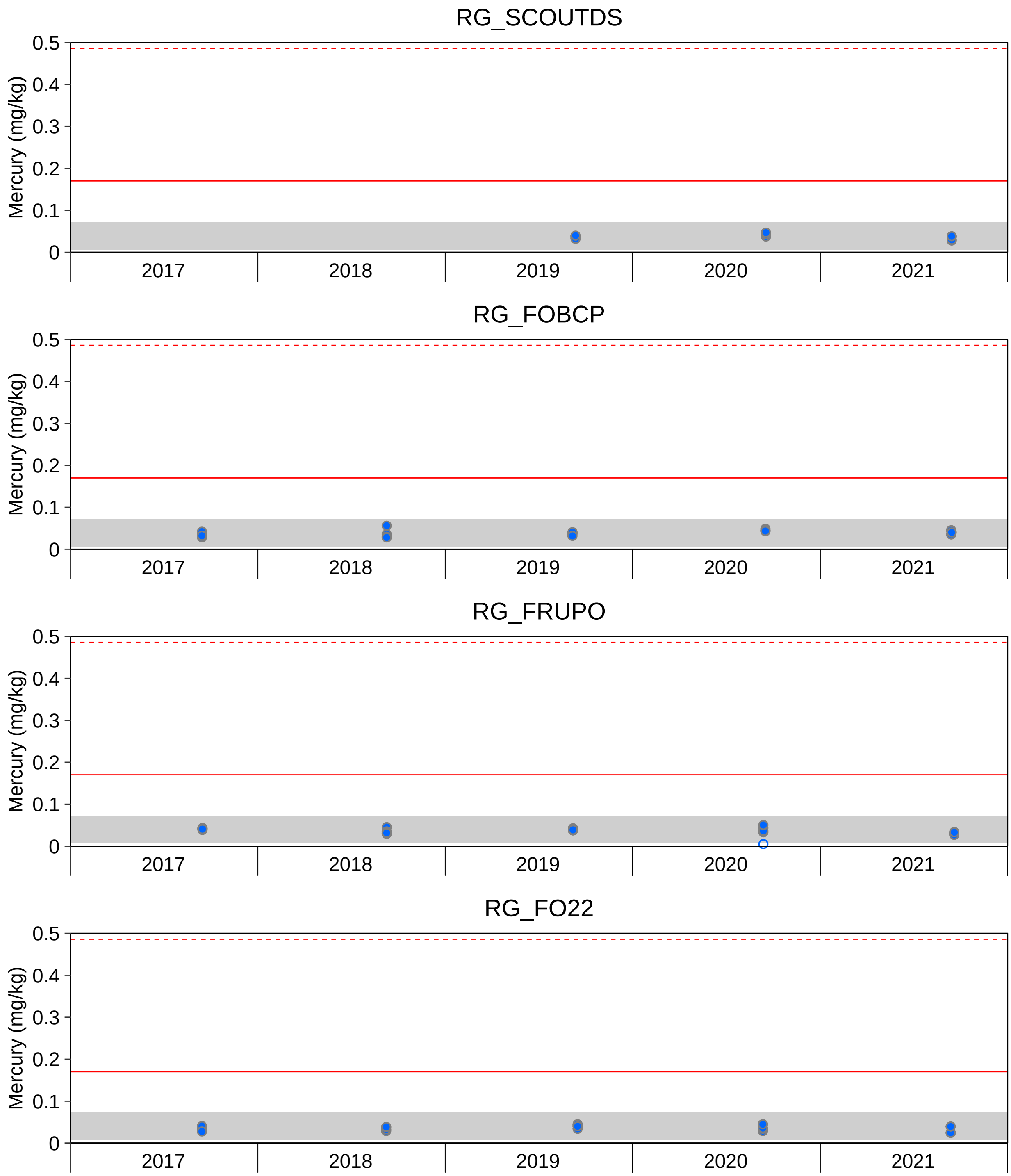

Figure D.9: Mercury Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

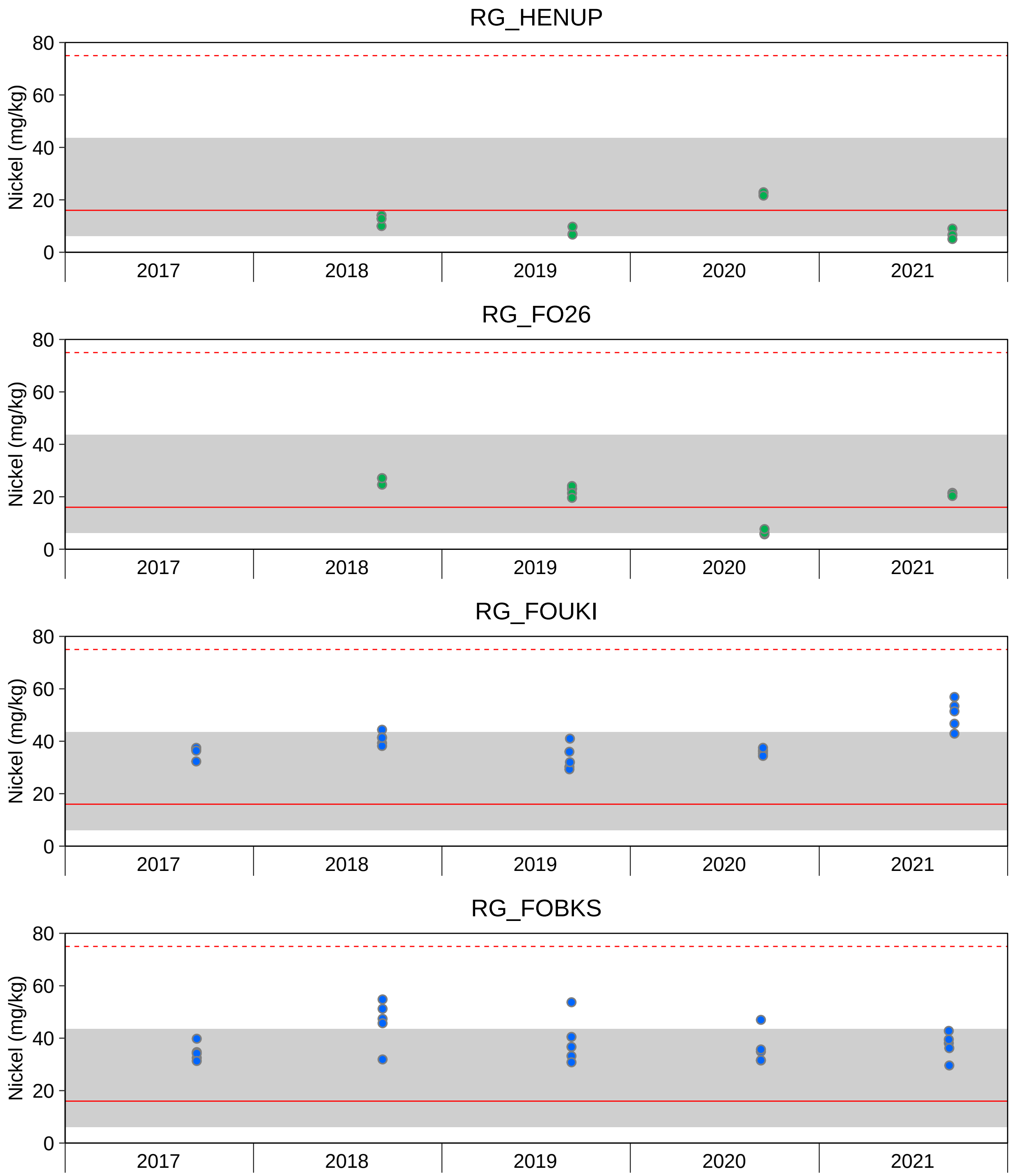

Figure D.10: Nickel Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

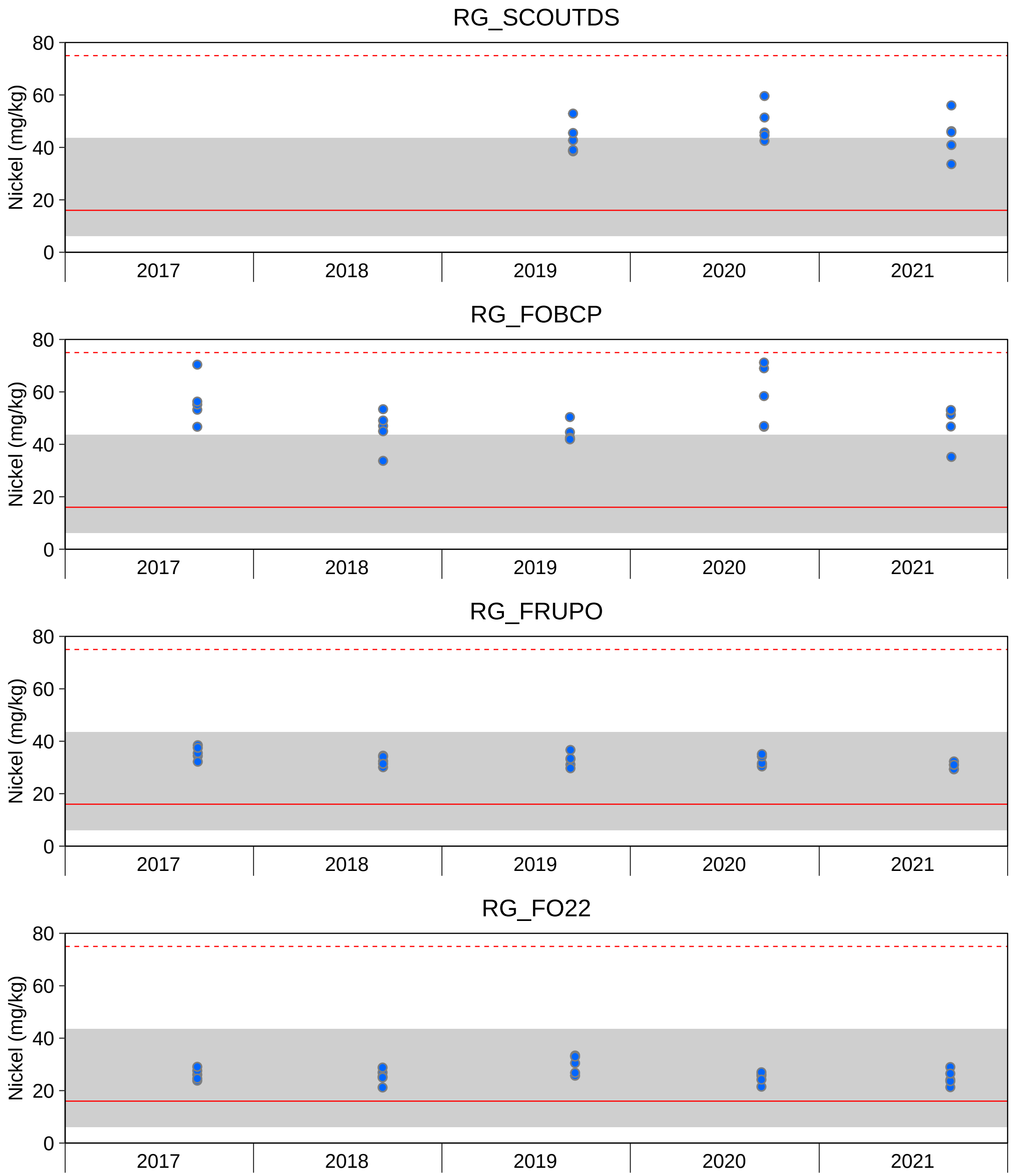

Figure D.10: Nickel Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

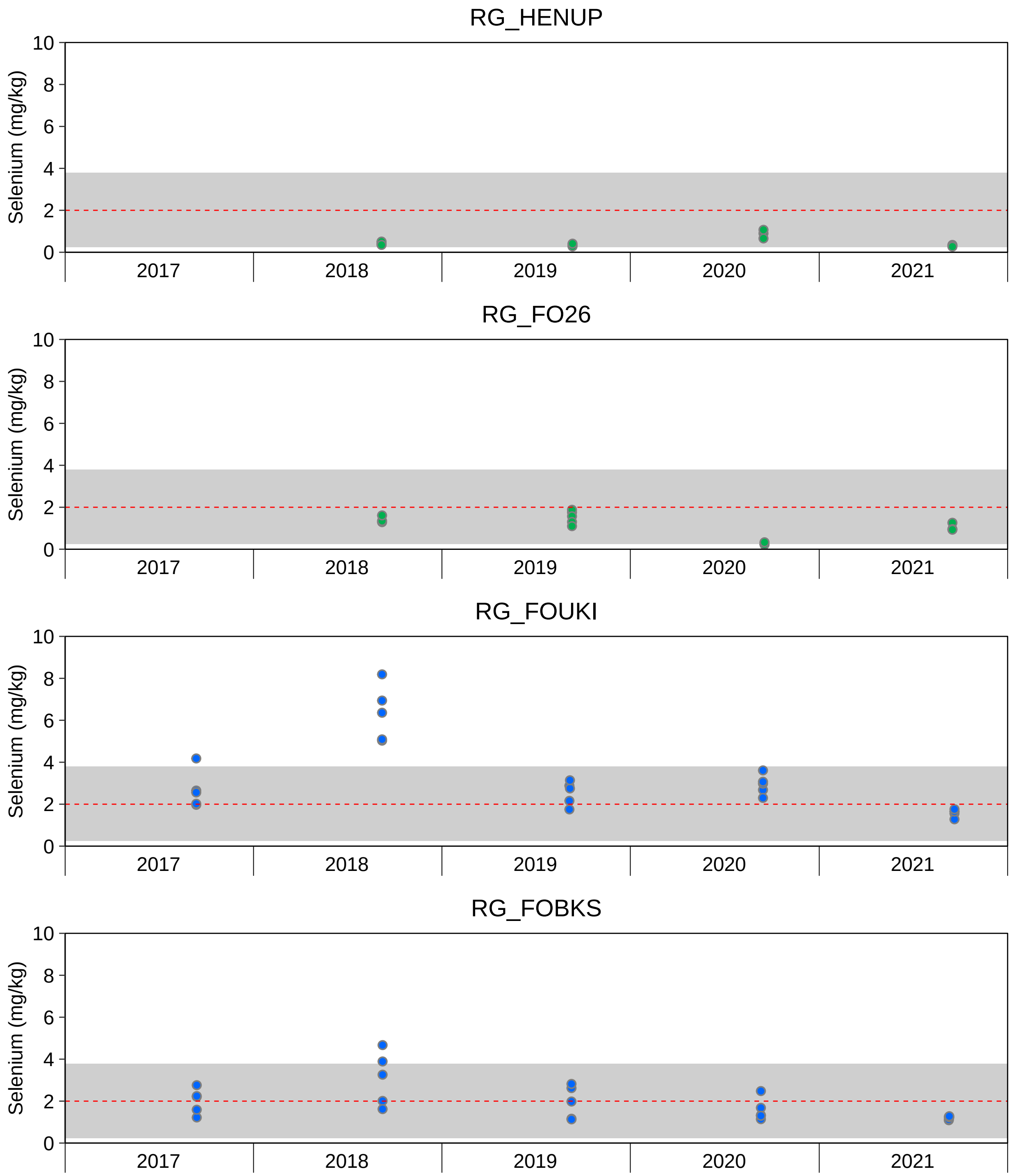

Figure D.11: Selenium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

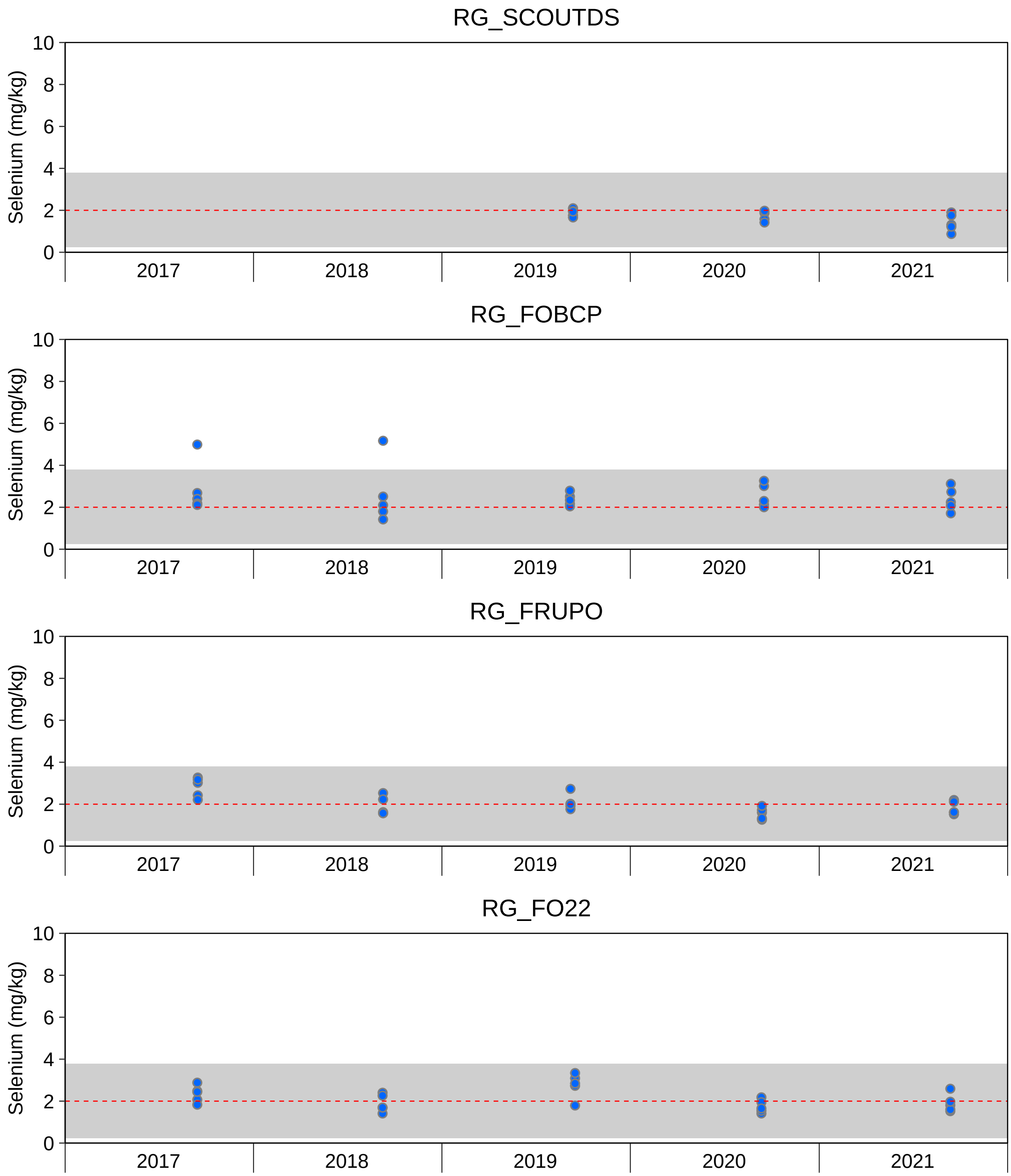

Figure D.11: Selenium Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

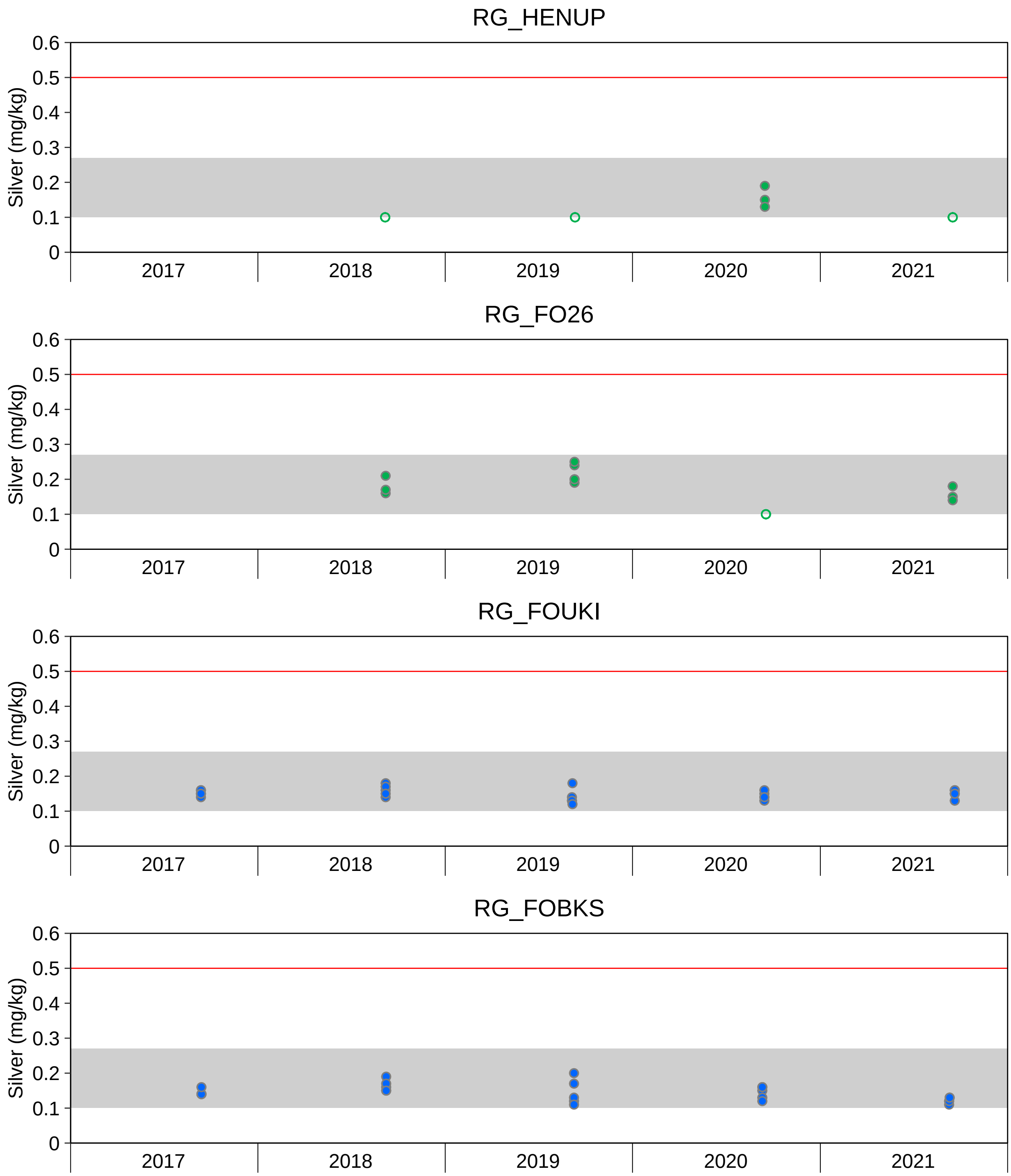

Figure D.12: Silver Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

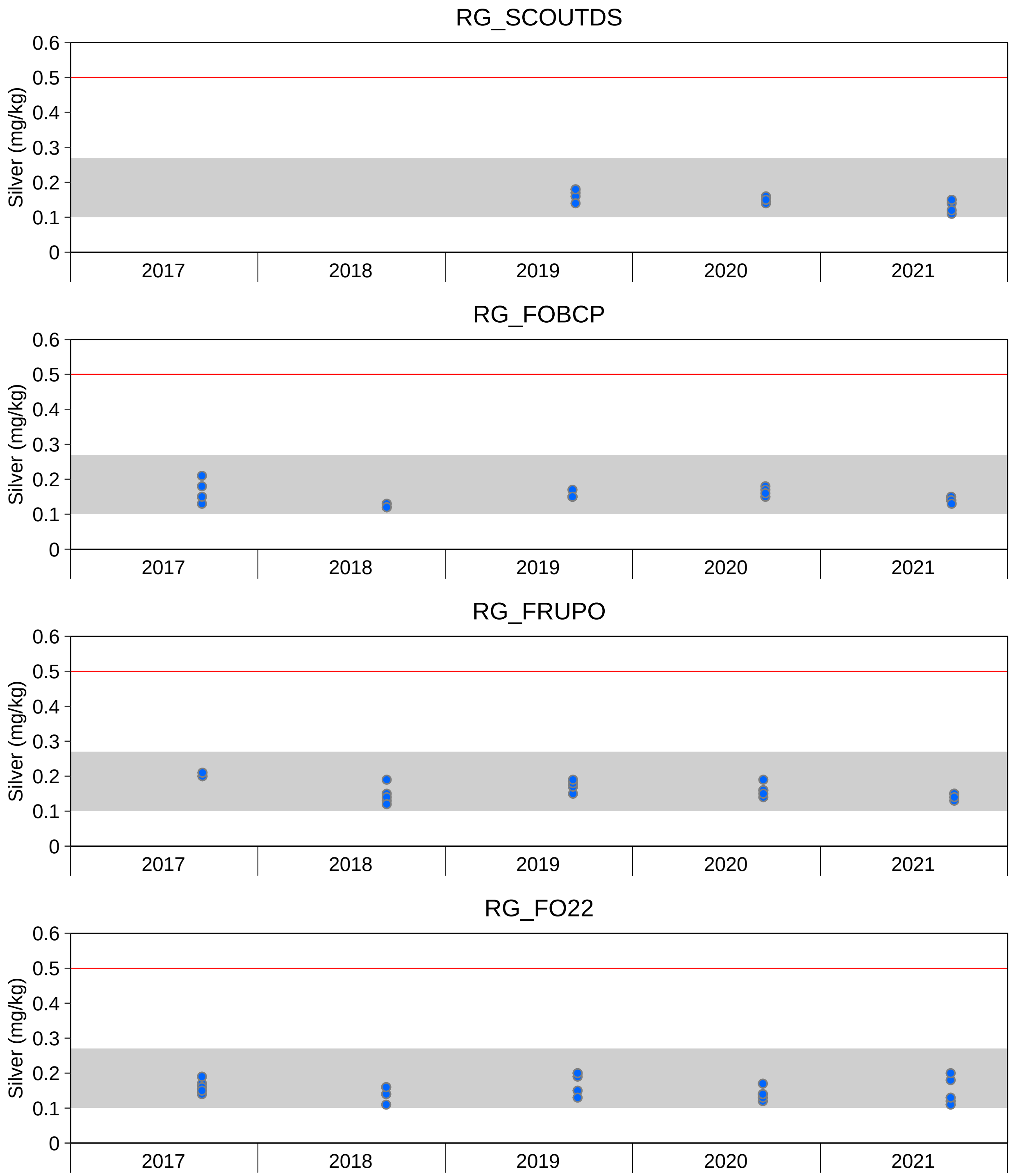

Figure D.12: Silver Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

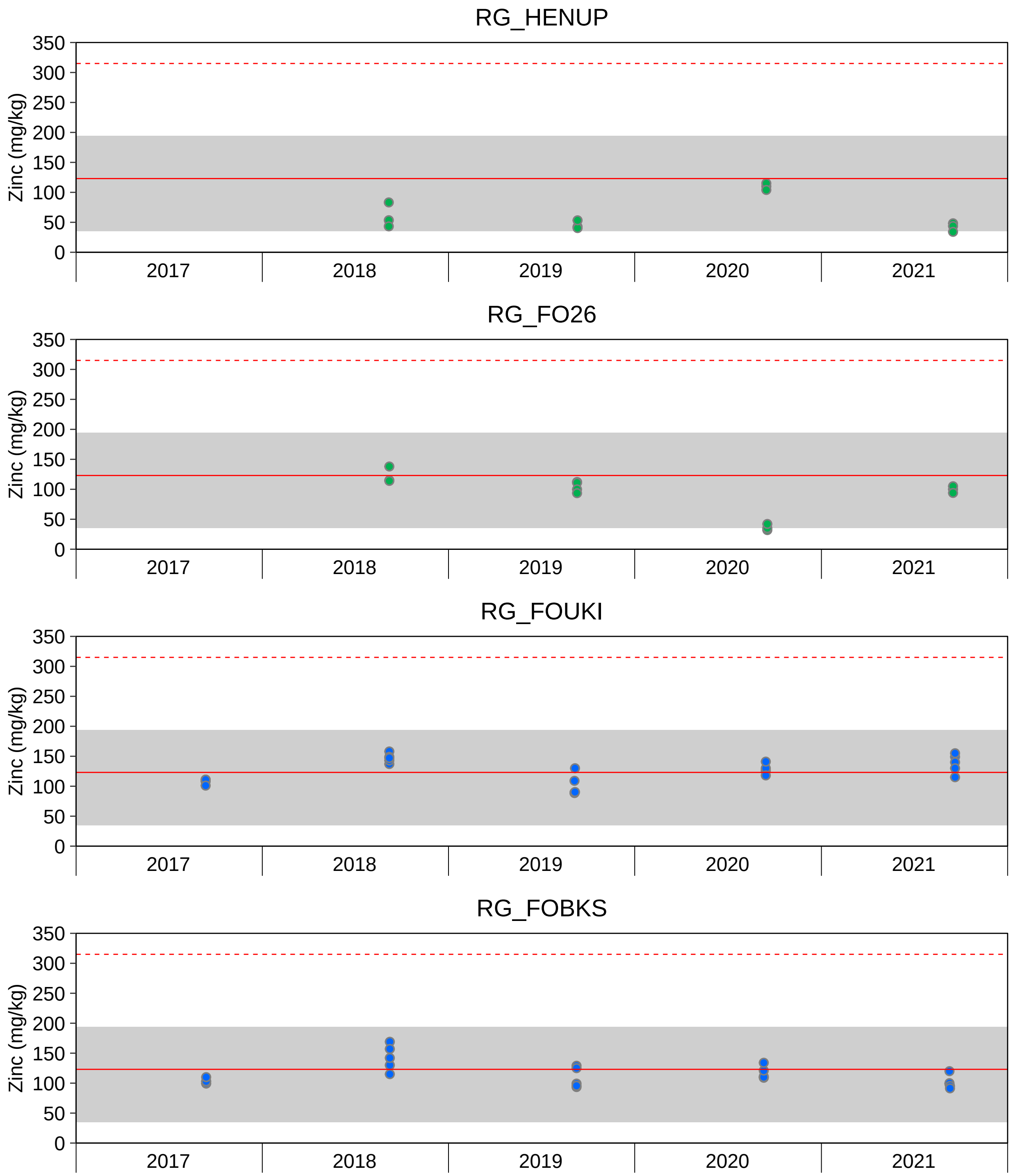

Figure D.13: Zinc Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

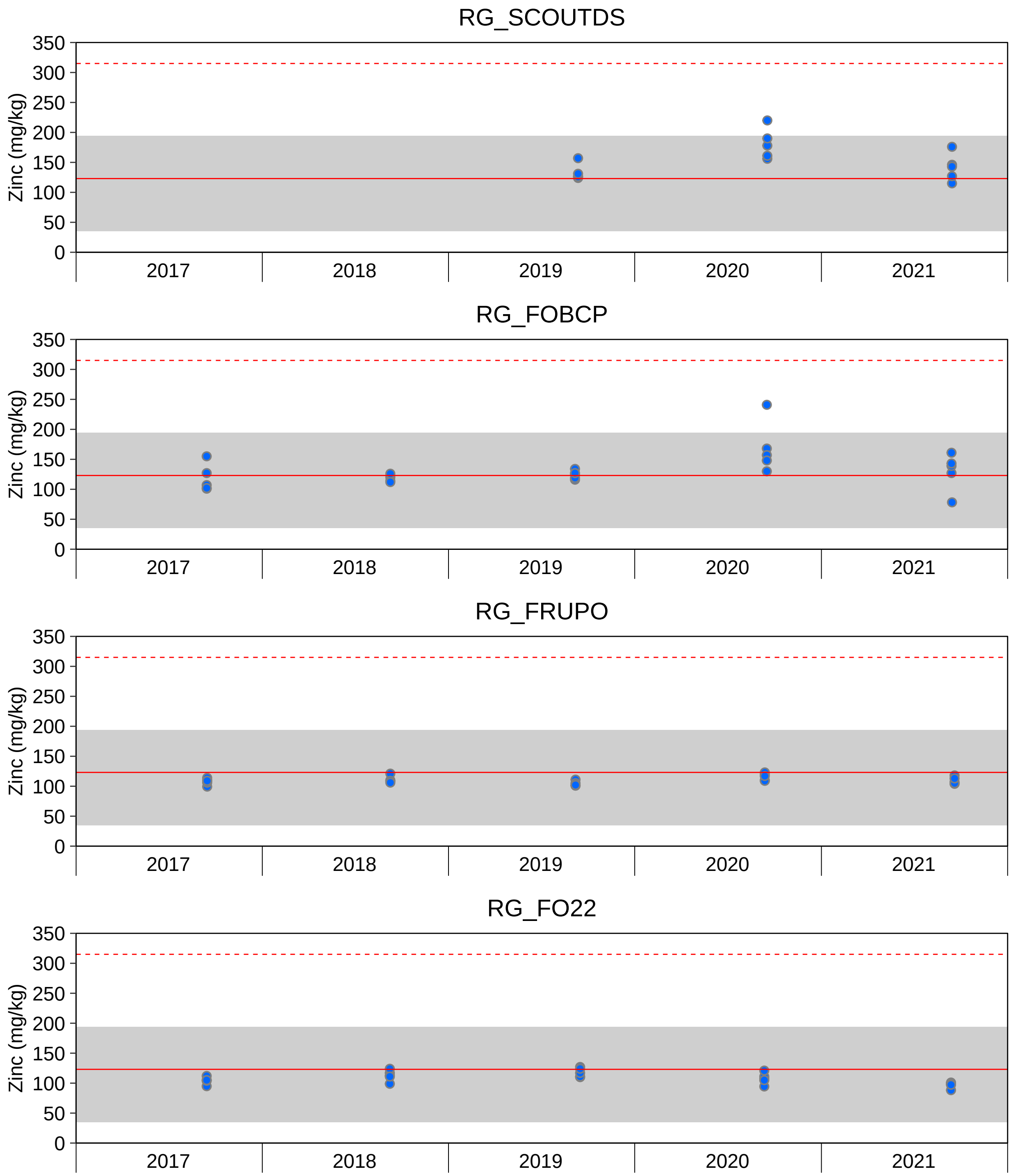

Figure D.13: Zinc Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAEMP, 2017 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG (or alert concentration in the case of selenium). Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

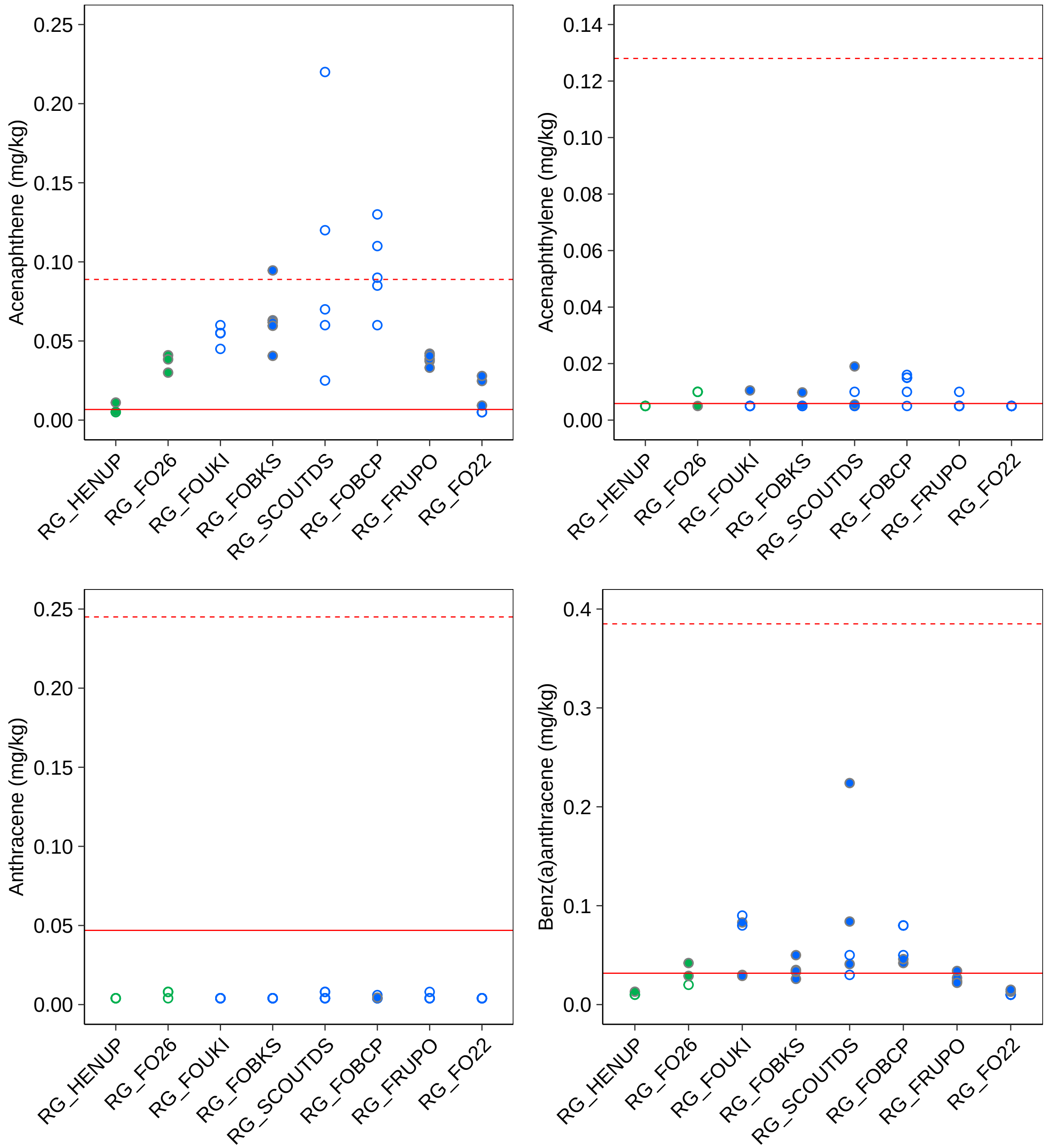

Figure D.14: Sediment Polycyclic Aromatic Hydrocarbons Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAMEP, September 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG. Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

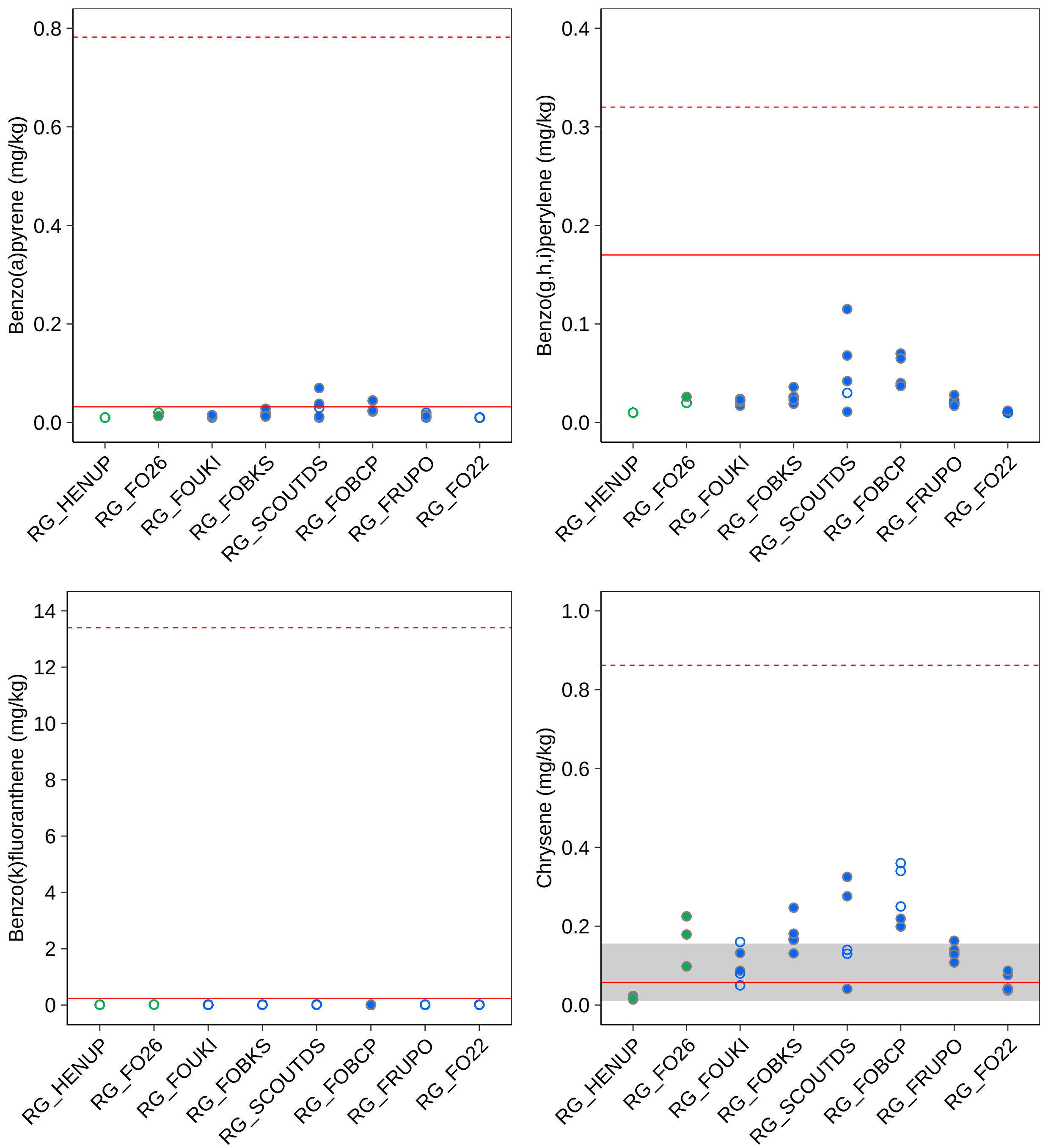

Figure D.14: Sediment Polycyclic Aromatic Hydrocarbons Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAMEP, September 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG. Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

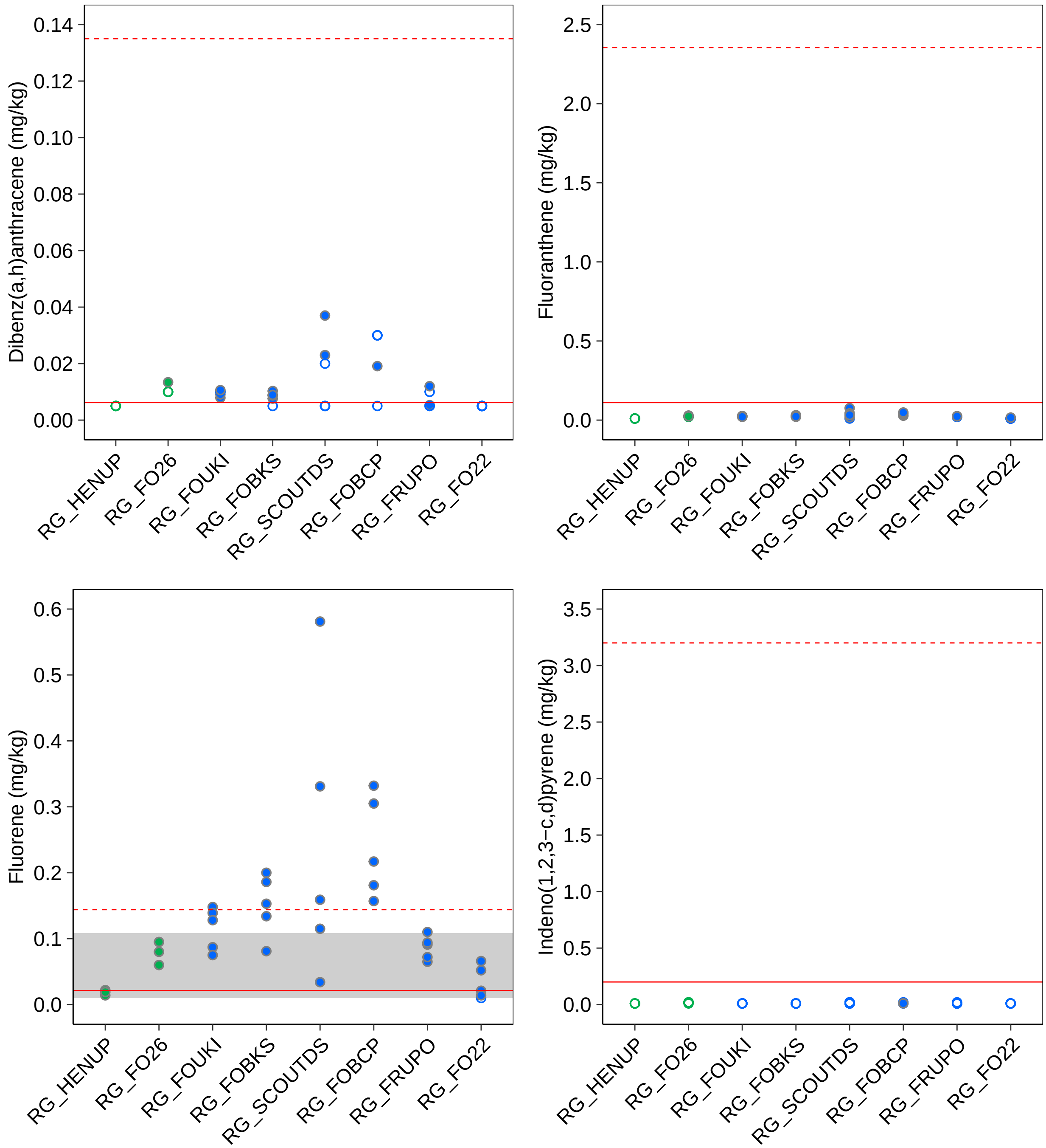

Figure D.14: Sediment Polycyclic Aromatic Hydrocarbons Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAMEP, September 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG. Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

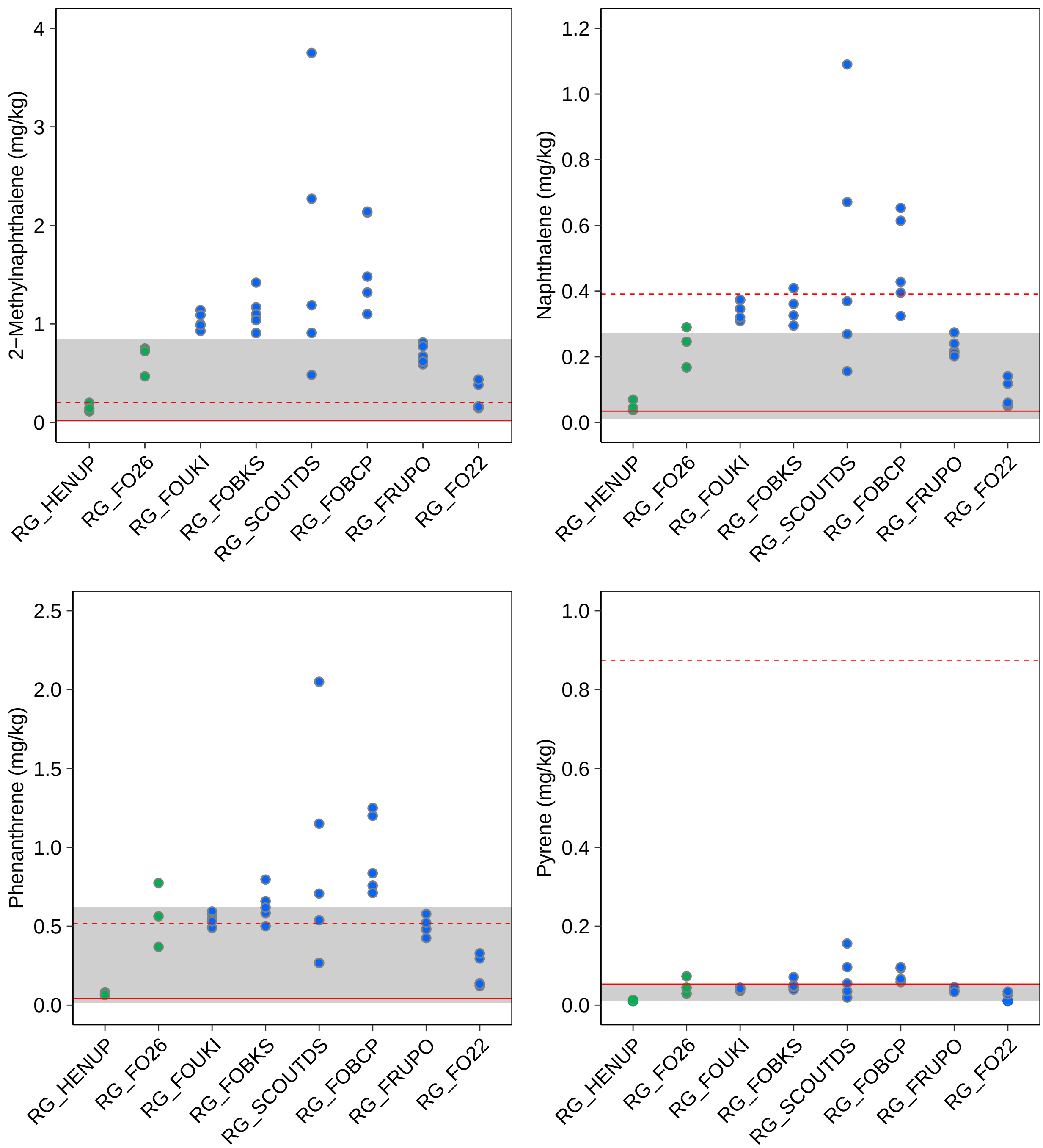

Figure D.14: Sediment Polycyclic Aromatic Hydrocarbons Concentrations Relative to British Columbia Working Sediment Quality Guidelines, FRO LAMEP, September 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL value. Solid red line represents Lower Working Sediment Quality Guideline (WSQG). Hashed red line represents Upper WSQG. Grey shading represents the reference area normal range (2.5th and 97.5th percentiles of 2017 to 2020 pooled reference area data, Minnow 2020).

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

Parameter		Units	BC Sediment Quality Guidelines Lower SQG	BC Sediment Quality Guidelines Upper SQG	RG_HENUP RG_HENUP-1 16-Sep-21	RG_HENUP-2 16-Sep-21	RG_HENUP-3 16-Sep-21	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	56.7	60.9	33.7	33.7	56.7	60.9	50.4	14.6
	pH(1:2 Soil:Water)	pH	-	-	8.27	8.23	8.47	8.23	8.27	8.47	8.32	0.129
Particle Size	% Gravel (>2 mm)	%	-	-	<1.0	<1.0	<1.0	<1	<1	<1	<1	-
	% Sand (2.00 mm - 1.00 mm)	%	-	-	1.10	6.80	3.50	1.10	3.50	6.80	3.80	2.86
	% Sand (1.00 mm - 0.50 mm)	%	-	-	6.30	10.9	13.0	6.30	10.9	13.0	10.1	3.43
	% Sand (0.50 mm - 0.25 mm)	%	-	-	10.3	26.1	33.9	10.3	26.1	33.9	23.4	12.0
	% Sand (0.25 mm - 0.125 mm)	%	-	-	25.3	22.3	26.0	22.3	25.3	26.0	24.5	1.97
	% Sand (0.125 mm - 0.063 mm	%	-	-	26.5	10.1	9.10	9.10	10.1	26.5	15.2	9.77
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	15.6	10.4	6.30	6.30	10.4	15.6	10.8	4.66
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	12.8	11.5	6.70	6.70	11.5	12.8	10.3	3.21
	% Clay (<4 µm)	%	-	-	2.10	2.10	1.60	1.60	2.10	2.10	1.93	0.289
	Texture	-	-	-	Loamy sand	Loamy sand	Sand	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	4.30	4.40	3.70	3.70	4.30	4.40	4.13	0.379
Metals	Aluminum (Al)	mg/kg	-	-	2,440	1,340	1,130	1,130	1,340	2,440	1,637	704
	Antimony (Sb)	mg/kg	-	-	0.120	<0.10	<0.10	<0.1	<0.1	0.120	0.107	-
	Arsenic (As)	mg/kg	5.9	17	1.78	1.14	1.11	1.11	1.14	1.78	1.34	0.378
	Barium (Ba)	mg/kg	-	-	23.1	13.9	10.6	10.6	13.9	23.1	15.9	6.48
	Beryllium (Be)	mg/kg	-	-	0.140	<0.10	<0.10	<0.1	<0.1	0.140	0.113	-
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5.0	<5.0	<5.0	<5	<5	<5	<5	-
	Cadmium (Cd)	mg/kg	0.60	3.5	0.297	0.271	0.209	0.209	0.271	0.297	0.259	0.0452
	Calcium (Ca)	mg/kg	-	-	237,000	229,000	233,000	229,000	233,000	237,000	233,000	4,000
	Chromium (Cr)	mg/kg	37	90	7.87	5.19	4.46	4.46	5.19	7.87	5.84	1.80
	Cobalt (Co)	mg/kg	-	-	1.43	0.930	0.730	0.730	0.930	1.43	1.03	0.361
	Copper (Cu)	mg/kg	36	197	2.21	1.47	1.06	1.06	1.47	2.21	1.58	0.583
	Iron (Fe)	mg/kg	21,200	43,766	3,830	2,480	2,290	2,290	2,480	3,830	2,867	840
	Lead (Pb)	mg/kg	35	91.3	2.52	1.63	1.46	1.46	1.63	2.52	1.87	0.569
	Lithium (Li)	mg/kg	-	-	10.9	6.50	5.90	5.90	6.50	10.9	7.77	2.73
	Magnesium (Mg)	mg/kg	-	-	53,100	36,900	34,500	34,500	36,900	53,100	41,500	10,117
	Manganese (Mn)	mg/kg	460	1,100	148	92.9	78.1	78.1	92.9	148	106	36.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.00860	<0.0050	<0.0050	<0.005	<0.005	0.00860	0.00620	-
	Molybdenum (Mo)	mg/kg	25	23,000	0.440	0.340	0.240	0.240	0.340	0.440	0.340	0.100
	Nickel (Ni)	mg/kg	16	75	9.02	6.63	5.06	5.06	6.63	9.02	6.90	1.99
	Phosphorus (P)	mg/kg	-	-	494	319	383	319	383	494	399	88.5
	Potassium (K)	mg/kg	-	-	660	410	380	380	410	660	483	154
	Selenium (Se)	mg/kg	2.0	-	0.350	0.320	0.270	0.270	0.320	0.350	0.313	0.0404
	Silver (Ag)	mg/kg	0.50	-	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	-
	Sodium (Na)	mg/kg	-	-	185	148	152	148	152	185	162	20.3
	Strontium (Sr)	mg/kg	-	-	97.2	104	104	97.2	104	104	102	3.93
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.0610	<0.050	<0.050	<0.05	<0.05	0.0610	0.0537	-
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	22.5	12.9	8.50	8.50	12.9	22.5	14.6	7.16
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.506	0.375	0.342	0.342	0.375	0.506	0.408	0.0867
	Vanadium (V)	mg/kg	-	-	8.03	4.99	4.36	4.36	4.99	8.03	5.79	1.96
	Zinc (Zn)	mg/kg	123	315	48.3	43.7	34.1	34.1	43.7	48.3	42.0	7.25
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.00520	0.0111	<0.0050	<0.005	0.00520	0.0111	0.00710	0.00393
	Acenaphthylene	mg/kg	0.0059	0.13	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005	-
	Acridine	mg/kg	-	-	0.0110	0.0220	0.0130	0.0110	0.0130	0.0220	0.0153	0.00586
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0040	<0.004	<0.004	<0.004	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	<0.010	0.0130	<0.010	<0.01	<0.01	0.0130	0.0110	-
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	Benzo(b&j)fluoranthene	mg/kg	-	-	<0.010	0.0140	<0.010	<0.01	<0.01	0.0140	0.0113	-
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	-
	Benzo(e)pyrene	mg/kg	-	-	<0.010	0.0150	<0.010	<0.01	<0.01	0.0150	0.0117	-
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.0140	0.0230	0.0160	0.0140	0.0160	0.0230	0.0177	0.00473
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005	-
	Fluoranthene	mg/kg	0.11	2.4	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	Fluorene	mg/kg	0.021	0.14	0.0140	0.0220	0.0190	0.0140	0.0190	0.0220	0.0183	0.00404
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.0710	0.108	0.0850	0.0710	0.0850	0.108	0.0880	0.0187
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.114	0.200	0.143	0.114	0.143	0.200	0.152	0.0438
	Naphthalene	mg/kg	0.035	0.39	0.0380	0.0700	0.0450	0.0380	0.0450	0.0700	0.0510	0.0168
	Perylene	mg/kg	-	-	<0.010	<0.010	<0.010	<0.01	<0.01	<0.01	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.0630	0.0810	0.0660	0.0630	0.0660	0.0810	0.0700	0.00964
	Pyrene	mg/kg	0.053	0.88	<0.010	0.0130	<0.010	<0.01	<0.01	0.0130	0.0110	-
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	-
	d10-Acenaphthene	%	-	-	82.8	72.5	82.6	72.5	82.6	82.8	79.3	5.89
	d12-Chrysene	%	-	-	97.3	82.6	96.0	82.6	96.0	97.3	92.0	8.14
	d8-Naphthalene	%	-	-	82.4	77.4	81.9	77.4	81.9	82.4	80.6	2.75
	d10-Phenanthrene	%	-	-	94.1	84.5	93.1	84.5	93.1	94.1	90.6	5.28
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.020	<0.020	<0.020	<0.02	<0.02	<0.02	<0.02	-
	IACR (CCME)	mg/kg	-	-	<0.15	0.190	<0.15	<0.15	<0.15	0.190	0.163	-

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines: Lower SQG	BC Sediment Quality Guidelines: Upper SQG	RG_FO26: RG_FO26-1	RG_FO26: RG_FO26-2	RG_FO26: RG_FO26-3	RG_FO26: Minimum	RG_FO26: Median	RG_FO26: Maximum	RG_FO26: Mean	RG_FO26: Standard Deviation
					16-Sep-21	16-Sep-21	16-Sep-21					
Physical Tests	Moisture	%	-	-	75.8	69.1	50.5	50.5	69.1	75.8	65.1	13.1
	pH(1:2 Soil:Water)	pH	-	-	7.67	8.06	8.28	7.67	8.06	8.28	8.00	0.309
Particle Size	% Gravel (>2 mm)	%	-	-	1.40	<1.0	<1.0	<1	<1	1.40	1.13	-
	% Sand (2.00 mm - 1.00 mm)	%	-	-	1.40	2.60	<1.0	<1	1.40	2.60	1.67	0.800
	% Sand (1.00 mm - 0.50 mm)	%	-	-	3.50	8.30	1.90	1.90	3.50	8.30	4.57	3.33
	% Sand (0.50 mm - 0.25 mm)	%	-	-	10.1	8.90	4.20	4.20	8.90	10.1	7.73	3.12
	% Sand (0.25 mm - 0.125 mm)	%	-	-	16.1	12.3	15.3	12.3	15.3	16.1	14.6	2.00
	% Sand (0.125 mm - 0.063 mm	%	-	-	12.1	12.6	18.2	12.1	12.6	18.2	14.3	3.39
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	24.1	24.8	27.2	24.1	24.8	27.2	25.4	1.63
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	26.8	26.5	28.5	26.5	26.8	28.5	27.3	1.08
	% Clay (<4 µm)	%	-	-	4.50	3.50	4.00	3.50	4.00	4.50	4.00	0.500
	Texture	-	-	-	Silt loam	Silt loam	Silt loam	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	7.76	8.92	4.61	4.61	7.76	8.92	7.10	2.23
Metals	Aluminum (Al)	mg/kg	-	-	7,090	6,880	6,010	6,010	6,880	7,090	6,660	573
	Antimony (Sb)	mg/kg	-	-	0.580	0.600	0.590	0.580	0.590	0.600	0.590	0.0100
	Arsenic (As)	mg/kg	5.9	17	5.99	5.85	5.82	5.82	5.85	5.99	5.89	0.0907
	Barium (Ba)	mg/kg	-	-	175	170	145	145	170	175	163	16.1
	Beryllium (Be)	mg/kg	-	-	0.670	0.670	0.530	0.530	0.670	0.670	0.623	0.0808
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	7.00	6.60	<5.0	<5	6.60	7.00	6.20	0.267
	Cadmium (Cd)	mg/kg	0.60	3.5	0.922	0.882	0.819	0.819	0.882	0.922	0.874	0.0519
	Calcium (Ca)	mg/kg	-	-	60,200	55,900	51,600	51,600	55,900	60,200	55,900	4,300
	Chromium (Cr)	mg/kg	37	90	13.8	12.6	11.0	11.0	12.6	13.8	12.5	1.40
	Cobalt (Co)	mg/kg	-	-	6.08	5.91	6.04	5.91	6.04	6.08	6.01	0.0889
	Copper (Cu)	mg/kg	36	197	14.8	14.9	14.6	14.6	14.8	14.9	14.8	0.153
	Iron (Fe)	mg/kg	21,200	43,766	15,300	15,300	15,000	15,000	15,300	15,300	15,200	173
	Lead (Pb)	mg/kg	35	91.3	9.13	8.81	9.06	8.81	9.06	9.13	9.00	0.168
	Lithium (Li)	mg/kg	-	-	10.4	10.0	10.6	10.0	10.4	10.6	10.3	0.306
	Magnesium (Mg)	mg/kg	-	-	10,300	9,380	11,600	9,380	10,300	11,600	10,427	1,115
	Manganese (Mn)	mg/kg	460	1,100	548	490	448	448	490	548	495	50.2
	Mercury (Hg)	mg/kg	0.17	0.49	0.0349	0.0342	0.0445	0.0342	0.0349	0.0445	0.0379	0.00576
	Molybdenum (Mo)	mg/kg	25	23,000	1.57	1.52	1.41	1.41	1.52	1.57	1.50	0.0819
	Nickel (Ni)	mg/kg	16	75	21.5	21.2	20.3	20.3	21.2	21.5	21.0	0.624
	Phosphorus (P)	mg/kg	-	-	1,350	1,330	1,340	1,330	1,340	1,350	1,340	10.0
	Potassium (K)	mg/kg	-	-	1,860	1,800	1,300	1,300	1,800	1,860	1,653	307
	Selenium (Se)	mg/kg	2.0	-	1.26	0.960	0.930	0.930	0.960	1.26	1.05	0.182
	Silver (Ag)	mg/kg	0.50	-	0.150	0.140	0.180	0.140	0.150	0.180	0.157	0.0208
	Sodium (Na)	mg/kg	-	-	94.0	86.0	85.0	85.0	86.0	94.0	88.3	4.93
	Strontium (Sr)	mg/kg	-	-	74.2	73.9	57.3	57.3	73.9	74.2	68.5	9.67
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.216	0.194	0.188	0.188	0.194	0.216	0.199	0.0147
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	9.50	8.60	6.50	6.50	8.60	9.50	8.20	1.54
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.933	0.903	0.814	0.814	0.903	0.933	0.883	0.0619
	Vanadium (V)	mg/kg	-	-	27.7	27.8	22.9	22.9	27.7	27.8	26.1	2.80
	Zinc (Zn)	mg/kg	123	315	100	105	93.9	93.9	100	105	99.6	5.56
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.0300	0.0410	0.0384	0.0300	0.0384	0.0410	0.0365	0.00575
	Acenaphthylene	mg/kg	0.0059	0.13	<0.010	<0.010	0.00500	0.00500	0.00500	<0.01	0.00500	-
	Acridine	mg/kg	-	-	0.0290	0.0420	0.0630	0.0290	0.0420	0.0630	0.0447	0.0172
	Anthracene	mg/kg	0.047	0.25	<0.0080	<0.0080	<0.0040	<0.004	<0.008	<0.008	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	<0.020	0.0420	0.0290	<0.02	0.0290	0.0420	0.0303	0.00867
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.020	<0.020	0.0130	0.0130	0.0130	<0.02	0.0130	-
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0400	0.0780	0.0730	0.0400	0.0730	0.0780	0.0637	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0400	0.0780	0.0730	0.0400	0.0730	0.0780	0.0637	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0380	0.0770	0.0710	0.0380	0.0710	0.0770	0.0620	0.0210
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.020	<0.020	0.0260	<0.02	<0.02	0.0260	0.0220	-
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.020	<0.020	<0.010	<0.01	<0.02	<0.02	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.0980	0.225	0.179	0.0980	0.179	0.225	0.167	0.0643
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.010	<0.010	0.0134	<0.01	<0.01	0.0134	0.0111	-
	Fluoranthene	mg/kg	0.11	2.4	<0.020	0.0290	0.0240	<0.02	0.0240	0.0290	0.0243	0.00333
	Fluorene	mg/kg	0.021	0.14	0.0600	0.0800	0.0950	0.0600	0.0800	0.0950	0.0783	0.0176
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.020	<0.020	<0.010	<0.01	<0.02	<0.02	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.284	0.471	0.418	0.284	0.418	0.471	0.391	0.0964
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.469	0.751	0.724	0.469	0.724	0.751	0.648	0.156
	Naphthalene	mg/kg	0.035	0.39	0.168	0.290	0.246	0.168	0.246	0.290	0.235	0.0618
	Perylene	mg/kg	-	-	<0.020	<0.020	0.0420	<0.02	<0.02	0.0420	0.0273	-
	Phenanthrene	mg/kg	0.042	0.52	0.369	0.774	0.563	0.369	0.563	0.774	0.569	0.203
	Pyrene	mg/kg	0.053	0.88	0.0290	0.0730	0.0440	0.0290	0.0440	0.0730	0.0487	0.0224
	Quinoline	mg/kg	-	-	<0.020	<0.020	<0.050	<0.02	<0.02	<0.05	<0.02	-
	d10-Acenaphthene	%	-	-	75.0	97.8	92.7	75.0	92.7	97.8	88.5	12.0
	d12-Chrysene	%	-	-	90.8	116	109	90.8	109	116	106	13.2
	d8-Naphthalene	%	-	-	75.3	101	94.4	75.3	94.4	101	90.3	13.4
	d10-Phenanthrene	%	-	-	88.0	110	105	88.0	105	110	101	11.3
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0230	0.0310	0.0400	0.0230	0.0310	0.0400	0.0313	0.00850
	IACR (CCME)	mg/kg	-	-	0.450	0.840	0.760	0.450	0.760	0.840	0.683	0.206

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

Parameter		Units	BC Sediment Quality Guidelines		RG_FOUKI				
			Lower SQG	Upper SQG	RG_FOUKI-1	RG_FOUKI-2	RG_FOUKI-3	RG_FOUKI-4	RG_FOUKI-5
					20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21	20-Sep-21
Physical Tests	Moisture	%	-	-	28.7	24.5	33.5	29.4	29.5
	pH(1:2 Soil:Water)	pH	-	-	8.45	8.63	8.44	8.63	8.36
Particle Size	% Gravel (>2 mm)	%	-	-	8.80	8.50	8.00	9.60	27.7
	% Sand (2.00 mm - 1.00 mm)	%	-	-	12.7	8.90	15.5	8.80	16.7
	% Sand (1.00 mm - 0.50 mm)	%	-	-	24.9	21.9	21.1	17.0	11.4
	% Sand (0.50 mm - 0.25 mm)	%	-	-	22.5	24.3	16.6	17.0	5.60
	% Sand (0.25 mm - 0.125 mm)	%	-	-	6.60	8.00	6.70	8.40	3.40
	% Sand (0.125 mm - 0.063 mm	%	-	-	3.80	4.90	5.00	6.10	4.30
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	8.40	9.30	10.2	12.4	11.7
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	10.1	11.7	13.7	17.2	16.1
	% Clay (<4 µm)	%	-	-	2.30	2.50	3.30	3.60	3.10
	Texture	-	-	-	Loamy sand	Loamy sand	Sandy loam	Sandy loam	Sandy loam
Organic Carbon	Total Organic Carbon	%	-	-	4.64	4.69	4.70	5.56	5.59
Metals	Aluminum (Al)	mg/kg	-	-	7,840	5,640	5,770	6,690	6,960
	Antimony (Sb)	mg/kg	-	-	0.860	0.640	0.710	0.660	0.590
	Arsenic (As)	mg/kg	5.9	17	6.54	5.07	5.82	5.72	4.93
	Barium (Ba)	mg/kg	-	-	231	165	210	221	197
	Beryllium (Be)	mg/kg	-	-	0.660	0.520	0.510	0.540	0.540
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	6.30	<5.0	<5.0	5.70	7.20
	Cadmium (Cd)	mg/kg	0.60	3.5	1.48	1.19	1.89	1.61	1.31
	Calcium (Ca)	mg/kg	-	-	69,500	60,700	87,500	87,100	84,900
	Chromium (Cr)	mg/kg	37	90	13.3	9.55	10.5	11.5	12.1
	Cobalt (Co)	mg/kg	-	-	11.2	8.88	11.7	10.6	10.4
	Copper (Cu)	mg/kg	36	197	16.5	13.0	15.8	15.0	14.2
	Iron (Fe)	mg/kg	21,200	43,766	20,900	17,400	18,300	18,700	16,500
	Lead (Pb)	mg/kg	35	91.3	9.86	7.57	8.26	8.16	8.36
	Lithium (Li)	mg/kg	-	-	13.7	10.9	9.80	10.4	12.1
	Magnesium (Mg)	mg/kg	-	-	11,300	9,350	12,700	11,800	13,800
	Manganese (Mn)	mg/kg	460	1,100	773	647	962	763	691
	Mercury (Hg)	mg/kg	0.17	0.49	0.0335	0.0371	0.0341	0.0315	0.0293
	Molybdenum (Mo)	mg/kg	25	23,000	1.80	1.41	1.55	1.48	1.45
	Nickel (Ni)	mg/kg	16	75	53.4	42.9	56.9	51.4	46.7
	Phosphorus (P)	mg/kg	-	-	1,410	1,160	1,460	1,330	1,280
	Potassium (K)	mg/kg	-	-	1,680	1,140	1,190	1,470	1,500
	Selenium (Se)	mg/kg	2.0	-	1.56	1.28	1.65	1.65	1.76
	Silver (Ag)	mg/kg	0.50	-	0.160	0.130	0.150	0.160	0.150
	Sodium (Na)	mg/kg	-	-	85.0	66.0	85.0	81.0	89.0
	Strontium (Sr)	mg/kg	-	-	87.0	66.8	82.1	85.6	88.5
	Sulfur (S)	mg/kg	-	-	1,300	1,000	1,100	1,200	1,200
	Thallium (Tl)	mg/kg	-	-	0.235	0.174	0.178	0.188	0.172
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	10.5	6.10	9.40	10.0	10.1
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.05	0.850	1.02	1.07	0.986
	Vanadium (V)	mg/kg	-	-	33.1	23.5	26.5	29.2	26.4
	Zinc (Zn)	mg/kg	123	315	149	115	155	140	130
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.060	<0.045	<0.055	<0.055	<0.055
	Acenaphthylene	mg/kg	0.0059	0.13	<0.0050	<0.0050	<0.0050	<0.0050	0.0105
	Acridine	mg/kg	-	-	<0.10	<0.080	<0.11	<0.11	<0.10
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0830	<0.080	0.0300	<0.090	0.0290
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0110	<0.010	0.0110	0.0140	0.0150
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0530	0.0450	0.0530	0.0480	0.0520
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0530	0.0450	0.0530	0.0480	0.0520
	Benzo(e)pyrene	mg/kg	-	-	0.0570	0.0490	0.0550	0.0530	0.0610
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0240	0.0170	0.0210	0.0220	0.0230
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene	mg/kg	0.057	0.86	0.0870	<0.050	0.132	<0.080	<0.16
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.010	0.00790	0.00910	<0.010	0.0106
	Fluoranthene	mg/kg	0.11	2.4	0.0260	0.0210	0.0250	0.0240	0.0210
	Fluorene	mg/kg	0.021	0.14	0.0870	0.0750	0.148	0.139	0.128
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene	mg/kg	-	-	0.632	0.540	0.611	0.579	0.571
	2-Methylnaphthalene	mg/kg	0.020	0.201	1.14	0.929	1.09	0.995	0.988
	Naphthalene	mg/kg	0.035	0.39	0.373	0.309	0.346	0.320	0.374
	Perylene	mg/kg	-	-	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene	mg/kg	0.042	0.52	0.579	0.490	0.593	0.545	0.531
	Pyrene	mg/kg	0.053	0.88	0.0440	0.0360	0.0430	0.0410	0.0420
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
	d10-Acenaphthene	%	-	-	71.0	68.6	79.2	73.9	76.1
	d12-Chrysene	%	-	-	77.5	74.6	89.7	82.2	86.4
	d8-Naphthalene	%	-	-	72.5	68.6	80.4	72.8	74.7
	d10-Phenanthrene	%	-	-	76.3	72.4	85.8	79.2	80.6
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0320	0.0230	0.0310	0.0300	0.0360
	IACR (CCME)	mg/kg	-	-	0.710	0.500	0.590	0.550	0.570

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FOUKI				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	24.5	29.4	33.5	29.1	3.20
	pH(1:2 Soil:Water)	pH	-	-	8.36	8.45	8.63	8.50	0.122
Particle Size	% Gravel (>2 mm)	%	-	-	8.00	8.80	27.7	12.5	8.51
	% Sand (2.00 mm - 1.00 mm)	%	-	-	8.80	12.7	16.7	12.5	3.65
	% Sand (1.00 mm - 0.50 mm)	%	-	-	11.4	21.1	24.9	19.3	5.22
	% Sand (0.50 mm - 0.25 mm)	%	-	-	5.60	17.0	24.3	17.2	7.31
	% Sand (0.25 mm - 0.125 mm)	%	-	-	3.40	6.70	8.40	6.62	1.97
	% Sand (0.125 mm - 0.063 mm	%	-	-	3.80	4.90	6.10	4.82	0.864
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	8.40	10.2	12.4	10.4	1.65
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	10.1	13.7	17.2	13.8	2.96
	% Clay (<4 µm)	%	-	-	2.30	3.10	3.60	2.96	0.546
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	4.64	4.70	5.59	5.04	0.493
Metals	Aluminum (Al)	mg/kg	-	-	5,640	6,690	7,840	6,580	906.1
	Antimony (Sb)	mg/kg	-	-	0.590	0.660	0.860	0.692	0.103
	Arsenic (As)	mg/kg	5.9	17	4.93	5.72	6.54	5.62	0.647
	Barium (Ba)	mg/kg	-	-	165	210	231	205	25.6
	Beryllium (Be)	mg/kg	-	-	0.510	0.540	0.660	0.554	0.0607
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	5.70	7.20	5.84	0.720
	Cadmium (Cd)	mg/kg	0.60	3.5	1.19	1.48	1.89	1.50	0.272
	Calcium (Ca)	mg/kg	-	-	60,700	84,900	87,500	77,940	12,167
	Chromium (Cr)	mg/kg	37	90	9.55	11.5	13.3	11.4	1.44
	Cobalt (Co)	mg/kg	-	-	8.88	10.6	11.7	10.6	1.07
	Copper (Cu)	mg/kg	36	197	13.0	15.0	16.5	14.9	1.37
	Iron (Fe)	mg/kg	21,200	43,766	16,500	18,300	20,900	18,360	1,655
	Lead (Pb)	mg/kg	35	91.3	7.57	8.26	9.86	8.44	0.850
	Lithium (Li)	mg/kg	-	-	9.80	10.9	13.7	11.4	1.55
	Magnesium (Mg)	mg/kg	-	-	9,350	11,800	13,800	11,790	1,663
	Manganese (Mn)	mg/kg	460	1,100	647	763	962	767	121
	Mercury (Hg)	mg/kg	0.17	0.49	0.0293	0.0335	0.0371	0.0331	0.00292
	Molybdenum (Mo)	mg/kg	25	23,000	1.41	1.48	1.80	1.54	0.155
	Nickel (Ni)	mg/kg	16	75	42.9	51.4	56.9	50.3	5.52
	Phosphorus (P)	mg/kg	-	-	1,160	1,330	1,460	1,328	117
	Potassium (K)	mg/kg	-	-	1,140	1,470	1,680	1,396	226
	Selenium (Se)	mg/kg	2.0	-	1.28	1.65	1.76	1.58	0.182
	Silver (Ag)	mg/kg	0.50	-	0.130	0.150	0.160	0.150	0.0122
	Sodium (Na)	mg/kg	-	-	66.0	85.0	89.0	81.2	8.96
	Strontium (Sr)	mg/kg	-	-	66.8	85.6	88.5	82.0	8.82
	Sulfur (S)	mg/kg	-	-	1,000	1,200	1,300	1,160	114
	Thallium (Tl)	mg/kg	-	-	0.172	0.178	0.235	0.189	0.0262
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	6.10	10.0	10.5	9.22	1.79
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.850	1.02	1.07	0.995	0.0872
	Vanadium (V)	mg/kg	-	-	23.5	26.5	33.1	27.7	3.61
	Zinc (Zn)	mg/kg	123	315	115	140	155	138	15.9
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.045	<0.055	<0.06	<0.045	-
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	0.0105	0.00610	-
	Acridine	mg/kg	-	-	<0.08	<0.1	<0.11	<0.08	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.004	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0290	0.0300	<0.09	0.0429	0.0317
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.01	0.0110	0.0150	0.0122	0.00201
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0450	0.0520	0.0530	0.0502	0.00356
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0450	0.0520	0.0530	0.0502	0.00356
	Benzo(e)pyrene	mg/kg	-	-	0.0490	0.0550	0.0610	0.0550	0.00447
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0170	0.0220	0.0240	0.0214	0.00270
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	<0.01	<0.01	-
	Chrysene	mg/kg	0.057	0.86	<0.05	0.0685	<0.16	0.0797	0.0308
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	0.00790	0.00910	0.0106	0.00892	0.00139
	Fluoranthene	mg/kg	0.11	2.4	0.0210	0.0240	0.0260	0.0234	0.00230
	Fluorene	mg/kg	0.021	0.14	0.0750	0.128	0.148	0.115	0.0325
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.01	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.540	0.579	0.632	0.587	0.0358
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.929	0.995	1.14	1.03	0.0850
	Naphthalene	mg/kg	0.035	0.39	0.309	0.346	0.374	0.344	0.0298
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.490	0.545	0.593	0.548	0.0408
	Pyrene	mg/kg	0.053	0.88	0.0360	0.0420	0.0440	0.0412	0.00311
	Quinoline	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	-
	d10-Acenaphthene	%	-	-	68.6	73.9	79.2	73.8	4.16
	d12-Chrysene	%	-	-	74.6	82.2	89.7	82.1	6.20
	d8-Naphthalene	%	-	-	68.6	72.8	80.4	73.8	4.30
	d10-Phenanthrene	%	-	-	72.4	79.2	85.8	78.9	4.99
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0230	0.0310	0.0360	0.0304	0.00472
	IACR (CCME)	mg/kg	-	-	0.500	0.570	0.710	0.584	0.0780

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines Lower SQG	BC Sediment Quality Guidelines Upper SQG	RG_FOBKS RG_FOBKS-1 09-Sep-21	RG_FOBKS-2 09-Sep-21	RG_FOBKS-3 09-Sep-21	RG_FOBKS-4 10-Sep-21	RG_FOBKS-5 10-Sep-21
Physical Tests	Moisture	%	-	-	34.8	43.7	41.9	53.0	43.0
	pH(1:2 Soil:Water)	pH	-	-	8.43	8.47	8.42	8.41	8.48
Particle Size	% Gravel (>2 mm)	%	-	-	11.0	15.8	5.60	1.60	<1.0
	% Sand (2.00 mm - 1.00 mm)	%	-	-	10.4	5.20	15.8	4.30	<1.0
	% Sand (1.00 mm - 0.50 mm)	%	-	-	16.5	9.00	21.4	5.20	1.90
	% Sand (0.50 mm - 0.25 mm)	%	-	-	18.8	10.9	10.6	8.30	7.40
	% Sand (0.25 mm - 0.125 mm)	%	-	-	10.5	10.4	4.30	11.5	12.3
	% Sand (0.125 mm - 0.063 mm	%	-	-	6.80	9.80	6.20	14.6	16.3
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	11.0	16.0	13.1	24.3	27.5
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	12.3	19.5	18.6	26.4	29.1
	% Clay (<4 µm)	%	-	-	2.60	3.40	4.40	4.00	3.90
	Texture	-	-	-	ndy loam / Loamy sa	Sandy loam	Sandy loam	Silt loam	Silt loam
Organic Carbon	Total Organic Carbon	%	-	-	3.80	4.80	5.00	5.48	4.70
Metals	Aluminum (Al)	mg/kg	-	-	5,770	4,730	4,730	5,370	5,560
	Antimony (Sb)	mg/kg	-	-	0.680	0.480	0.490	0.490	0.520
	Arsenic (As)	mg/kg	5.9	17	5.25	4.27	4.16	4.06	4.24
	Barium (Ba)	mg/kg	-	-	197	158	163	171	167
	Beryllium (Be)	mg/kg	-	-	0.540	0.460	0.440	0.460	0.470
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	<5.0	<5.0	5.40	5.70	6.30
	Cadmium (Cd)	mg/kg	0.60	3.5	1.44	1.24	1.35	1.23	1.07
	Calcium (Ca)	mg/kg	-	-	72,800	72,400	88,600	67,300	64,700
	Chromium (Cr)	mg/kg	37	90	10.5	8.70	8.67	9.42	9.97
	Cobalt (Co)	mg/kg	-	-	9.23	7.73	8.02	7.38	6.16
	Copper (Cu)	mg/kg	36	197	14.0	10.9	10.5	11.2	11.1
	Iron (Fe)	mg/kg	21,200	43,766	17,700	13,000	12,500	12,300	12,200
	Lead (Pb)	mg/kg	35	91.3	8.09	6.92	6.79	7.17	7.54
	Lithium (Li)	mg/kg	-	-	10.7	9.50	9.70	10.3	11.1
	Magnesium (Mg)	mg/kg	-	-	9,090	9,330	9,290	11,900	12,600
	Manganese (Mn)	mg/kg	460	1,100	661	555	626	577	460
	Mercury (Hg)	mg/kg	0.17	0.49	0.0241	0.0274	0.0323	0.0235	0.0255
	Molybdenum (Mo)	mg/kg	25	23,000	1.35	1.11	1.16	1.09	1.15
	Nickel (Ni)	mg/kg	16	75	42.8	38.1	39.5	36.2	29.6
	Phosphorus (P)	mg/kg	-	-	1,250	981	1,050	1,030	1,060
	Potassium (K)	mg/kg	-	-	1,170	1,080	1,140	1,240	1,300
	Selenium (Se)	mg/kg	2.0	-	1.25	1.09	1.12	1.23	1.28
	Silver (Ag)	mg/kg	0.50	-	0.120	0.110	0.120	0.130	0.130
	Sodium (Na)	mg/kg	-	-	66.0	60.0	65.0	68.0	70.0
	Strontium (Sr)	mg/kg	-	-	79.5	68.0	75.1	66.2	72.4
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl)	mg/kg	-	-	0.178	0.159	0.155	0.156	0.171
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	6.90	7.30	8.70	9.00	8.40
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.09	0.926	1.02	0.871	0.899
	Vanadium (V)	mg/kg	-	-	27.7	21.9	22.2	22.9	23.6
	Zinc (Zn)	mg/kg	123	315	120	98.6	100	95.2	91.3
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.0406	0.0631	0.0618	0.0946	0.0596
	Acenaphthylene	mg/kg	0.0059	0.13	<0.0050	0.00980	<0.0050	0.00510	<0.0050
	Acridine	mg/kg	-	-	<0.080	<0.12	<0.14	<0.16	<0.11
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0260	0.0330	0.0350	0.0500	0.0340
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0120	0.0200	0.0160	0.0280	0.0130
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0490	0.0610	0.0650	0.104	0.0680
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0490	0.0610	0.0650	0.104	0.0680
	Benzo(e)pyrene	mg/kg	-	-	0.0530	0.0680	0.0670	0.109	0.0690
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0190	0.0260	0.0260	0.0360	0.0230
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene	mg/kg	0.057	0.86	0.131	0.168	0.165	0.247	0.181
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	0.00760	<0.0050	0.0103	0.00870	0.00890
	Fluoranthene	mg/kg	0.11	2.4	0.0210	0.0230	0.0240	0.0310	0.0230
	Fluorene	mg/kg	0.021	0.14	0.0810	0.153	0.186	0.200	0.134
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene	mg/kg	-	-	0.529	0.657	0.610	0.814	0.581
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.908	1.17	1.10	1.42	1.04
	Naphthalene	mg/kg	0.035	0.39	0.295	0.361	0.326	0.409	0.295
	Perylene	mg/kg	-	-	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene	mg/kg	0.042	0.52	0.500	0.583	0.659	0.796	0.618
	Pyrene	mg/kg	0.053	0.88	0.0390	0.0460	0.0500	0.0710	0.0480
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
	d10-Acenaphthene	%	-	-	77.7	86.5	119	126	90.4
	d12-Chrysene	%	-	-	87.1	95.3	118	103	101
	d8-Naphthalene	%	-	-	74.8	78.4	107	112	84.4
	d10-Phenanthrene	%	-	-	82.4	89.3	129	119	93.1
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0290	0.0340	0.0390	0.0560	0.0350
	IACR (CCME)	mg/kg	-	-	0.550	0.660	0.720	1.07	0.720

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

Parameter		Units	BC Sediment Quality Guidelines		RG_FOBKS				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	34.8	43.0	53.0	43.3	6.49
	pH(1:2 Soil:Water)	pH	-	-	8.41	8.43	8.48	8.44	0.0311
Particle Size	% Gravel (>2 mm)	%	-	-	<1	5.60	15.8	7.00	6.40
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	5.20	15.8	7.34	5.21
	% Sand (1.00 mm - 0.50 mm)	%	-	-	1.90	9.00	21.4	10.8	8.04
	% Sand (0.50 mm - 0.25 mm)	%	-	-	7.40	10.6	18.8	11.2	4.50
	% Sand (0.25 mm - 0.125 mm)	%	-	-	4.30	10.5	12.3	9.80	3.17
	% Sand (0.125 mm - 0.063 mm	%	-	-	6.20	9.80	16.3	10.7	4.55
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	11.0	16.0	27.5	18.4	7.18
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	12.3	19.5	29.1	21.2	6.68
	% Clay (<4 µm)	%	-	-	2.60	3.90	4.40	3.66	0.691
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	3.80	4.80	5.48	4.76	0.613
Metals	Aluminum (Al)	mg/kg	-	-	4,730	5,370	5,770	5,232	480
	Antimony (Sb)	mg/kg	-	-	0.480	0.490	0.680	0.532	0.0841
	Arsenic (As)	mg/kg	5.9	17	4.06	4.24	5.25	4.40	0.484
	Barium (Ba)	mg/kg	-	-	158	167	197	171	15.2
	Beryllium (Be)	mg/kg	-	-	0.440	0.460	0.540	0.474	0.0385
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	5.40	6.30	5.48	0.428
	Cadmium (Cd)	mg/kg	0.60	3.5	1.07	1.24	1.44	1.27	0.139
	Calcium (Ca)	mg/kg	-	-	64,700	72,400	88,600	73,160	9,287
	Chromium (Cr)	mg/kg	37	90	8.67	9.42	10.5	9.45	0.798
	Cobalt (Co)	mg/kg	-	-	6.16	7.73	9.23	7.70	1.11
	Copper (Cu)	mg/kg	36	197	10.5	11.1	14.0	11.5	1.40
	Iron (Fe)	mg/kg	21,200	43,766	12,200	12,500	17,700	13,540	2,346
	Lead (Pb)	mg/kg	35	91.3	6.79	7.17	8.09	7.30	0.525
	Lithium (Li)	mg/kg	-	-	9.50	10.3	11.1	10.3	0.669
	Magnesium (Mg)	mg/kg	-	-	9,090	9,330	12,600	10,442	1,671
	Manganese (Mn)	mg/kg	460	1,100	460	577	661	576	76.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.0235	0.0255	0.0323	0.0266	0.00354
	Molybdenum (Mo)	mg/kg	25	23,000	1.09	1.15	1.35	1.17	0.104
	Nickel (Ni)	mg/kg	16	75	29.6	38.1	42.8	37.2	4.90
	Phosphorus (P)	mg/kg	-	-	981	1,050	1,250	1,074	103
	Potassium (K)	mg/kg	-	-	1,080	1,170	1,300	1,186	85.9
	Selenium (Se)	mg/kg	2.0	-	1.09	1.23	1.28	1.19	0.0838
	Silver (Ag)	mg/kg	0.50	-	0.110	0.120	0.130	0.122	0.00837
	Sodium (Na)	mg/kg	-	-	60.0	66.0	70.0	65.8	3.77
	Strontium (Sr)	mg/kg	-	-	66.2	72.4	79.5	72.2	5.37
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.155	0.159	0.178	0.164	0.0102
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	6.90	8.40	9.00	8.06	0.913
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.871	0.926	1.09	0.961	0.0912
	Vanadium (V)	mg/kg	-	-	21.9	22.9	27.7	23.7	2.35
	Zinc (Zn)	mg/kg	123	315	91.3	98.6	120	101	11.1
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.0406	0.0618	0.0946	0.0639	0.0194
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	0.00980	0.00598	0.00266
	Acridine	mg/kg	-	-	<0.08	<0.12	<0.16	<0.08	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.004	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0260	0.0340	0.0500	0.0356	0.00879
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0120	0.0160	0.0280	0.0178	0.00650
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0490	0.0650	0.104	0.0694	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0490	0.0650	0.104	0.0694	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0530	0.0680	0.109	0.0732	0.0211
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0190	0.0260	0.0360	0.0260	0.00628
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	<0.01	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.131	0.168	0.247	0.178	0.0426
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.005	0.00870	0.0103	0.00810	0.00115
	Fluoranthene	mg/kg	0.11	2.4	0.0210	0.0230	0.0310	0.0244	0.00385
	Fluorene	mg/kg	0.021	0.14	0.0810	0.153	0.200	0.151	0.0470
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.01	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.529	0.610	0.814	0.638	0.109
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.908	1.10	1.42	1.13	0.190
	Naphthalene	mg/kg	0.035	0.39	0.295	0.326	0.409	0.337	0.0485
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.500	0.618	0.796	0.631	0.109
	Pyrene	mg/kg	0.053	0.88	0.0390	0.0480	0.0710	0.0508	0.0120
	Quinoline	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	-
	d10-Acenaphthene	%	-	-	77.7	90.4	126	99.9	21.2
	d12-Chrysene	%	-	-	87.1	101	118	101	11.4
	d8-Naphthalene	%	-	-	74.8	84.4	112	91.2	16.9
	d10-Phenanthrene	%	-	-	82.4	93.1	129	103	20.4
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0290	0.0350	0.0560	0.0386	0.0104
	IACR (CCME)	mg/kg	-	-	0.550	0.720	1.07	0.744	0.195

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_SCOUTDS				
			Lower SQG	Upper SQG	RG_SCOUTDS-1	RG_SCOUTDS-2	RG_SCOUTDS-3	RG_SCOUTDS-4	RG_SCOUTDS-5
					14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21
Physical Tests	Moisture	%	-	-	83.3	71.7	31.6	37.9	37.1
	pH(1:2 Soil:Water)	pH	-	-	8.21	8.42	8.60	8.45	8.44
Particle Size	% Gravel (>2 mm)	%	-	-	2.10	9.80	2.00	3.30	4.90
	% Sand (2.00 mm - 1.00 mm)	%	-	-	4.10	17.7	5.70	3.80	1.80
	% Sand (1.00 mm - 0.50 mm)	%	-	-	17.0	21.8	23.4	10.3	6.50
	% Sand (0.50 mm - 0.25 mm)	%	-	-	30.0	6.10	38.7	27.6	25.4
	% Sand (0.25 mm - 0.125 mm)	%	-	-	11.3	5.30	11.1	17.5	18.5
	% Sand (0.125 mm - 0.063 mm	%	-	-	5.80	7.30	5.00	8.30	9.70
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	11.6	12.3	6.10	12.3	14.2
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	14.4	15.5	6.60	13.9	15.9
	% Clay (<4 µm)	%	-	-	3.80	4.00	1.40	3.00	3.10
	Texture	-	-	-	Sandy loam	Sandy loam	Sand	Sandy loam	Sandy loam
Organic Carbon	Total Organic Carbon	%	-	-	3.80	5.66	2.69	4.22	4.45
Metals	Aluminum (Al)	mg/kg	-	-	7,320	6,140	5,960	5,800	5,610
	Antimony (Sb)	mg/kg	-	-	0.690	0.550	0.680	0.740	0.600
	Arsenic (As)	mg/kg	5.9	17	5.12	4.48	5.10	5.44	4.62
	Barium (Ba)	mg/kg	-	-	209	212	180	170	180
	Beryllium (Be)	mg/kg	-	-	0.600	0.530	0.550	0.570	0.480
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	7.70	6.20	5.20	<5.0	<5.0
	Cadmium (Cd)	mg/kg	0.60	3.5	2.21	1.81	1.21	1.56	1.47
	Calcium (Ca)	mg/kg	-	-	61,000	49,600	44,200	55,100	46,500
	Chromium (Cr)	mg/kg	37	90	13.2	11.1	10.2	10.8	10.1
	Cobalt (Co)	mg/kg	-	-	11.8	9.75	6.07	7.59	7.44
	Copper (Cu)	mg/kg	36	197	13.7	13.0	11.2	13.0	11.5
	Iron (Fe)	mg/kg	21,200	43,766	17,400	14,900	17,700	17,400	14,500
	Lead (Pb)	mg/kg	35	91.3	8.16	6.94	7.29	8.48	7.24
	Lithium (Li)	mg/kg	-	-	10.2	8.90	9.30	10.1	8.50
	Magnesium (Mg)	mg/kg	-	-	8,870	6,850	7,180	10,200	8,660
	Manganese (Mn)	mg/kg	460	1,100	813	730	441	513	529
	Mercury (Hg)	mg/kg	0.17	0.49	0.0375	0.0375	0.0280	0.0298	0.0382
	Molybdenum (Mo)	mg/kg	25	23,000	1.45	1.21	1.16	1.49	1.23
	Nickel (Ni)	mg/kg	16	75	56.0	46.2	33.6	45.8	40.9
	Phosphorus (P)	mg/kg	-	-	1,230	1,020	1,210	1,300	1,070
	Potassium (K)	mg/kg	-	-	2,080	1,720	1,550	1,390	1,440
	Selenium (Se)	mg/kg	2.0	-	1.90	1.31	0.870	1.76	1.22
	Silver (Ag)	mg/kg	0.50	-	0.150	0.140	0.110	0.150	0.120
	Sodium (Na)	mg/kg	-	-	73.0	58.0	65.0	72.0	63.0
	Strontium (Sr)	mg/kg	-	-	83.1	75.0	75.3	74.1	70.6
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl)	mg/kg	-	-	0.211	0.182	0.176	0.192	0.179
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	9.30	7.40	5.70	6.10	6.30
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.05	0.932	0.967	1.09	0.890
	Vanadium (V)	mg/kg	-	-	33.9	27.3	27.3	28.0	25.4
	Zinc (Zn)	mg/kg	123	315	176	146	115	143	127
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.22	<0.12	<0.025	<0.060	<0.070
	Acenaphthylene	mg/kg	0.0059	0.13	<0.010	0.0190	<0.0050	0.00550	<0.0050
	Acridine	mg/kg	-	-	0.482	0.269	<0.040	<0.090	<0.15
	Anthracene	mg/kg	0.047	0.25	<0.0080	<0.0080	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene	mg/kg	0.032	0.39	0.224	0.0840	0.0410	<0.030	<0.050
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0700	0.0380	<0.010	0.0120	<0.030
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.237	0.127	0.0270	0.0500	0.0800
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.237	0.127	0.0270	0.0500	0.0800
	Benzo(e)pyrene	mg/kg	-	-	0.273	0.147	0.0290	0.0480	0.0930
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.115	0.0680	0.0110	<0.030	0.0420
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.020	<0.020	<0.010	<0.010	<0.010
	Chrysene	mg/kg	0.057	0.86	0.276	0.325	0.0410	<0.14	<0.13
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	0.0370	0.0230	<0.0050	<0.0050	<0.020
	Fluoranthene	mg/kg	0.11	2.4	0.0760	0.0430	<0.010	0.0180	0.0320
	Fluorene	mg/kg	0.021	0.14	0.581	0.331	0.0340	0.115	0.159
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.020	<0.020	<0.010	<0.010	<0.010
	1-Methylnaphthalene	mg/kg	-	-	2.19	1.30	0.278	0.543	0.703
	2-Methylnaphthalene	mg/kg	0.020	0.201	3.75	2.27	0.483	0.909	1.19
	Naphthalene	mg/kg	0.035	0.39	1.09	0.671	0.156	0.269	0.369
	Perylene	mg/kg	-	-	<0.020	<0.020	<0.010	<0.010	<0.010
	Phenanthrene	mg/kg	0.042	0.52	2.05	1.15	0.267	0.538	0.707
	Pyrene	mg/kg	0.053	0.88	0.156	0.0960	0.0190	0.0350	0.0550
	Quinoline	mg/kg	-	-	<0.020	<0.020	<0.050	<0.050	<0.050
	d10-Acenaphthene	%	-	-	121	89.6	95.1	90.3	104
	d12-Chrysene	%	-	-	127	91.0	100	92.7	107
	d8-Naphthalene	%	-	-	113	83.2	89.0	85.1	97.9
	d10-Phenanthrene	%	-	-	123	89.5	97.2	90.4	102
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.160	0.0890	<0.020	0.0230	0.0380
	IACR (CCME)	mg/kg	-	-	2.72	1.49	0.370	0.470	0.730

Value > Lower Working Sediment Quality Guideline (WSQG).
Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).
Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_SCOUTDS				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	31.6	37.9	83.3	52.3	6.49
	pH(1:2 Soil:Water)	pH	-	-	8.21	8.44	8.60	8.42	0.0311
Particle Size	% Gravel (>2 mm)	%	-	-	2.00	3.30	9.80	4.42	6.40
	% Sand (2.00 mm - 1.00 mm)	%	-	-	1.80	4.10	17.7	6.62	5.21
	% Sand (1.00 mm - 0.50 mm)	%	-	-	6.50	17.0	23.4	15.8	8.04
	% Sand (0.50 mm - 0.25 mm)	%	-	-	6.10	27.6	38.7	25.6	4.50
	% Sand (0.25 mm - 0.125 mm)	%	-	-	5.30	11.3	18.5	12.7	3.17
	% Sand (0.125 mm - 0.063 mm	%	-	-	5.00	7.30	9.70	7.22	4.55
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	6.10	12.3	14.2	11.3	7.18
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	6.60	14.4	15.9	13.3	6.68
	% Clay (<4 µm)	%	-	-	1.40	3.10	4.00	3.06	0.691
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	2.69	4.22	5.66	4.16	0.613
Metals	Aluminum (Al)	mg/kg	-	-	5,610	5,960	7,320	6,166	480
	Antimony (Sb)	mg/kg	-	-	0.550	0.680	0.740	0.652	0.0841
	Arsenic (As)	mg/kg	5.9	17	4.48	5.10	5.44	4.95	0.484
	Barium (Ba)	mg/kg	-	-	170	180	212	190	15.2
	Beryllium (Be)	mg/kg	-	-	0.480	0.550	0.600	0.546	0.0385
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	5.20	7.70	5.82	0.428
	Cadmium (Cd)	mg/kg	0.60	3.5	1.21	1.56	2.21	1.65	0.139
	Calcium (Ca)	mg/kg	-	-	44,200	49,600	61,000	51,280	9,287
	Chromium (Cr)	mg/kg	37	90	10.1	10.8	13.2	11.1	0.798
	Cobalt (Co)	mg/kg	-	-	6.07	7.59	11.8	8.53	1.11
	Copper (Cu)	mg/kg	36	197	11.2	13.0	13.7	12.5	1.40
	Iron (Fe)	mg/kg	21,200	43,766	14,500	17,400	17,700	16,380	2,346
	Lead (Pb)	mg/kg	35	91.3	6.94	7.29	8.48	7.62	0.525
	Lithium (Li)	mg/kg	-	-	8.50	9.30	10.2	9.40	0.669
	Magnesium (Mg)	mg/kg	-	-	6,850	8,660	10,200	8,352	1,671
	Manganese (Mn)	mg/kg	460	1,100	441	529	813	605	76.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.0280	0.0375	0.0382	0.0342	0.00354
	Molybdenum (Mo)	mg/kg	25	23,000	1.16	1.23	1.49	1.31	0.104
	Nickel (Ni)	mg/kg	16	75	33.6	45.8	56.0	44.5	4.90
	Phosphorus (P)	mg/kg	-	-	1,020	1,210	1,300	1,166	103
	Potassium (K)	mg/kg	-	-	1,390	1,550	2,080	1,636	85.9
	Selenium (Se)	mg/kg	2.0	-	0.870	1.31	1.90	1.41	0.0838
	Silver (Ag)	mg/kg	0.50	-	0.110	0.140	0.150	0.134	0.00837
	Sodium (Na)	mg/kg	-	-	58.0	65.0	73.0	66.2	3.77
	Strontium (Sr)	mg/kg	-	-	70.6	75.0	83.1	75.6	5.37
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.176	0.182	0.211	0.188	0.0102
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	5.70	6.30	9.30	6.96	0.913
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.890	0.967	1.09	0.986	0.0912
	Vanadium (V)	mg/kg	-	-	25.4	27.3	33.9	28.4	2.35
	Zinc (Zn)	mg/kg	123	315	115	143	176	141	11.1
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.025	<0.07	<0.22	<0.025	0.0194
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	0.0190	0.00793	0.00266
	Acridine	mg/kg	-	-	<0.04	<0.15	0.482	0.174	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.008	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	<0.03	0.0410	0.224	0.0829	0.00879
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.01	0.0120	0.0700	0.0282	0.00650
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0270	0.0800	0.237	0.104	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0270	0.0800	0.237	0.104	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0290	0.0930	0.273	0.118	0.0211
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0110	0.0420	0.115	0.0494	0.00628
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	<0.02	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.0410	0.0410	0.325	0.145	0.0426
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.005	<0.02	0.0370	0.0150	0.00115
	Fluoranthene	mg/kg	0.11	2.4	<0.01	0.0320	0.0760	0.0358	0.00385
	Fluorene	mg/kg	0.021	0.14	0.0340	0.159	0.581	0.244	0.0470
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.02	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.278	0.703	2.19	1.00	0.109
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.483	1.19	3.75	1.72	0.190
	Naphthalene	mg/kg	0.035	0.39	0.156	0.369	1.09	0.511	0.0485
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.02	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.267	0.707	2.05	0.942	0.109
	Pyrene	mg/kg	0.053	0.88	0.0190	0.0550	0.156	0.0722	0.0120
	Quinoline	mg/kg	-	-	<0.02	<0.05	<0.05	<0.02	-
	d10-Acenaphthene	%	-	-	89.6	95.1	121	100	21.2
	d12-Chrysene	%	-	-	91.0	100	127	104	11.4
	d8-Naphthalene	%	-	-	83.2	89.0	112	93.5	16.9
	d10-Phenanthrene	%	-	-	89.5	97.2	123	100	20.4
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.02	0.0380	0.160	0.0660	0.0104
	IACR (CCME)	mg/kg	-	-	0.370	0.730	2.72	1.16	0.195

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FOBCP				
			Lower SQG	Upper SQG	RG_FOBCP-1	RG_FOBCP-2	RG_FOBCP-3	RG_FOBCP-4	RG_FOBCP-5
					13-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	14-Sep-21
Physical Tests	Moisture	%	-	-	41.1	36.1	53.5	67.5	59.5
	pH(1:2 Soil:Water)	pH	-	-	8.33	8.34	8.37	8.27	8.35
Particle Size	% Gravel (>2 mm)	%	-	-	3.80	<1.0	<1.0	4.20	17.7
	% Sand (2.00 mm - 1.00 mm)	%	-	-	5.00	<1.0	1.50	1.40	7.10
	% Sand (1.00 mm - 0.50 mm)	%	-	-	10.4	1.40	4.20	4.40	4.30
	% Sand (0.50 mm - 0.25 mm)	%	-	-	18.0	9.90	14.0	12.5	3.80
	% Sand (0.25 mm - 0.125 mm)	%	-	-	12.0	25.4	16.1	16.6	5.40
	% Sand (0.125 mm - 0.063 mm	%	-	-	8.90	19.5	13.5	14.3	9.00
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	18.1	20.2	21.2	20.7	22.6
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	20.2	20.0	24.3	22.6	25.9
	% Clay (<4 µm)	%	-	-	3.60	3.30	4.50	3.40	4.00
	Texture	-	-	-	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Silt loam
Organic Carbon	Total Organic Carbon	%	-	-	5.01	4.00	5.33	6.30	7.89
Metals	Aluminum (Al)	mg/kg	-	-	6,360	4,390	5,530	5,250	4,450
	Antimony (Sb)	mg/kg	-	-	0.680	0.610	0.570	0.460	0.370
	Arsenic (As)	mg/kg	5.9	17	5.08	4.52	4.34	4.12	3.50
	Barium (Ba)	mg/kg	-	-	215	160	180	204	251
	Beryllium (Be)	mg/kg	-	-	0.560	0.430	0.480	0.440	0.330
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	6.90	<5.0	5.80	5.60	7.90
	Cadmium (Cd)	mg/kg	0.60	3.5	2.02	1.56	1.77	1.99	1.29
	Calcium (Ca)	mg/kg	-	-	58,600	56,600	57,600	65,700	67,100
	Chromium (Cr)	mg/kg	37	90	12.0	8.80	10.5	10.1	8.11
	Cobalt (Co)	mg/kg	-	-	7.73	6.67	7.25	7.06	7.42
	Copper (Cu)	mg/kg	36	197	12.9	11.1	11.5	11.4	9.73
	Iron (Fe)	mg/kg	21,200	43,766	16,400	13,700	13,300	12,200	9,080
	Lead (Pb)	mg/kg	35	91.3	7.69	7.40	7.24	6.49	5.79
	Lithium (Li)	mg/kg	-	-	9.30	8.10	8.50	7.30	5.40
	Magnesium (Mg)	mg/kg	-	-	9,350	11,600	10,100	9,390	4,620
	Manganese (Mn)	mg/kg	460	1,100	570	521	582	553	308
	Mercury (Hg)	mg/kg	0.17	0.49	0.0357	0.0351	0.0454	0.0446	0.0400
	Molybdenum (Mo)	mg/kg	25	23,000	1.51	1.24	1.25	1.04	0.840
	Nickel (Ni)	mg/kg	16	75	51.3	46.8	52.9	53.1	35.2
	Phosphorus (P)	mg/kg	-	-	1,300	1,170	1,160	1,050	808
	Potassium (K)	mg/kg	-	-	1,900	1,020	1,510	1,500	1,190
	Selenium (Se)	mg/kg	2.0	-	2.24	1.71	2.08	3.12	2.73
	Silver (Ag)	mg/kg	0.50	-	0.150	0.140	0.140	0.140	0.130
	Sodium (Na)	mg/kg	-	-	73.0	68.0	71.0	72.0	81.0
	Strontium (Sr)	mg/kg	-	-	77.4	60.6	68.0	64.8	86.6
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl)	mg/kg	-	-	0.219	0.189	0.210	0.188	0.154
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	8.20	6.40	8.30	8.40	10.5
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.12	0.984	1.05	0.936	0.696
	Vanadium (V)	mg/kg	-	-	30.4	22.1	25.8	25.2	19.0
	Zinc (Zn)	mg/kg	123	315	161	127	139	143	78.2
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.085	<0.060	<0.090	<0.11	<0.13
	Acenaphthylene	mg/kg	0.0059	0.13	<0.016	<0.015	<0.015	<0.010	<0.0050
	Acridine	mg/kg	-	-	0.137	0.120	<0.17	<0.23	<0.27
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0040	<0.0060	0.00440
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0420	0.0460	<0.050	<0.080	<0.080
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0250	0.0220	0.0240	0.0440	0.0450
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0820	0.0890	0.0950	0.136	0.141
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0820	0.0890	0.0950	0.152	0.151
	Benzo(e)pyrene	mg/kg	-	-	0.0900	0.0980	0.0980	0.163	0.149
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0380	0.0400	0.0370	0.0700	0.0650
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.010	0.0160	0.0100
	Chrysene	mg/kg	0.057	0.86	0.199	0.219	<0.25	<0.36	<0.34
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.030	<0.030	<0.0050	0.0191	<0.030
	Fluoranthene	mg/kg	0.11	2.4	0.0280	0.0290	0.0390	0.0430	0.0480
	Fluorene	mg/kg	0.021	0.14	0.181	0.157	0.217	0.305	0.332
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.020	0.0100	<0.010	<0.015	0.0110
	1-Methylnaphthalene	mg/kg	-	-	0.810	0.675	0.889	1.25	1.26
	2-Methylnaphthalene	mg/kg	0.020	0.201	1.32	1.10	1.48	2.13	2.14
	Naphthalene	mg/kg	0.035	0.39	0.395	0.324	0.428	0.614	0.653
	Perylene	mg/kg	-	-	<0.010	<0.010	<0.010	<0.015	<0.010
	Phenanthrene	mg/kg	0.042	0.52	0.757	0.711	0.836	1.20	1.25
	Pyrene	mg/kg	0.053	0.88	0.0580	0.0590	0.0660	0.0930	0.0960
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.050	<0.015	<0.050
	d10-Acenaphthene	%	-	-	97.6	110	99.7	96.7	103
	d12-Chrysene	%	-	-	99.8	107	104	102	105
	d8-Naphthalene	%	-	-	93.8	99.7	93.3	91.1	96.4
	d10-Phenanthrene	%	-	-	98.8	105	101	98.5	101
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0560	0.0550	0.0410	0.0850	0.0830
	IACR (CCME)	mg/kg	-	-	0.910	0.970	0.840	1.37	1.35

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FOBCP				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	36.1	53.5	67.5	51.5	6.49
	pH(1:2 Soil:Water)	pH	-	-	8.27	8.34	8.37	8.33	0.0311
Particle Size	% Gravel (>2 mm)	%	-	-	<1	3.80	17.7	5.54	6.40
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	1.50	7.10	3.20	5.21
	% Sand (1.00 mm - 0.50 mm)	%	-	-	1.40	4.30	10.4	4.94	8.04
	% Sand (0.50 mm - 0.25 mm)	%	-	-	3.80	12.5	18.0	11.6	4.50
	% Sand (0.25 mm - 0.125 mm)	%	-	-	5.40	16.1	25.4	15.1	3.17
	% Sand (0.125 mm - 0.063 mm	%	-	-	8.90	13.5	19.5	13.0	4.55
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	18.1	20.7	22.6	20.6	7.18
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	20.0	22.6	25.9	22.6	6.68
	% Clay (<4 µm)	%	-	-	3.30	3.60	4.50	3.76	0.691
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	4.00	5.33	7.89	5.71	0.613
Metals	Aluminum (Al)	mg/kg	-	-	4,390	5,250	6,360	5,196	480
	Antimony (Sb)	mg/kg	-	-	0.370	0.570	0.680	0.538	0.0841
	Arsenic (As)	mg/kg	5.9	17	3.50	4.34	5.08	4.31	0.484
	Barium (Ba)	mg/kg	-	-	160	204	251	202	15.2
	Beryllium (Be)	mg/kg	-	-	0.330	0.440	0.560	0.448	0.0385
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	5.80	7.90	6.24	0.428
	Cadmium (Cd)	mg/kg	0.60	3.5	1.29	1.77	2.02	1.73	0.139
	Calcium (Ca)	mg/kg	-	-	56,600	58,600	67,100	61,120	9,287
	Chromium (Cr)	mg/kg	37	90	8.11	10.1	12.0	9.90	0.798
	Cobalt (Co)	mg/kg	-	-	6.67	7.25	7.73	7.23	1.11
	Copper (Cu)	mg/kg	36	197	9.73	11.4	12.9	11.3	1.40
	Iron (Fe)	mg/kg	21,200	43,766	9,080	13,300	16,400	12,936	2,346
	Lead (Pb)	mg/kg	35	91.3	5.79	7.24	7.69	6.92	0.525
	Lithium (Li)	mg/kg	-	-	5.40	8.10	9.30	7.72	0.669
	Magnesium (Mg)	mg/kg	-	-	4,620	9,390	11,600	9,012	1,671
	Manganese (Mn)	mg/kg	460	1,100	308	553	582	507	76.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.0351	0.0400	0.0454	0.0402	0.00354
	Molybdenum (Mo)	mg/kg	25	23,000	0.840	1.24	1.51	1.18	0.104
	Nickel (Ni)	mg/kg	16	75	35.2	51.3	53.1	47.9	4.90
	Phosphorus (P)	mg/kg	-	-	808	1,160	1,300	1,098	103
	Potassium (K)	mg/kg	-	-	1,020	1,500	1,900	1,424	85.9
	Selenium (Se)	mg/kg	2.0	-	1.71	2.24	3.12	2.38	0.0838
	Silver (Ag)	mg/kg	0.50	-	0.130	0.140	0.150	0.140	0.00837
	Sodium (Na)	mg/kg	-	-	68.0	72.0	81.0	73.0	3.77
	Strontium (Sr)	mg/kg	-	-	60.6	68.0	86.6	71.5	5.37
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.154	0.189	0.219	0.192	0.0102
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	6.40	8.30	10.5	8.36	0.913
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.696	0.984	1.12	0.957	0.0912
	Vanadium (V)	mg/kg	-	-	19.0	25.2	30.4	24.5	2.35
	Zinc (Zn)	mg/kg	123	315	78.2	139	161	130	11.1
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.06	<0.09	<0.13	<0.06	0.0194
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.015	<0.016	<0.005	0.00266
	Acridine	mg/kg	-	-	0.120	0.128	<0.27	0.128	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.006	0.00410	-
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0420	0.0440	<0.08	0.0440	0.00879
	Benzo(a)pyrene	mg/kg	0.032	0.78	0.0220	0.0250	0.0450	0.0320	0.00650
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0820	0.0950	0.141	0.109	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0820	0.0950	0.152	0.114	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0900	0.0980	0.163	0.120	0.0211
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0370	0.0400	0.0700	0.0500	0.00628
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	0.0160	0.0112	-
	Chrysene	mg/kg	0.057	0.86	0.199	0.209	<0.36	0.209	0.0426
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.005	0.0120	<0.03	0.0120	0.00115
	Fluoranthene	mg/kg	0.11	2.4	0.0280	0.0390	0.0480	0.0374	0.00385
	Fluorene	mg/kg	0.021	0.14	0.157	0.217	0.332	0.238	0.0470
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	0.0100	<0.02	0.0103	-
	1-Methylnaphthalene	mg/kg	-	-	0.675	0.889	1.26	0.977	0.109
	2-Methylnaphthalene	mg/kg	0.020	0.201	1.10	1.48	2.14	1.63	0.190
	Naphthalene	mg/kg	0.035	0.39	0.324	0.428	0.653	0.483	0.0485
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.015	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.711	0.836	1.25	0.951	0.109
	Pyrene	mg/kg	0.053	0.88	0.0580	0.0660	0.0960	0.0744	0.0120
	Quinoline	mg/kg	-	-	<0.015	<0.05	<0.05	<0.015	-
	d10-Acenaphthene	%	-	-	96.7	99.7	110	101	21.2
	d12-Chrysene	%	-	-	99.8	104	107	104	11.4
	d8-Naphthalene	%	-	-	91.1	93.8	99.7	94.9	16.9
	d10-Phenanthrene	%	-	-	98.5	101	105	101	20.4
	B(a)P Total Potency Equivalent	mg/kg	-	-	0.0410	0.0560	0.0850	0.0640	0.0104
	IACR (CCME)	mg/kg	-	-	0.840	0.970	1.37	1.09	0.195

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FRUPO				
			Lower SQG	Upper SQG	RG_FRUPO-1	RG_FRUPO-2	RG_FRUPO-3	RG_FRUPO-4	RG_FRUPO-5
					19-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
Physical Tests	Moisture	%	-	-	47.9	50.8	69.5	50.1	50.7
	pH(1:2 Soil:Water)	pH	-	-	8.40	8.30	8.21	8.41	8.13
Particle Size	% Gravel (>2 mm)	%	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1.0	2.20	2.20	<1.0	<1.0
	% Sand (1.00 mm - 0.50 mm)	%	-	-	8.10	2.40	6.70	<1.0	8.80
	% Sand (0.50 mm - 0.25 mm)	%	-	-	15.1	6.20	12.5	8.60	27.9
	% Sand (0.25 mm - 0.125 mm)	%	-	-	16.4	17.1	20.1	20.8	20.5
	% Sand (0.125 mm - 0.063 mm	%	-	-	14.1	22.3	14.9	19.8	11.5
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	19.4	22.1	17.0	21.9	12.6
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	22.1	23.4	22.0	24.0	15.0
	% Clay (<4 µm)	%	-	-	4.20	4.20	4.60	4.00	3.20
	Texture	-	-	-	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Sandy loam
Organic Carbon	Total Organic Carbon	%	-	-	5.38	4.86	5.80	5.52	4.54
Metals	Aluminum (Al)	mg/kg	-	-	6,800	5,450	4,960	5,260	6,800
	Antimony (Sb)	mg/kg	-	-	0.640	0.560	0.590	0.580	0.660
	Arsenic (As)	mg/kg	5.9	17	5.63	5.03	5.19	4.90	5.53
	Barium (Ba)	mg/kg	-	-	181	160	161	166	196
	Beryllium (Be)	mg/kg	-	-	0.600	0.480	0.530	0.480	0.590
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	6.40	<5.0	<5.0	<5.0	7.20
	Cadmium (Cd)	mg/kg	0.60	3.5	1.26	1.18	1.24	1.20	1.25
	Calcium (Ca)	mg/kg	-	-	40,000	51,900	46,300	49,500	43,800
	Chromium (Cr)	mg/kg	37	90	13.0	11.0	10.1	10.6	12.8
	Cobalt (Co)	mg/kg	-	-	6.15	5.79	6.43	5.90	6.34
	Copper (Cu)	mg/kg	36	197	13.0	11.9	12.2	12.4	12.9
	Iron (Fe)	mg/kg	21,200	43,766	16,100	13,400	14,600	13,300	15,800
	Lead (Pb)	mg/kg	35	91.3	8.08	7.28	7.33	7.34	8.04
	Lithium (Li)	mg/kg	-	-	9.80	9.00	8.00	8.90	9.70
	Magnesium (Mg)	mg/kg	-	-	9,670	13,000	9,760	12,100	9,290
	Manganese (Mn)	mg/kg	460	1,100	521	475	479	491	511
	Mercury (Hg)	mg/kg	0.17	0.49	0.0301	0.0289	0.0267	0.0338	0.0330
	Molybdenum (Mo)	mg/kg	25	23,000	1.56	1.36	1.35	1.42	1.58
	Nickel (Ni)	mg/kg	16	75	32.3	29.3	29.4	31.0	31.0
	Phosphorus (P)	mg/kg	-	-	1,420	1,390	1,490	1,370	1,490
	Potassium (K)	mg/kg	-	-	1,760	1,290	1,200	1,230	1,830
	Selenium (Se)	mg/kg	2.0	-	2.20	2.11	1.52	1.61	1.62
	Silver (Ag)	mg/kg	0.50	-	0.150	0.150	0.130	0.150	0.140
	Sodium (Na)	mg/kg	-	-	86.0	90.0	77.0	85.0	87.0
	Strontium (Sr)	mg/kg	-	-	64.6	62.1	61.2	60.1	68.5
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl)	mg/kg	-	-	0.195	0.165	0.157	0.172	0.199
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	10.1	10.4	7.70	9.30	10.6
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.08	0.947	1.00	0.933	1.05
	Vanadium (V)	mg/kg	-	-	32.5	25.2	25.3	25.2	32.0
	Zinc (Zn)	mg/kg	123	315	118	104	107	105	113
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.0373	0.0386	0.0420	0.0406	0.0331
	Acenaphthylene	mg/kg	0.0059	0.13	<0.0050	<0.0050	<0.010	<0.0050	<0.0050
	Acridine	mg/kg	-	-	0.0420	0.0630	0.0600	0.0740	0.0520
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0080	<0.0040	<0.0040
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0240	0.0230	0.0270	0.0340	0.0220
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.010	0.0120	<0.020	0.0160	0.0130
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0530	0.0540	0.0470	0.0690	0.0430
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0530	0.0540	0.0470	0.0690	0.0430
	Benzo(e)pyrene	mg/kg	-	-	0.0540	0.0530	0.0480	0.0670	0.0440
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0230	0.0190	<0.020	0.0280	0.0170
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.020	<0.010	<0.010
	Chrysene	mg/kg	0.057	0.86	0.134	0.140	0.128	0.163	0.108
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.0050	0.00530	<0.010	0.0120	<0.0050
	Fluoranthene	mg/kg	0.11	2.4	0.0220	0.0200	<0.020	0.0250	0.0240
	Fluorene	mg/kg	0.021	0.14	0.0650	0.0910	0.0940	0.110	0.0720
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.010	<0.010	<0.020	<0.010	<0.010
	1-Methylnaphthalene	mg/kg	-	-	0.367	0.404	0.513	0.486	0.379
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.591	0.672	0.813	0.774	0.619
	Naphthalene	mg/kg	0.035	0.39	0.217	0.211	0.274	0.240	0.202
	Perylene	mg/kg	-	-	<0.010	<0.010	<0.020	<0.010	<0.010
	Phenanthrene	mg/kg	0.042	0.52	0.480	0.482	0.522	0.578	0.425
	Pyrene	mg/kg	0.053	0.88	0.0360	0.0370	0.0350	0.0450	0.0330
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.020	<0.050	<0.050
	d10-Acenaphthene	%	-	-	87.8	82.4	88.7	85.4	82.5
	d12-Chrysene	%	-	-	98.7	93.4	103	95.0	93.9
	d8-Naphthalene	%	-	-	87.3	78.2	87.8	83.1	81.6
	d10-Phenanthrene	%	-	-	96.1	92.1	101	92.0	91.6
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.020	0.0270	0.0260	0.0420	0.0240
	IACR (CCME)	mg/kg	-	-	0.530	0.560	0.550	0.740	0.470

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FRUPO				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	47.9	50.7	69.5	53.8	6.49
	pH(1:2 Soil:Water)	pH	-	-	8.13	8.30	8.41	8.29	0.0311
Particle Size	% Gravel (>2 mm)	%	-	-	<1	<1	<1	<1	6.40
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	<1	2.20	1.48	5.21
	% Sand (1.00 mm - 0.50 mm)	%	-	-	<1	6.70	8.80	5.40	8.04
	% Sand (0.50 mm - 0.25 mm)	%	-	-	6.20	12.5	27.9	14.1	4.50
	% Sand (0.25 mm - 0.125 mm)	%	-	-	16.4	20.1	20.8	19.0	3.17
	% Sand (0.125 mm - 0.063 mm	%	-	-	11.5	14.9	22.3	16.5	4.55
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	12.6	19.4	22.1	18.6	7.18
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	15.0	22.1	24.0	21.3	6.68
	% Clay (<4 µm)	%	-	-	3.20	4.20	4.60	4.04	0.691
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	4.54	5.38	5.80	5.22	0.613
Metals	Aluminum (Al)	mg/kg	-	-	4,960	5,450	6,800	5,854	480
	Antimony (Sb)	mg/kg	-	-	0.560	0.590	0.660	0.606	0.0841
	Arsenic (As)	mg/kg	5.9	17	4.90	5.19	5.63	5.26	0.484
	Barium (Ba)	mg/kg	-	-	160	166	196	173	15.2
	Beryllium (Be)	mg/kg	-	-	0.480	0.530	0.600	0.536	0.0385
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	<5	7.20	5.72	0.428
	Cadmium (Cd)	mg/kg	0.60	3.5	1.18	1.24	1.26	1.23	0.139
	Calcium (Ca)	mg/kg	-	-	40,000	46,300	51,900	46,300	9,287
	Chromium (Cr)	mg/kg	37	90	10.1	11.0	13.0	11.5	0.798
	Cobalt (Co)	mg/kg	-	-	5.79	6.15	6.43	6.12	1.11
	Copper (Cu)	mg/kg	36	197	11.9	12.4	13.0	12.5	1.40
	Iron (Fe)	mg/kg	21,200	43,766	13,300	14,600	16,100	14,640	2,346
	Lead (Pb)	mg/kg	35	91.3	7.28	7.34	8.08	7.61	0.525
	Lithium (Li)	mg/kg	-	-	8.00	9.00	9.80	9.08	0.669
	Magnesium (Mg)	mg/kg	-	-	9,290	9,760	13,000	10,764	1,671
	Manganese (Mn)	mg/kg	460	1,100	475	491	521	495	76.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.0267	0.0301	0.0338	0.0305	0.00354
	Molybdenum (Mo)	mg/kg	25	23,000	1.35	1.42	1.58	1.45	0.104
	Nickel (Ni)	mg/kg	16	75	29.3	31.0	32.3	30.6	4.90
	Phosphorus (P)	mg/kg	-	-	1,370	1,420	1,490	1,432	103
	Potassium (K)	mg/kg	-	-	1,200	1,290	1,830	1,462	85.9
	Selenium (Se)	mg/kg	2.0	-	1.52	1.62	2.20	1.81	0.0838
	Silver (Ag)	mg/kg	0.50	-	0.130	0.150	0.150	0.144	0.00837
	Sodium (Na)	mg/kg	-	-	77.0	86.0	90.0	85.0	3.77
	Strontium (Sr)	mg/kg	-	-	60.1	62.1	68.5	63.3	5.37
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.157	0.172	0.199	0.178	0.0102
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	7.70	10.1	10.6	9.62	0.913
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.933	1.00	1.08	1.00	0.0912
	Vanadium (V)	mg/kg	-	-	25.2	25.3	32.5	28.0	2.35
	Zinc (Zn)	mg/kg	123	315	104	107	118	109	11.1
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.0331	0.0386	0.0420	0.0383	0.0194
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	<0.01	<0.005	0.00266
	Acridine	mg/kg	-	-	0.0420	0.0600	0.0740	0.0582	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.008	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	0.0220	0.0240	0.0340	0.0260	0.00879
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.01	0.0125	<0.02	0.0128	0.00650
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0430	0.0530	0.0690	0.0532	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0430	0.0530	0.0690	0.0532	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0440	0.0530	0.0670	0.0532	0.0211
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	0.0170	0.0190	0.0280	0.0210	0.00628
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	<0.02	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.108	0.134	0.163	0.135	0.0426
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.005	<0.005	0.0120	0.00648	0.00115
	Fluoranthene	mg/kg	0.11	2.4	<0.02	0.0220	0.0250	0.0222	0.00385
	Fluorene	mg/kg	0.021	0.14	0.0650	0.0910	0.110	0.0864	0.0470
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.02	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.367	0.404	0.513	0.430	0.109
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.591	0.672	0.813	0.694	0.190
	Naphthalene	mg/kg	0.035	0.39	0.202	0.217	0.274	0.229	0.0485
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.02	<0.01	-
	Phenanthrene	mg/kg	0.042	0.52	0.425	0.482	0.578	0.497	0.109
	Pyrene	mg/kg	0.053	0.88	0.0330	0.0360	0.0450	0.0372	0.0120
	Quinoline	mg/kg	-	-	<0.02	<0.05	<0.05	<0.02	-
	d10-Acenaphthene	%	-	-	82.4	85.4	88.7	85.4	21.2
	d12-Chrysene	%	-	-	93.4	95.0	103	96.8	11.4
	d8-Naphthalene	%	-	-	78.2	83.1	87.8	83.6	16.9
	d10-Phenanthrene	%	-	-	91.6	92.1	101	94.6	20.4
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.02	0.0260	0.0420	0.0278	0.0104
	IACR (CCME)	mg/kg	-	-	0.470	0.550	0.740	0.570	0.195

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FO22				
			Lower SQG	Upper SQG	RG_FO22-1	RG_FO22-2	RG_FO22-3	RG_FO22-4	RG_FO22-5
					12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21
Physical Tests	Moisture	%	-	-	36.8	34.6	34.9	51.7	54.2
	pH(1:2 Soil:Water)	pH	-	-	8.45	8.31	8.45	8.40	8.43
Particle Size	% Gravel (>2 mm)	%	-	-	<1.0	2.90	<1.0	<1.0	<1.0
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (1.00 mm - 0.50 mm)	%	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.50 mm - 0.25 mm)	%	-	-	3.60	11.7	4.60	<1.0	<1.0
	% Sand (0.25 mm - 0.125 mm)	%	-	-	27.0	30.3	29.1	12.2	8.30
	% Sand (0.125 mm - 0.063 mm	%	-	-	22.3	16.3	22.9	22.1	18.6
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	22.8	18.4	21.7	29.5	30.4
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	20.7	16.8	18.9	30.7	35.7
	% Clay (<4 µm)	%	-	-	2.70	2.60	2.50	4.80	6.20
	Texture	-	-	-	Sandy loam	Sandy loam	Sandy loam	Silt loam	Silt loam
Organic Carbon	Total Organic Carbon	%	-	-	2.82	2.51	2.81	5.43	6.09
Metals	Aluminum (Al)	mg/kg	-	-	5,740	6,160	5,430	5,420	6,830
	Antimony (Sb)	mg/kg	-	-	0.490	0.590	0.580	0.540	0.550
	Arsenic (As)	mg/kg	5.9	17	4.33	5.10	5.27	4.74	4.84
	Barium (Ba)	mg/kg	-	-	150	166	153	164	175
	Beryllium (Be)	mg/kg	-	-	0.470	0.540	0.520	0.510	0.520
	Bismuth (Bi)	mg/kg	-	-	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B)	mg/kg	-	-	6.10	5.60	<5.0	<5.0	6.40
	Cadmium (Cd)	mg/kg	0.60	3.5	0.896	0.953	0.990	1.27	1.18
	Calcium (Ca)	mg/kg	-	-	39,100	31,700	39,500	43,800	40,800
	Chromium (Cr)	mg/kg	37	90	10.8	11.2	10.8	11.1	13.1
	Cobalt (Co)	mg/kg	-	-	4.63	5.67	5.51	5.52	5.62
	Copper (Cu)	mg/kg	36	197	9.42	11.1	11.6	13.5	14.1
	Iron (Fe)	mg/kg	21,200	43,766	12,100	14,600	14,300	13,000	13,100
	Lead (Pb)	mg/kg	35	91.3	7.34	8.33	8.51	7.94	8.44
	Lithium (Li)	mg/kg	-	-	9.10	8.70	9.10	9.60	10.8
	Magnesium (Mg)	mg/kg	-	-	11,700	8,590	12,000	13,200	13,600
	Manganese (Mn)	mg/kg	460	1,100	329	394	405	423	516
	Mercury (Hg)	mg/kg	0.17	0.49	0.0247	0.0241	0.0245	0.0396	0.0394
	Molybdenum (Mo)	mg/kg	25	23,000	1.05	1.18	1.22	1.17	1.26
	Nickel (Ni)	mg/kg	16	75	21.3	24.1	23.6	29.0	26.5
	Phosphorus (P)	mg/kg	-	-	1,640	1,670	1,690	1,400	1,410
	Potassium (K)	mg/kg	-	-	1,360	1,390	1,160	1,120	1,450
	Selenium (Se)	mg/kg	2.0	-	1.80	1.52	1.60	2.59	1.97
	Silver (Ag)	mg/kg	0.50	-	0.120	0.110	0.130	0.180	0.200
	Sodium (Na)	mg/kg	-	-	72.0	68.0	72.0	72.0	74.0
	Strontium (Sr)	mg/kg	-	-	54.7	57.9	56.7	52.3	53.7
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl)	mg/kg	-	-	0.170	0.173	0.170	0.181	0.218
	Tin (Sn)	mg/kg	-	-	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti)	mg/kg	-	-	11.5	9.10	8.70	10.3	14.4
	Tungsten (W)	mg/kg	-	-	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U)	mg/kg	-	-	1.08	1.13	1.15	0.975	1.06
	Vanadium (V)	mg/kg	-	-	25.9	28.5	26.3	25.1	29.3
	Zinc (Zn)	mg/kg	123	315	88.3	101	100	98.4	97.3
	Zirconium (Zr)	mg/kg	-	-	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	0.00920	<0.0050	<0.0050	0.0247	0.0279
	Acenaphthylene	mg/kg	0.0059	0.13	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acridine	mg/kg	-	-	0.0180	<0.010	<0.010	0.0350	0.0400
	Anthracene	mg/kg	0.047	0.25	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene	mg/kg	0.032	0.39	<0.010	<0.010	<0.010	0.0130	0.0150
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0190	0.0140	0.0170	0.0330	0.0350
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.0190	<0.015	0.0170	0.0330	0.0350
	Benzo(e)pyrene	mg/kg	-	-	0.0190	0.0160	0.0180	0.0340	0.0350
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.010	<0.010	<0.010	0.0120	<0.010
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene	mg/kg	0.057	0.86	0.0420	0.0370	0.0400	0.0760	0.0870
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene	mg/kg	0.11	2.4	<0.010	<0.010	<0.010	<0.010	0.0160
	Fluorene	mg/kg	0.021	0.14	0.0210	<0.010	0.0140	0.0520	0.0660
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene	mg/kg	-	-	0.102	0.0960	0.100	0.240	0.261
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.164	0.146	0.159	0.382	0.436
	Naphthalene	mg/kg	0.035	0.39	0.0500	0.0530	0.0600	0.118	0.141
	Perylene	mg/kg	-	-	0.0210	0.0160	0.0210	0.0280	0.0150
	Phenanthrene	mg/kg	0.042	0.52	0.138	0.121	0.134	0.295	0.328
	Pyrene	mg/kg	0.053	0.88	0.0120	0.0110	<0.010	0.0270	0.0340
	Quinoline	mg/kg	-	-	<0.050	<0.050	<0.050	<0.050	<0.050
	d10-Acenaphthene	%	-	-	95.3	79.4	78.2	91.1	87.0
	d12-Chrysene	%	-	-	94.2	92.5	84.5	90.5	87.9
	d8-Naphthalene	%	-	-	82.3	77.9	73.7	83.5	85.5
	d10-Phenanthrene	%	-	-	108	100	79.8	95.5	97.7
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.020	<0.020	<0.020	<0.020	<0.020
	IACR (CCME)	mg/kg	-	-	0.210	0.180	0.200	0.340	0.370

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.1: Sediment Quality Samples and Summary Statistics for Lotic Reference and Mine-Exposed Areas, FRO LAEMP, September 2021

	Parameter	Units	BC Sediment Quality Guidelines		RG_FO22				
			Lower SQG	Upper SQG	Minimum	Median	Maximum	Mean	Standard Deviation
Physical Tests	Moisture	%	-	-	34.6	36.8	54.2	42.4	6.49
	pH(1:2 Soil:Water)	pH	-	-	8.31	8.43	8.45	8.41	0.0311
Particle Size	% Gravel (>2 mm)	%	-	-	<1	<1	2.90	1.38	6.40
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	<1	<1	<1	5.21
	% Sand (1.00 mm - 0.50 mm)	%	-	-	<1	<1	<1	<1	8.04
	% Sand (0.50 mm - 0.25 mm)	%	-	-	<1	3.60	11.7	4.38	4.50
	% Sand (0.25 mm - 0.125 mm)	%	-	-	8.30	27.0	30.3	21.4	3.17
	% Sand (0.125 mm - 0.063 mm	%	-	-	16.3	22.1	22.9	20.4	4.55
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	18.4	22.8	30.4	24.6	7.18
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	16.8	20.7	35.7	24.6	6.68
	% Clay (<4 µm)	%	-	-	2.50	2.70	6.20	3.76	0.691
	Texture	-	-	-	-	-	-	-	-
Organic Carbon	Total Organic Carbon	%	-	-	2.51	2.82	6.09	3.93	0.613
Metals	Aluminum (Al)	mg/kg	-	-	5,420	5,740	6,830	5,916	480
	Antimony (Sb)	mg/kg	-	-	0.490	0.550	0.590	0.550	0.0841
	Arsenic (As)	mg/kg	5.9	17	4.33	4.84	5.27	4.86	0.484
	Barium (Ba)	mg/kg	-	-	150	164	175	162	15.2
	Beryllium (Be)	mg/kg	-	-	0.470	0.520	0.540	0.512	0.0385
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	-
	Boron (B)	mg/kg	-	-	<5	5.60	6.40	5.62	0.428
	Cadmium (Cd)	mg/kg	0.60	3.5	0.896	0.990	1.27	1.06	0.139
	Calcium (Ca)	mg/kg	-	-	31,700	39,500	43,800	38,980	9,287
	Chromium (Cr)	mg/kg	37	90	10.8	11.1	13.1	11.4	0.798
	Cobalt (Co)	mg/kg	-	-	4.63	5.52	5.67	5.39	1.11
	Copper (Cu)	mg/kg	36	197	9.42	11.6	14.1	11.9	1.40
	Iron (Fe)	mg/kg	21,200	43,766	12,100	13,100	14,600	13,420	2,346
	Lead (Pb)	mg/kg	35	91.3	7.34	8.33	8.51	8.11	0.525
	Lithium (Li)	mg/kg	-	-	8.70	9.10	10.8	9.46	0.669
	Magnesium (Mg)	mg/kg	-	-	8,590	12,000	13,600	11,818	1,671
	Manganese (Mn)	mg/kg	460	1,100	329	405	516	413	76.8
	Mercury (Hg)	mg/kg	0.17	0.49	0.0241	0.0247	0.0396	0.0305	0.00354
	Molybdenum (Mo)	mg/kg	25	23,000	1.05	1.18	1.26	1.18	0.104
	Nickel (Ni)	mg/kg	16	75	21.3	24.1	29.0	24.9	4.90
	Phosphorus (P)	mg/kg	-	-	1,400	1,640	1,690	1,562	103
	Potassium (K)	mg/kg	-	-	1,120	1,360	1,450	1,296	85.9
	Selenium (Se)	mg/kg	2.0	-	1.52	1.80	2.59	1.90	0.0838
	Silver (Ag)	mg/kg	0.50	-	0.110	0.130	0.200	0.148	0.00837
	Sodium (Na)	mg/kg	-	-	68.0	72.0	74.0	71.6	3.77
	Strontium (Sr)	mg/kg	-	-	52.3	54.7	57.9	55.1	5.37
	Sulfur (S)	mg/kg	-	-	<1000	<1000	<1000	<1000	-
	Thallium (Tl)	mg/kg	-	-	0.170	0.173	0.218	0.182	0.0102
	Tin (Sn)	mg/kg	-	-	<2	<2	<2	<2	-
	Titanium (Ti)	mg/kg	-	-	8.70	10.3	14.4	10.8	0.913
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	-
	Uranium (U)	mg/kg	-	-	0.975	1.08	1.15	1.08	0.0912
	Vanadium (V)	mg/kg	-	-	25.1	26.3	29.3	27.0	2.35
	Zinc (Zn)	mg/kg	123	315	88.3	98.4	101	97.0	11.1
	Zirconium (Zr)	mg/kg	-	-	<1	<1	<1	<1	-
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.0067	0.089	<0.005	0.00920	0.0279	0.0144	0.0194
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	<0.005	<0.005	0.00266
	Acridine	mg/kg	-	-	<0.01	0.0180	0.0400	0.0226	-
	Anthracene	mg/kg	0.047	0.25	<0.004	<0.004	<0.004	<0.004	-
	Benz(a)anthracene	mg/kg	0.032	0.39	<0.01	<0.01	0.0150	0.0116	0.00879
	Benzo(a)pyrene	mg/kg	0.032	0.78	<0.01	<0.01	<0.01	<0.01	0.00650
	Benzo(b&j)fluoranthene	mg/kg	-	-	0.0140	0.0190	0.0350	0.0236	0.0206
	Benzo(b+j+k)fluoranthene	mg/kg	-	-	<0.015	0.0190	0.0350	0.0238	0.0206
	Benzo(e)pyrene	mg/kg	-	-	0.0160	0.0190	0.0350	0.0244	0.0211
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.01	<0.01	0.0120	0.0104	0.00628
	Benzo(k)fluoranthene	mg/kg	0.24	13	<0.01	<0.01	<0.01	<0.01	-
	Chrysene	mg/kg	0.057	0.86	0.0370	0.0420	0.0870	0.0564	0.0426
	Dibenz(a,h)anthracene	mg/kg	0.0062	0.14	<0.005	<0.005	<0.005	<0.005	0.00115
	Fluoranthene	mg/kg	0.11	2.4	<0.01	<0.01	0.0160	0.0112	0.00385
	Fluorene	mg/kg	0.021	0.14	<0.01	0.0210	0.0660	0.0326	0.0470
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.01	<0.01	-
	1-Methylnaphthalene	mg/kg	-	-	0.0960	0.102	0.261	0.160	0.109
	2-Methylnaphthalene	mg/kg	0.020	0.201	0.146	0.164	0.436	0.257	0.190
	Naphthalene	mg/kg	0.035	0.39	0.0500	0.0600	0.141	0.0844	0.0485
	Perylene	mg/kg	-	-	0.0150	0.0210	0.0280	0.0202	-
	Phenanthrene	mg/kg	0.042	0.52	0.121	0.138	0.328	0.203	0.109
	Pyrene	mg/kg	0.053	0.88	<0.01	0.0120	0.0340	0.0188	0.0120
	Quinoline	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	-
	d10-Acenaphthene	%	-	-	78.2	87.0	95.3	86.2	21.2
	d12-Chrysene	%	-	-	84.5	90.5	94.2	89.9	11.4
	d8-Naphthalene	%	-	-	73.7	82.3	85.5	80.6	16.9
	d10-Phenanthrene	%	-	-	79.8	97.7	108	96.2	20.4
	B(a)P Total Potency Equivalent	mg/kg	-	-	<0.02	<0.02	<0.02	<0.02	0.0104
	IACR (CCME)	mg/kg	-	-	0.180	0.210	0.370	0.260	0.195

Value > Lower Working Sediment Quality Guideline (WSQG).

Value > Upper Working Sediment Quality Guideline (WSQG, or alert concentration in the case of Selenium).

Notes: All summary stats calculated to 3 significant figures. "-" indicates no data available.

Table D.2: Mean Calcite Index Values in the Fording River, FRO LAEMP, 2021

Biological Monitoring Area	Calcite Reach	Regional Calcite Monitoring Program Calcite Index Within Reaches		Calcite Index at Benthic Invertebrate Monitoring Areas Within Riffles	
		CI	CI'	CI	CI'
RG_HENUP	HENR3	0.00	0.00	0.00	0.00
RG_FO26	FORD12	0.14	0.03	0.10	0.06
RG_UFR1	-	-	-	-	-
RG_FODHE	FORD11	0.10	0.02	0.44	0.08
RG_FOUCL				0.02	0.00
RG_FOUNGD				0.11	0.04
RG_FODNGD	-	-	-	0.10	0.04
RG_MP1	FORD10	0.35	0.13	0.17	0.04
RG_FOUSH				0.17	0.04
RG_FOUKI				0.39	0.07
RG_FOBKS	FORD9	0.25	0.13	0.22	0.08
RG_SCOUTDS				0.06	0.01
RG_FOBSC				0.13	0.04
RG_FOBCP				0.33	0.13
RG_FRCP1SW				0.56	0.17
RG_FRUPO	FORD8	0.67	0.40	0.81	0.31
RG_FODPO				0.77	0.36
RG_FO22				0.56	0.26
RG_FOUEW	FORD7/6	1.16	0.90	0.65	0.25

Notes: "-" indicates that no calcite monitoring was completed. CI represents calcite index determined by presence and CI' represents calcite index determined by fraction of rock having calcite.

Table D.3: **Calcite Index Values in the Fording River, FRO LAEMP, 2013 to 2021**

Biological Monitoring Area	Teck Water Station	Calcite Reach	Regional Calcite Monitoring Program Calcite Index Within Reaches									Calcite Concretion at Benthic Invertebrate Monitoring Areas Within Riffles																						
			2013	2014	2015	2016	2017	2018	2019	2020	2021	2015	2016	2017	2018					2019					2020					2021				
RG_HENUP	FR_HC3	HENR3	0.00	0.00	0.00	-	-	-		-	0.00	0.0	0.0	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FO26	FR_UFR1	FORD12	0.00	0.00	0.00	0.27	-	0.30	0.28	0.15	0.14	0.0	0.0	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_UFR1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FODHE	FR_FR1											0.0	0.0	0.00	0.00	0.00	0.00	-	-	0.00	0.04	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FOUCL	-	FORD11	0.00	0.00	0.00	-	-	0.30	-	0.18	0.10	-	-	-	-	-	-	-	-	0.00	0.08	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FOUNGD	-											0.0	-	0.00	-	0.08	0.00	-	-	0.03	0.08	0.01	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FODNGD	FR_FRABEC1	-	-	-	-	-	-	-	-	-	-	0.0	-	0.00	0.03	0.00	0.06	-	-	0.00	0.01	0.00	-	-	0.15	0.00	0.00	-	-	0.00	0.00	0.01	-	-
RG_MP1	FR_MULTIPLATE											0.0	-	0.00	0.55	0.24	0.28	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FOUSH	-	FORD10	0.00	0.00	0.00	-	-	0.60	-	0.52	0.35	0.0	-	0.01	0.00	0.00	0.02	-	-	0.12	0.01	0.09	-	-	0.14	0.10	0.00	-	-	0.00	0.00	0.00	-	-
RG_FOUKI	FR_FR2											0.0	0.8	0.00	0.00	0.00	0.00	-	-	0.00	0.00	0.02	-	-	0.00	0.00	0.02	-	-	0.00	0.00	0.00	-	-
RG_FOBKS	GH_FR3											0.0	1.0	0.00	0.03	0.00	0.00	-	-	0.01	0.02	0.08	-	-	0.00	0.02	0.02	-	-	0.00	0.07	0.00	-	-
RG_SCOUTDS	-											-	-	-	-	-	-	-	-	0.00	0.00	0.00	-	-	0.01	0.01	0.00	-	-	0.00	0.00	0.00	-	-
RG_FOBSC	FR_FR4		0.00	0.00	0.00	0.00	0.32	0.70	0.54	0.44	0.25	-	0.8	0.06	0.00	0.01	0.06	-	-	0.00	0.01	0.00	-	-	0.03	0.13	0.17	-	-	0.00	0.00	0.00	-	-
RG_FOBCP	FR_FRCP1											0.3	0.6	0.07	0.07	0.24	0.14	0.39	0.46	0.08	0.11	0.45	-	-	0.05	0.02	0.30	0.71	0.28	0.00	0.00	0.02	0.04	0.09
RG_FRCP1SW	FR_FRCP1SW		-	-	-	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FRUPO	FR_FRRD											-	-	0.00	0.00	0.06	0.00	-	-	0.10	0.06	0.10	-	-	0.01	0.00	0.00	-	-	0.00	0.00	0.00	-	-
RG_FODPO	GH_PC2	FORD8	0.31	0.49	0.48	-	-	0.60	-	0.69	0.67	0.0	0.0	0.00	0.00	0.00	0.01	-	-	0.01	0.01	0.04	-	-	0.02	0.21	0.06	-	-	0.00	0.00	0.00	-	-
RG_FO22	FR_FRABCH											0.0	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RG_FOUEW	FR_FR5	FORD7/6	0.59	0.70	1.04	0.64	0.71	0.80	0.94	1.00	1.16	0.0	0.0	0.00	0.06	0.00	0.00	-	-	0.14	0.02	0.07	-	-	0.77	0.12	0.00	-	-	0.00	0.00	0.00	-	-

Notes: "-" indicates that no calcite monitoring was completed. Calcite Index (CI) was calculated using binary presence/absence scoring to allow for comparisons over time. See table X.x for Calculated using the proportional calcite presence scoring method (CI').

Table D.3: Calcite Index Values in the Fording River, FRO LAEMP, 2013 to 2021

Biological Monitoring Area	Teck Water Station	Calcite Reach	Calcite Presence at Benthic Invertebrate Monitoring Areas Within Riffles																														
			2015	2016	2017	2018					2019					2020[a]					2021					2015	2016	2017	2018				
RG_HENUP	FR_HC3	HENR3	0.1	0.0	0.01	0.00	0.03	0.01	-	-	0.00	0.01	0.03	-	-	0.00	0.03	0.01	-	-	0.00	0.00	0.00	-	-	0.1	0.0	0.0	0.0	0.0	0.0	-	-
RG_FO26	FR_UFR1	FORD12	0.9	0.8	0.62	0.88	0.96	0.72	-	-	0.97	0.99	0.98	-	-	0.01	0.03	0.10	-	-	0.13	0.05	0.12	-	-	0.9	0.8	0.6	0.9	1.0	0.7	-	-
RG_UFR1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.03	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_FODHE	FR_FR1		0.9	0.0	0.92	0.55	0.36	0.82	-	-	0.12	0.06	0.22	-	-	0.83	0.88	0.67	-	-	0.53	0.54	0.25	-	-	0.9	0.0	0.9	0.6	0.4	0.8	-	-
RG_FOUCL	-	FORD11	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59	0.00	0.00	-	-	0.02	0.01	0.03	-	-	-	-	-	-	-	-	-	-
RG_FOUNGD	-		0.8	-	0.62	0.98	1.00	0.94	-	-	0.45	0.59	0.48	-	-	0.10	0.04	0.13	-	-	0.07	0.12	0.15	-	-	0.8	-	0.6	1.0	1.1	0.9	-	-
RG_FODNGD	FR_FRABEC1	-	0.8	-	0.96	0.89	0.93	0.90	-	-	0.36	0.42	0.39	-	-	0.88	0.92	0.80	-	-	0.15	0.00	0.14	-	-	0.8	-	1.0	0.9	0.9	1.0	-	-
RG_MP1	FR_MULTIPLATE		1.0	-	0.95	0.88	0.89	0.83	-	-	0.45	0.55	0.71	-	-	0.79	0.92	0.72	-	-	0.37	0.09	0.05	-	-	1.0	-	1.0	1.4	1.1	1.1	-	-
RG_FOUSH	-	FORD10	1.0	-	0.89	0.97	0.96	0.90	-	-	0.99	1.00	0.99	-	-	0.91	0.79	0.88	-	-	0.19	0.04	0.39	-	-	1.0	-	0.9	1.0	1.0	0.9	-	-
RG_FOUKI	FR_FR2		1.0	1.8	0.78	0.61	0.81	0.58	-	-	0.46	0.51	0.49	-	-	0.49	0.51	0.84	-	-	0.39	0.36	0.42	-	-	1.0	1.8	0.8	0.6	0.8	0.6	-	-
RG_FOBKS	GH_FR3		0.9	2.0	0.48	0.79	0.48	0.66	-	-	0.74	0.86	0.80	-	-	0.55	0.60	0.55	-	-	0.19	0.19	0.21	-	-	0.9	2.0	0.5	0.8	0.5	0.7	-	-
RG_SCOUTDS	-		-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	0.78	0.53	-	-	0.19	0.00	0.01	-	-	-	-	-	-	-	-	-	-
RG_FOBSC	FR_FR4		1.0	1.8	1.00	0.99	1.00	0.89	-	-	0.25	0.33	0.22	-	-	0.64	0.78	0.77	-	-	0.01	0.29	0.10	-	-	1.2	1.8	1.1	1.0	1.0	1.0	-	-
RG_FOBCP	FR_FRCP1		1.0	1.6	0.99	0.81	0.94	0.92	1.00	0.97	0.85	0.50	0.85	-	-	0.87	0.80	0.86			0.15	0.15	0.67	0.32	0.22	1.3	1.6	1.1	0.9	1.2	1.1	1.4	1.4
RG_FRCP1SW	FR_FRCP1SW		-	-	1.00	-	-	-	-	-	0.41	0.09	0.70	-	-	0.18	0.53	0.56	-	-	0.38	0.52	0.77	-	-	-	-	1.0	-	-	-	-	-
RG_FRUPO	FR_FRRD		-	-	1.00	0.95	0.98	1.00	-	-	1.00	0.61	0.89	-	-	0.15	0.11	0.10	-	-	0.89	0.75	0.78	-	-	-	-	1.0	1.0	1.0	1.0	-	-
RG_FODPO	GH_PC2	FORD8	0.9	1.0	0.93	0.93	0.94	0.99	-	-	0.45	0.51	0.87	-	-	0.82	0.84	0.85	-	-	0.59	0.84	0.88	-	-	0.9	1.0	0.9	0.9	0.9	1.0	-	-
RG_FO22	FR_FRABCH		0.8	-	0.96	1.00	0.82	0.96	0.90	0.95	0.89	0.90	0.76			0.42	0.80	0.72			0.52	0.60	0.49	0.48	0.70	0.8	-	1.0	1.0	0.8	1.0	0.9	1.0
RG_FOUEW	FR_FR5	FORD7/6	1.0	-	0.99	1.00	1.00	1.00	-	-	0.89	0.95	0.51	-	-	0.98	0.93	0.84	-	-	0.83	0.62	0.51	-	-	1.0	1.0	1.0	1.1	1.0	1.0	-	-

Notes: "-" indicates that no calcite monitoring was completed. Calcite Index (CI) was calculated using binary presence/absence scoring to allow for comparisons over time. See table X.x for Calculated using the proportional calcite presence scoring method (CI').

Table D.3: **Calcite Index Values in the Fording River, FRO LAEMP, 2013 to 2021**

Biological Monitoring Area	Teck Water Station	Calcite Reach	Calcite Index at Benthic Invertebrate Monitoring Areas Within Riffles														
			2019					2020[a]					2021				
RG_HENUP	FR_HC3	HENR3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-
RG_FO26	FR_UFR1	FORD12	1.0	1.0	1.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1	0.1	-	-
RG_UFR1	-	-	-	-	-	-	-	0.0	0.0	0.1	-	-	-	-	-	-	-
RG_FODHE	FR_FR1		0.2	0.1	0.1	-	-	0.8	0.9	0.7	-	-	0.5	0.5	0.3	-	-
RG_FOUCL	-	FORD11	0.9	1.1	1.0	-	-	0.6	0.0	0.0	-	-	0	0	0	-	-
RG_FOUNGD	-		0.5	0.7	0.5	-	-	0.1	0.0	0.1	-	-	0.1	0.1	0.2	-	-
RG_FODNGD	FR_FRABEC1	-	0.4	0.4	0.4	-	-	1.0	0.9	0.8	-	-	0.2	0	0.2	-	-
RG_MP1	FR_MULTIPLATE		0.5	0.6	0.7	-	-	0.8	0.9	0.7	-	-	0.4	0.1	0.1	-	-
RG_FOUSH	-	FORD10	1.1	1.0	1.1	-	-	1.1	0.9	0.9	-	-	0.2	0	0.4	-	-
RG_FOUKI	FR_FR2		0.5	0.5	0.5	-	-	0.5	0.5	0.9	-	-	0.4	0.4	0.4	-	-
RG_FOBKS	GH_FR3		0.8	0.9	0.9	-	-	0.7	0.8	0.5	-	-	0.2	0.3	0.2	-	-
RG_SCOUTDS	-		0.0	0.0	0.0	-	-	0.6	0.6	0.6	-	-	0.2	0.0	0	-	-
RG_FOBSC	FR_FR4		0.3	0.2	0.3	-	-	0.7	0.9	0.9	-	-	0	0.3	0.2	-	-
RG_FOBCP	FR_FRCP1		0.9	0.6	1.3	-	-	0.9	0.8	1.2	1.7	1.2	0.2	0.2	0.7	0.4	0.3
RG_FRCP1SW	FR_FRCP1SW		0.4	0.1	0.7	-	-	0.2	0.5	0.6	-	-	0.4	0.5	0.8	-	-
RG_FRUPO	FR_FRRD		1.0	0.7	1.1	-	-	0.1	0.1	0.2	-	-	0.9	0.8	0.8	-	-
RG_FODPO	GH_PC2	FORD8	0.5	0.5	0.9	-	-	0.8	1.1	0.9	-	-	0.6	0.8	0.9	-	-
RG_FO22	FR_FRABCH		0.9	0.8	0.9	0.9	0.5	0.4	0.8	0.7	0.9	0.7	0.5	0.6	0.5	0.5	0.7
RG_FOUEW	FR_FR5	FORD7/6	0.6	1.0	1.1	-	-	1.8	1.1	0.8	-	-	0.8	0.6	0.5	-	-

Notes: "-" indicates that no calcite monitoring was completed. Calcite Index (CI) was calculated using binary presence/absence scoring to allow for comparisons over time. See table X.x for Calculated using the proportional calcite presence scoring method (CI').

APPENDIX E
BENTHIC INVERTEBRATES

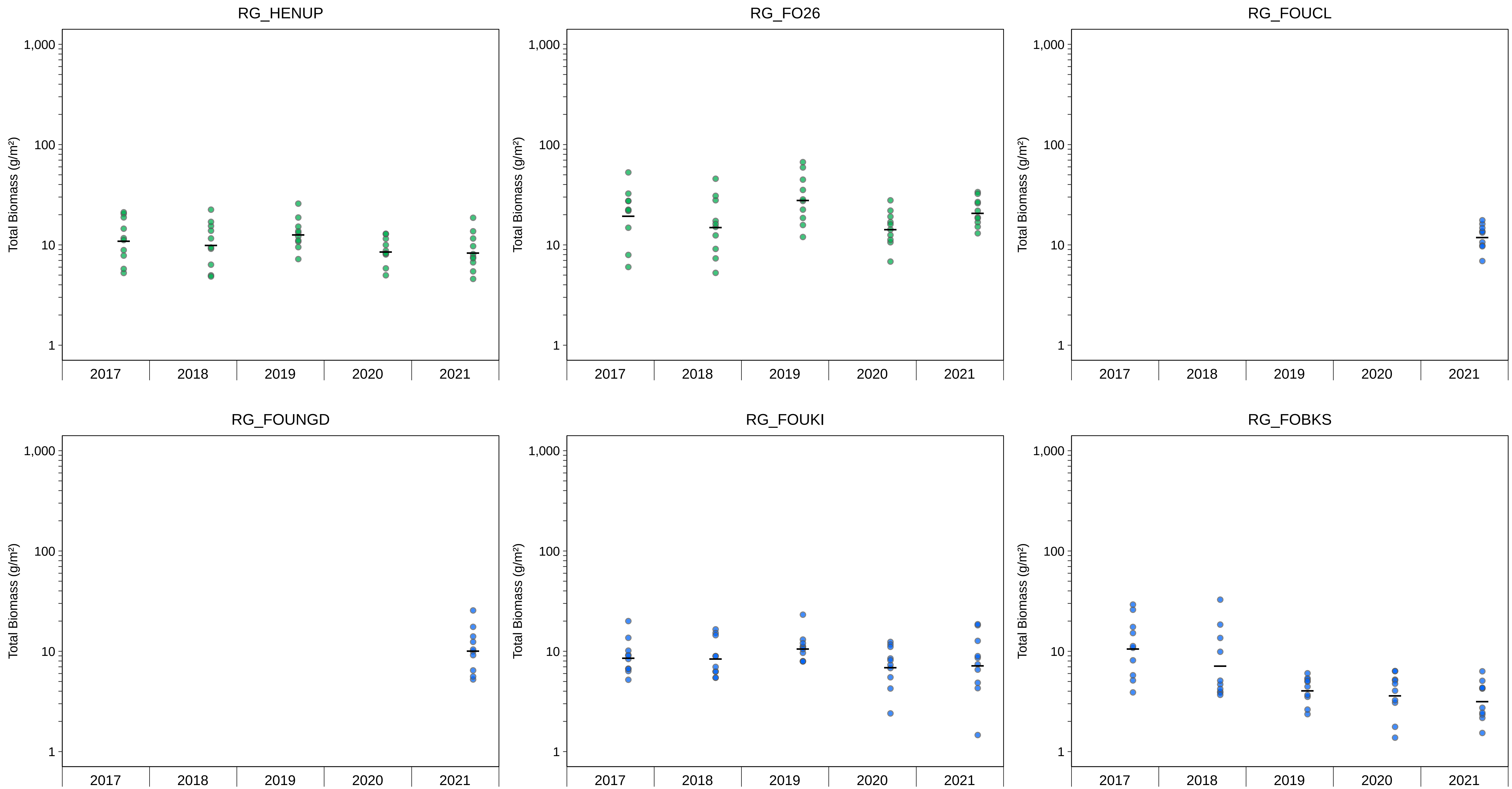

Figure E.1: Total Benthic Invertebrate Biomass (Hess Sampling) by Year, FRO LAEMP, September 2012 to 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

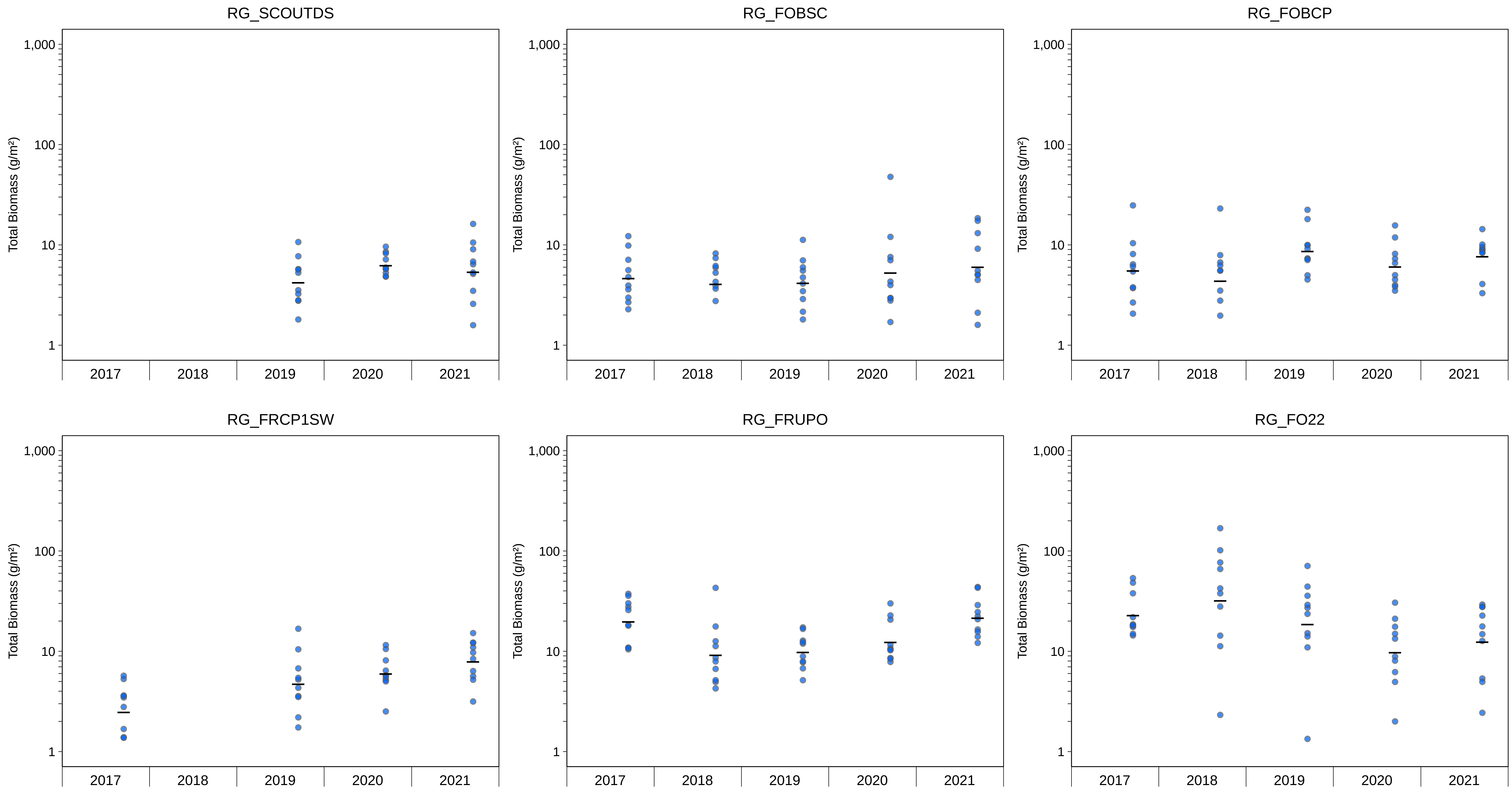

Figure E.1: Total Benthic Invertebrate Biomass (Hess Sampling) by Year, FRO LAEMP, September 2012 to 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

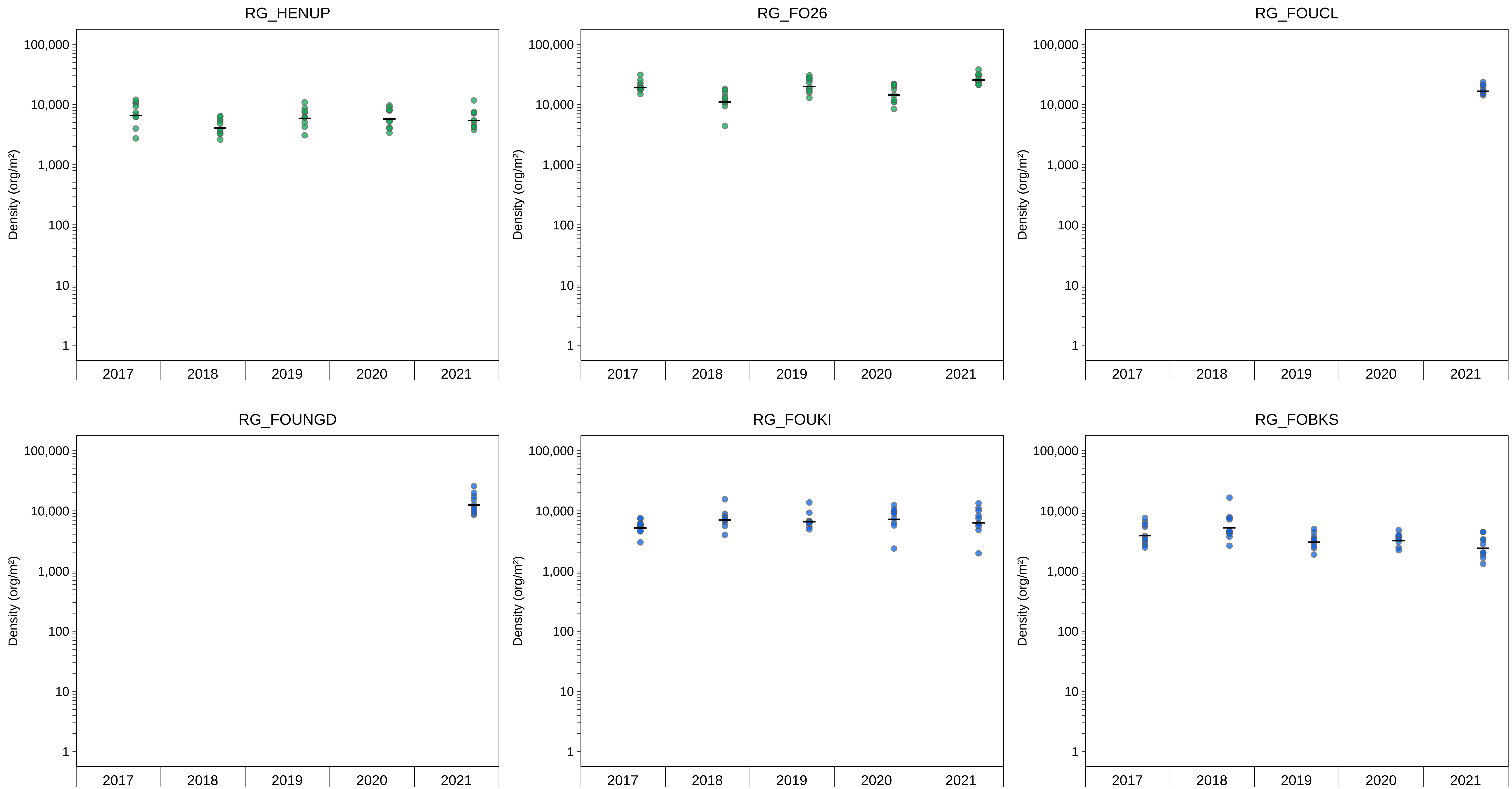

Figure E.2: Total Benthic Invertebrate Density (Hess Sampling) by Year, FRO LAEMP, September 2012 to 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

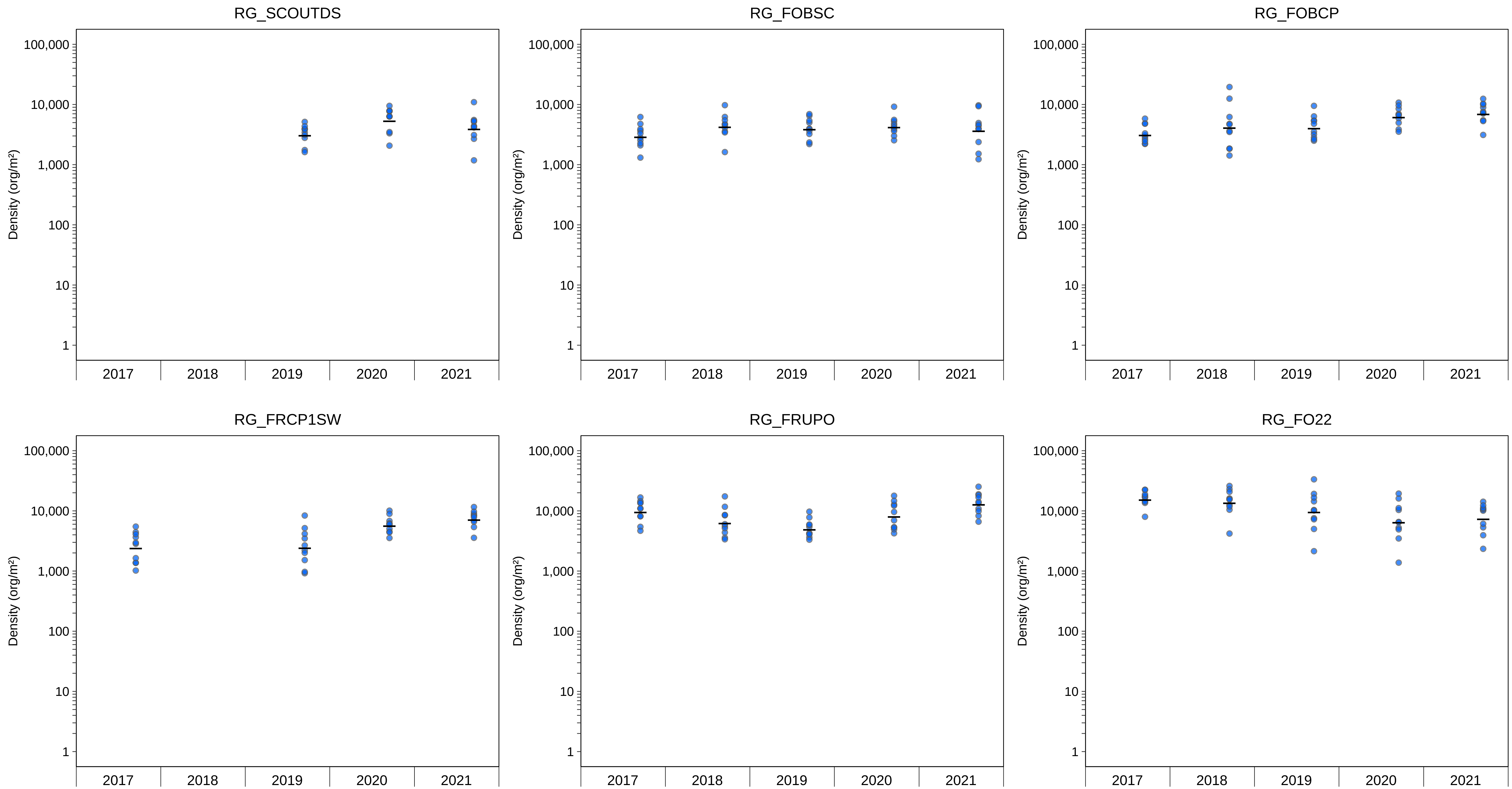

Figure E.2: Total Benthic Invertebrate Density (Hess Sampling) by Year, FRO LAEMP, September 2012 to 2021

Note: Green represents reference areas and blue represents exposed areas. Black lines denote the geometric means.

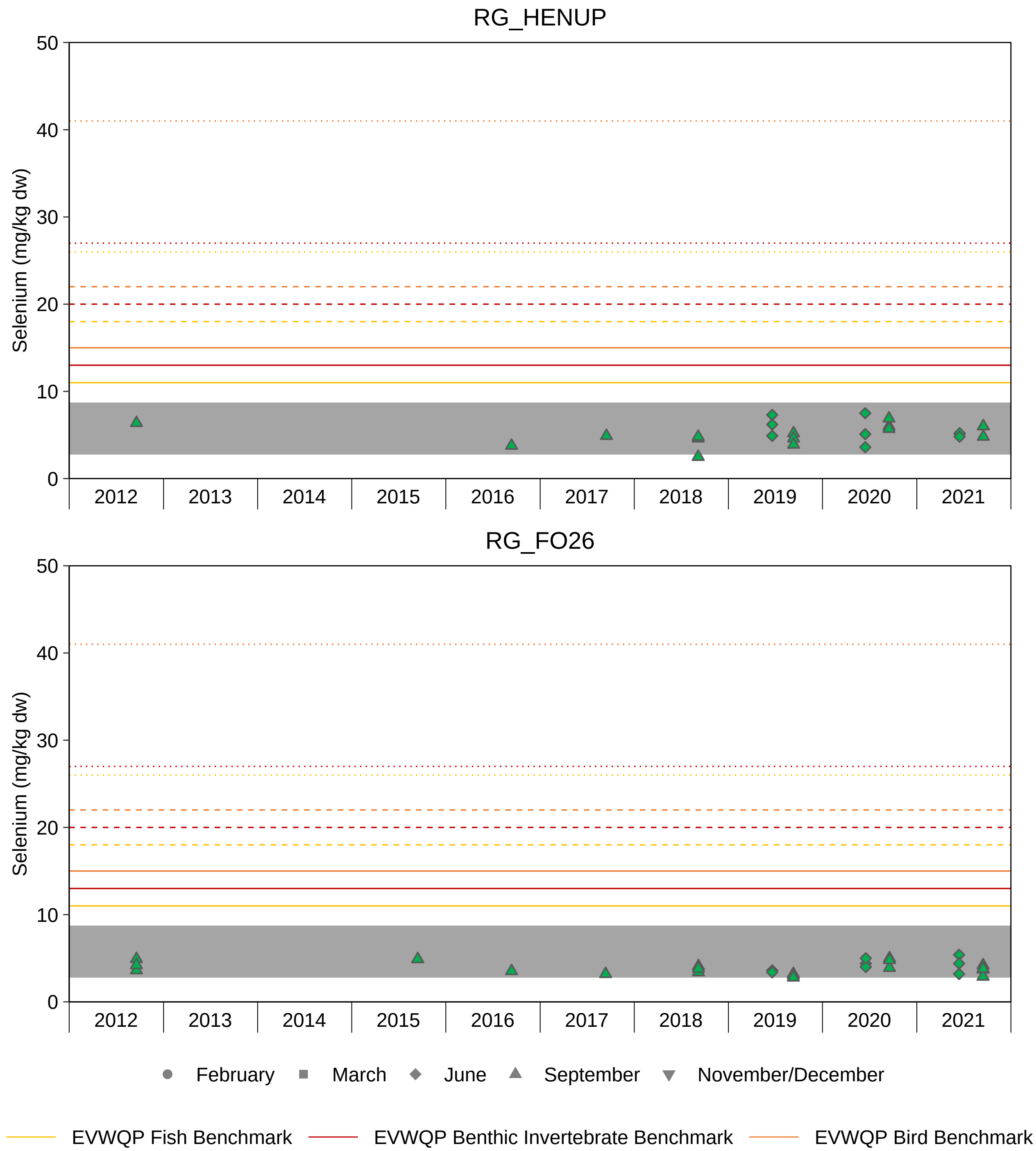

Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

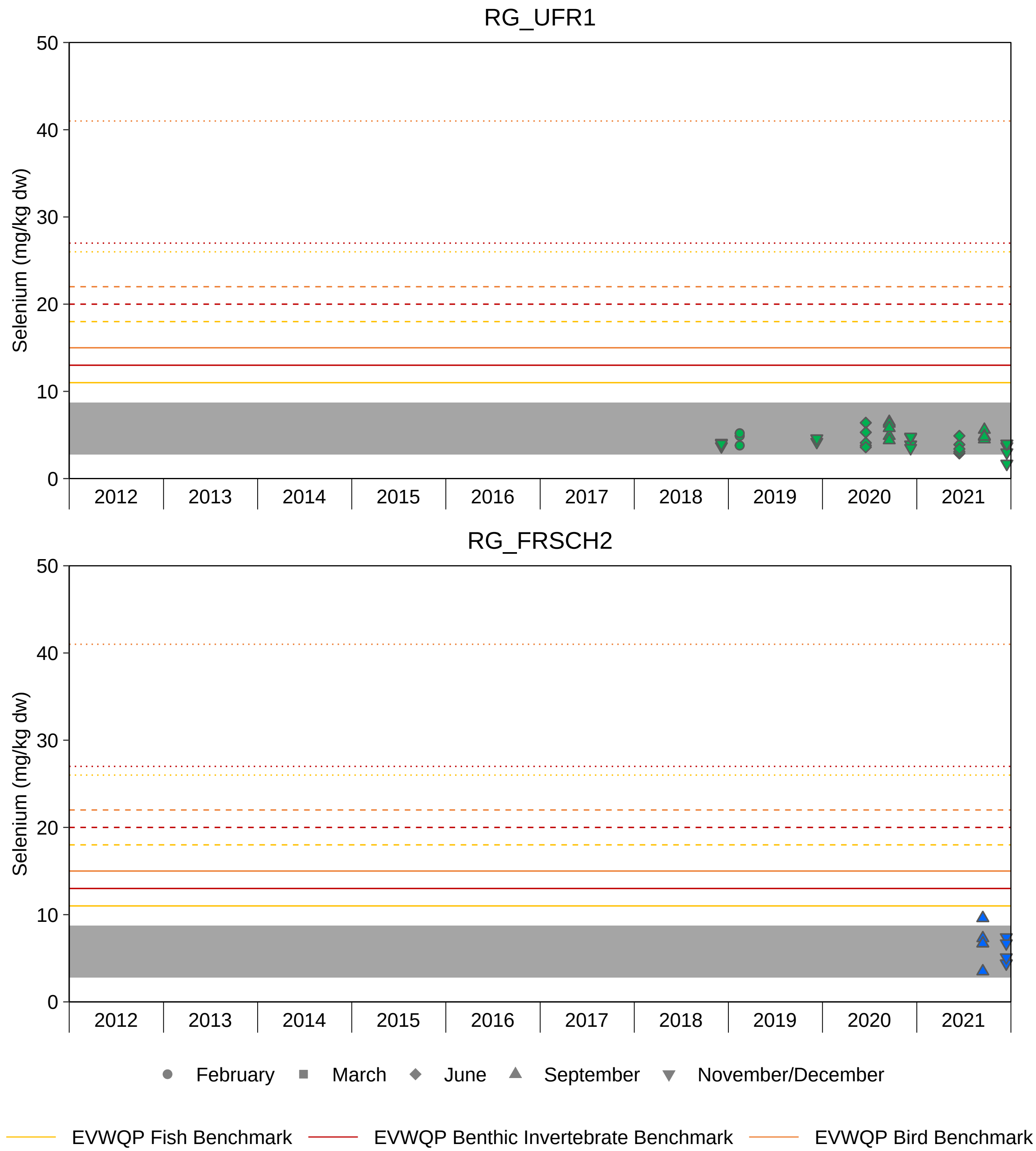

Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

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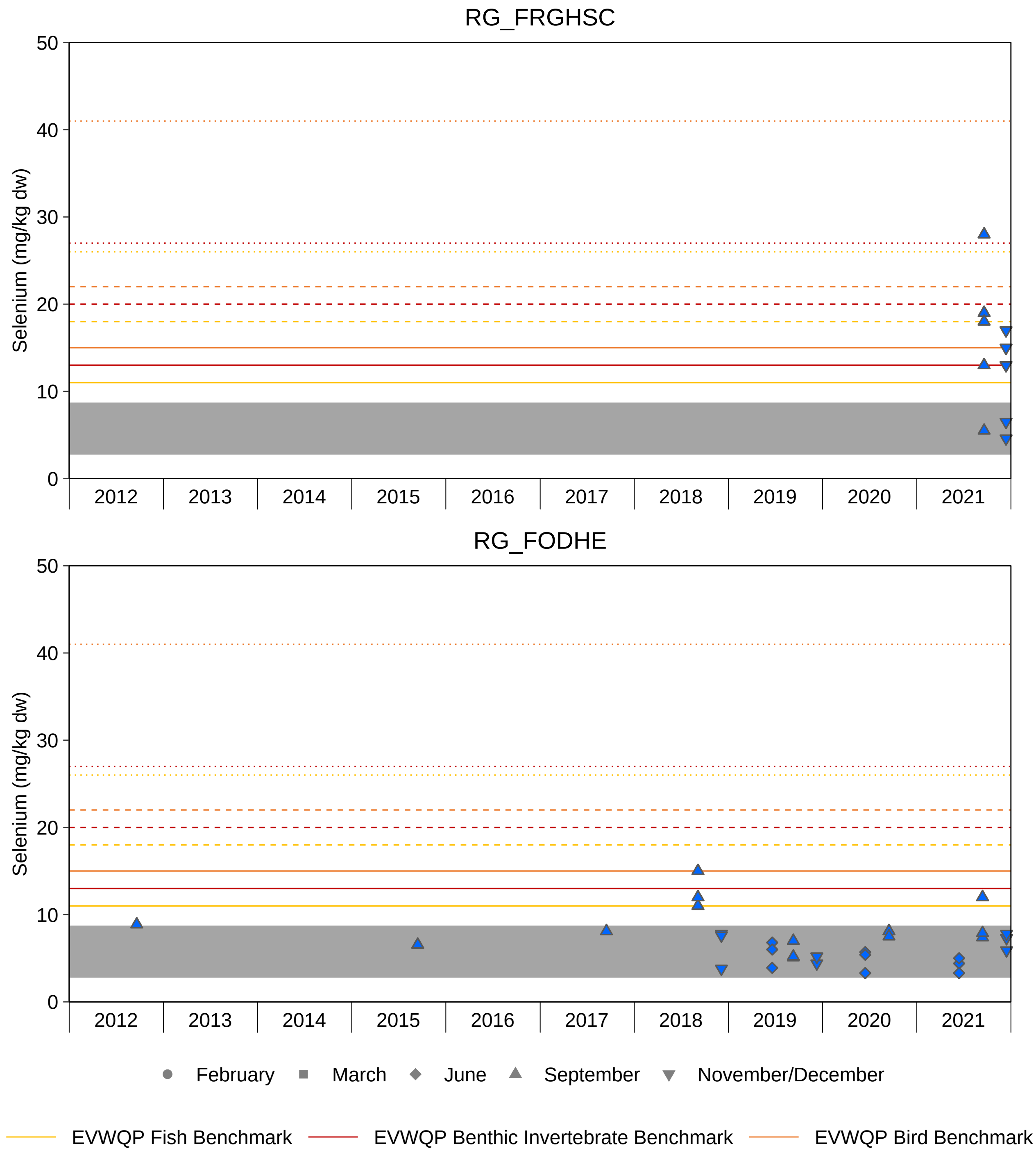


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

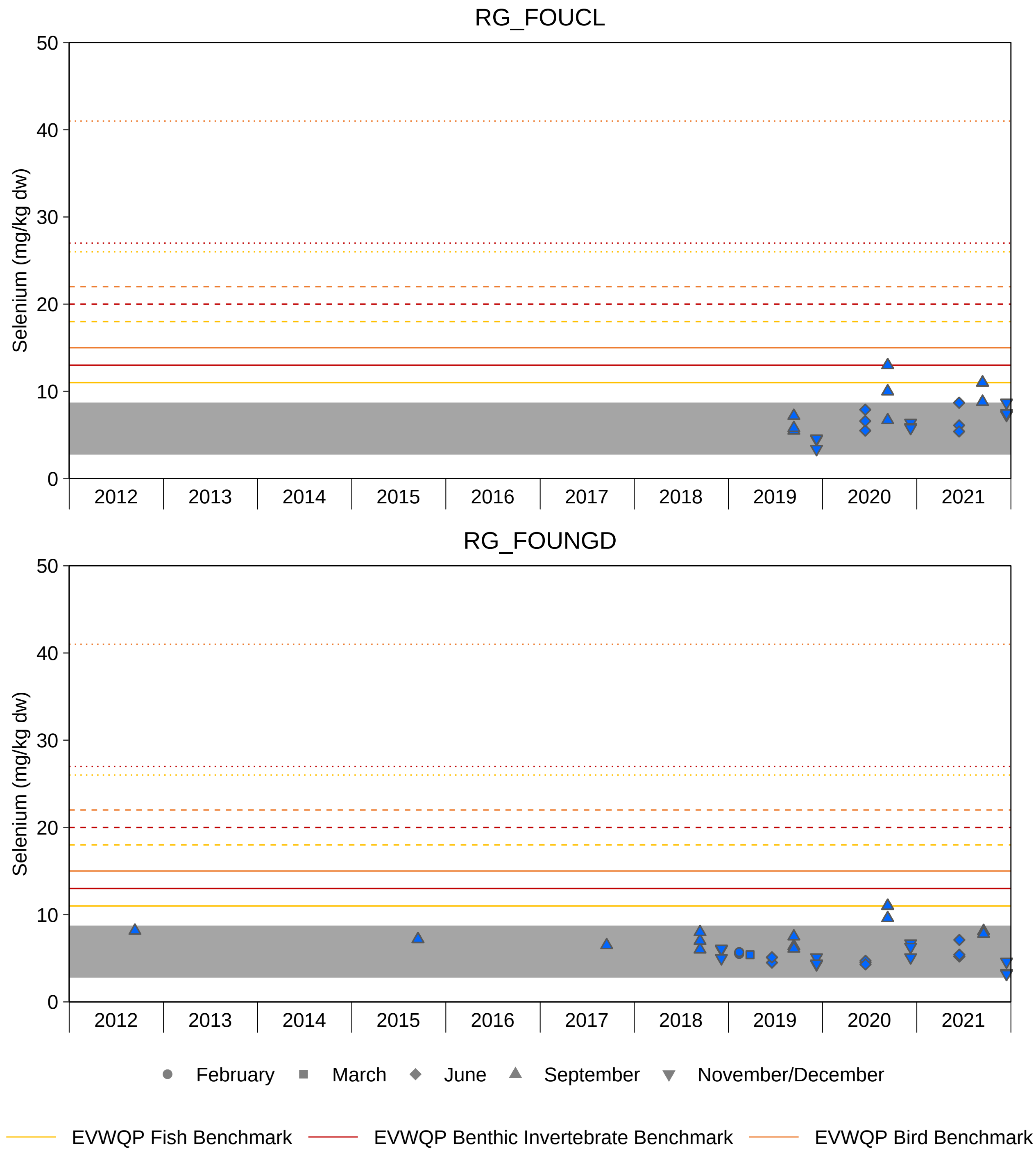
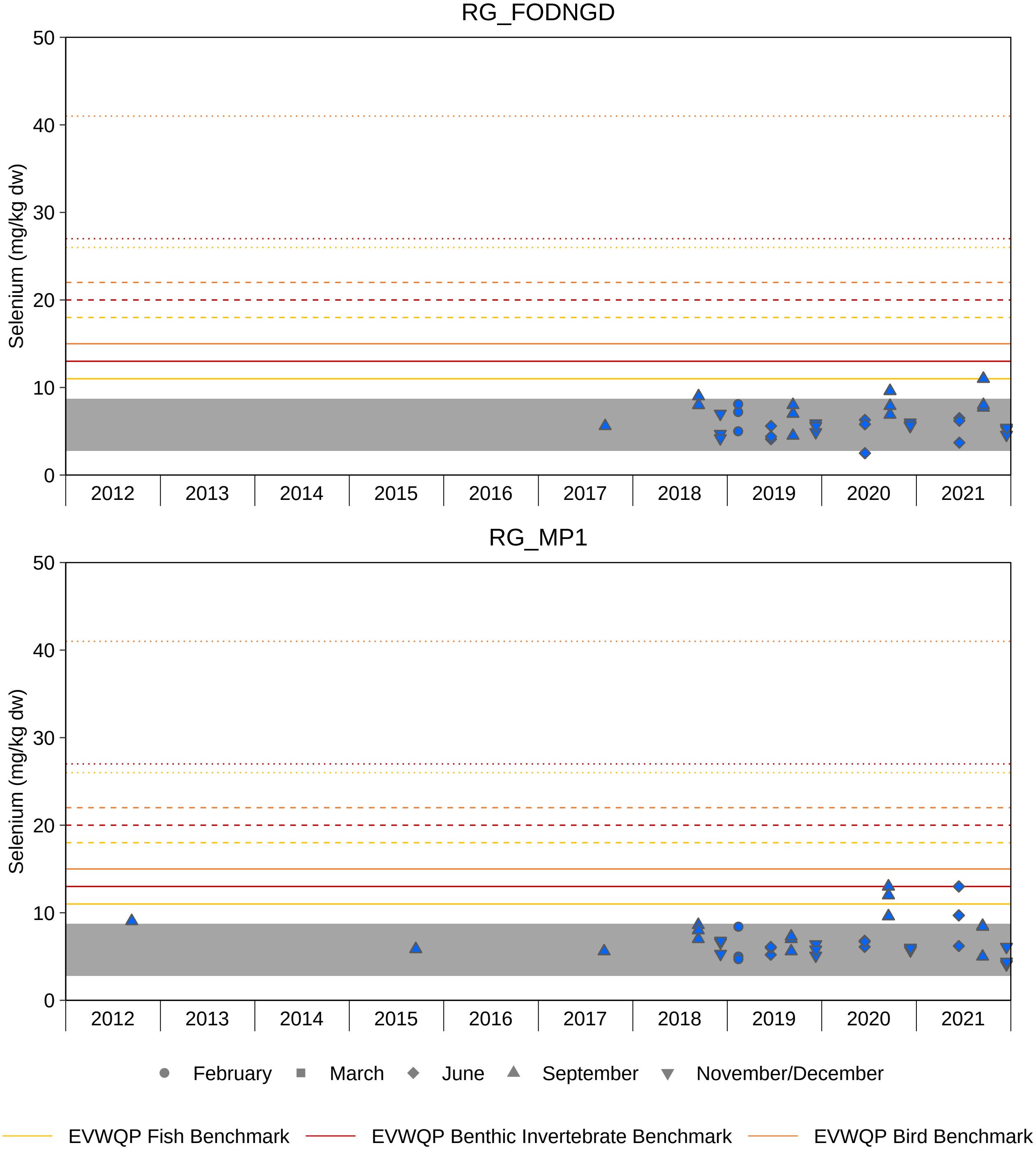


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.



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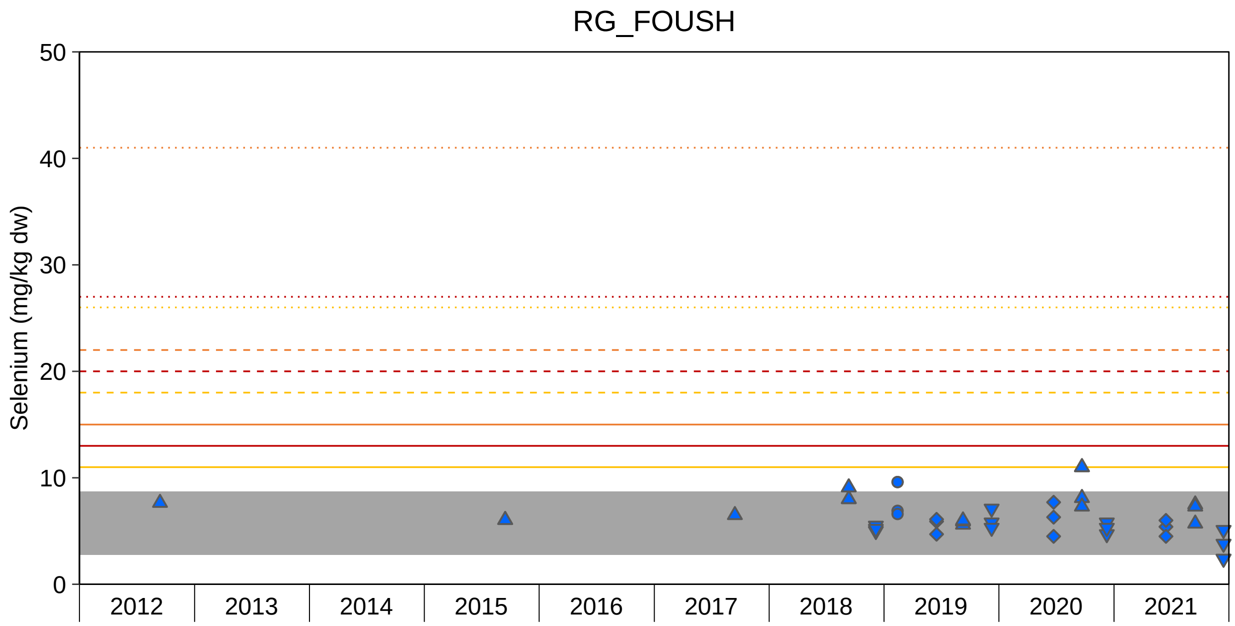


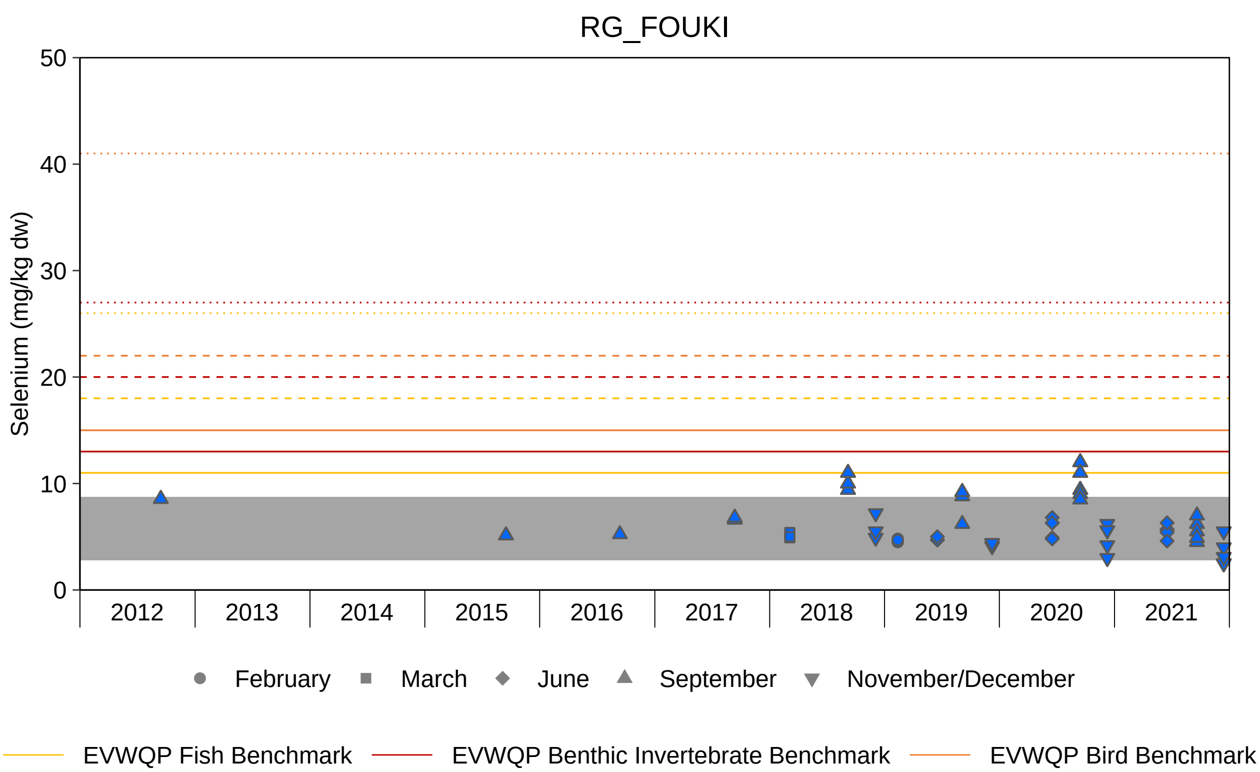


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

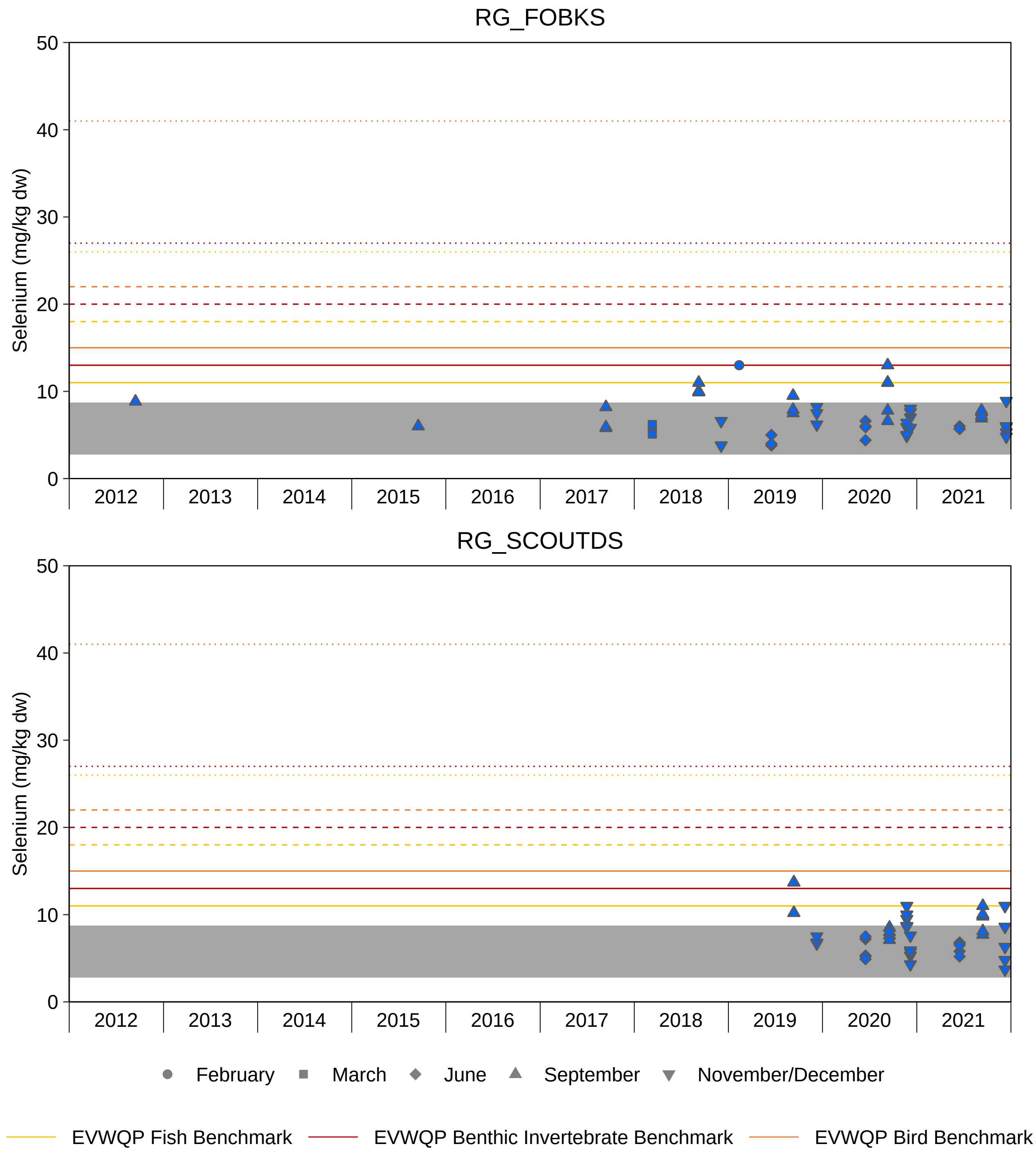


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

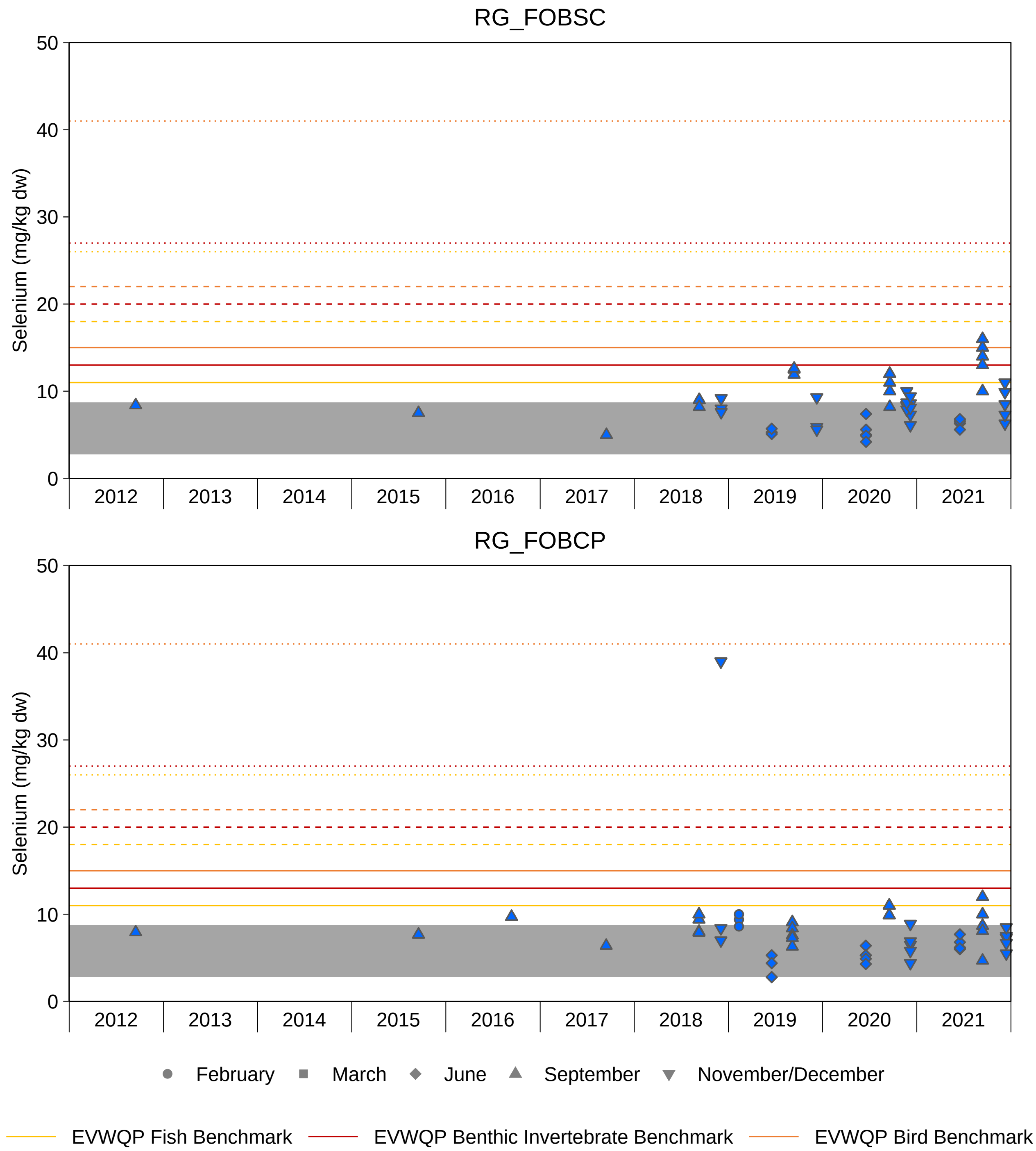


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

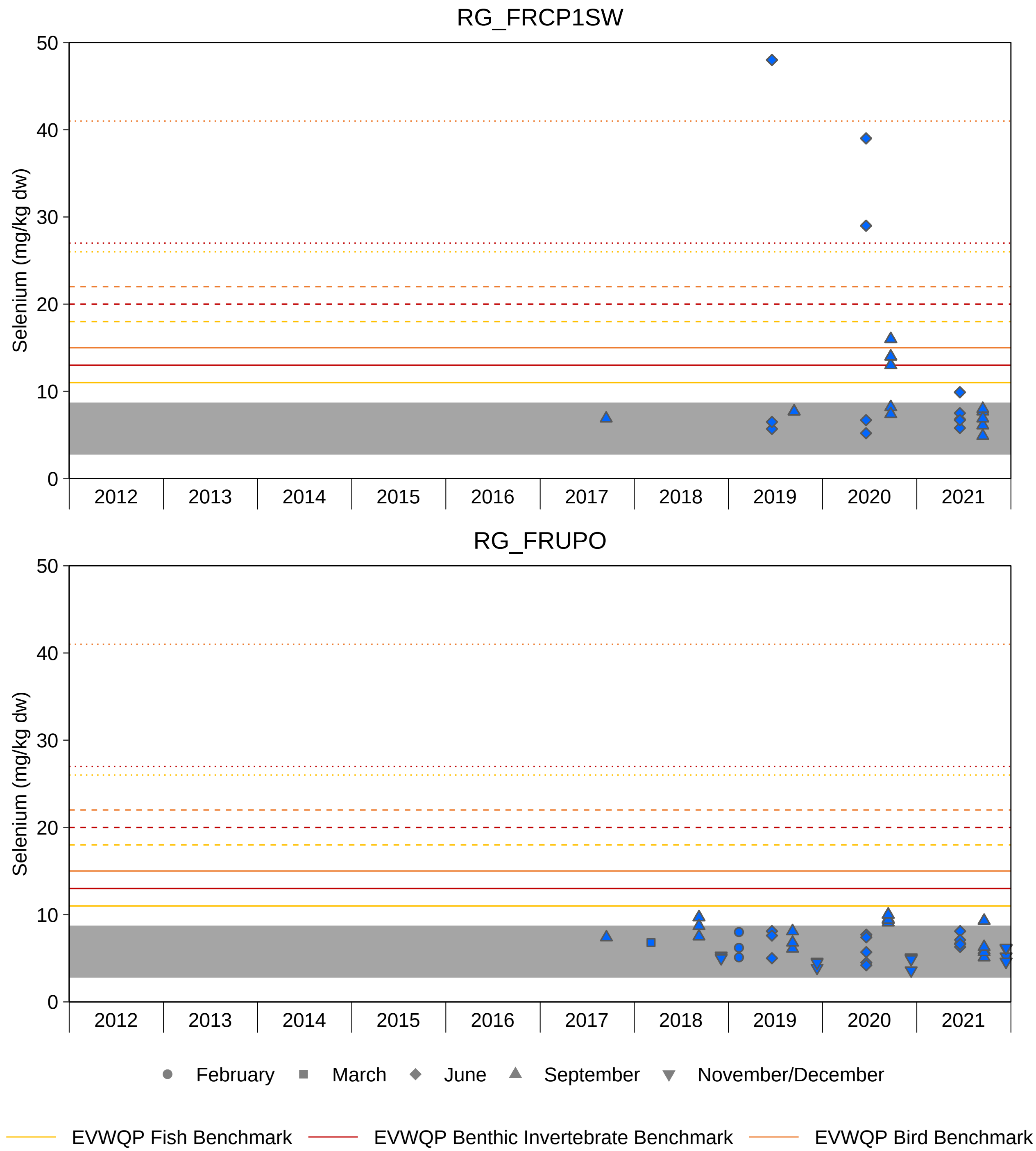


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

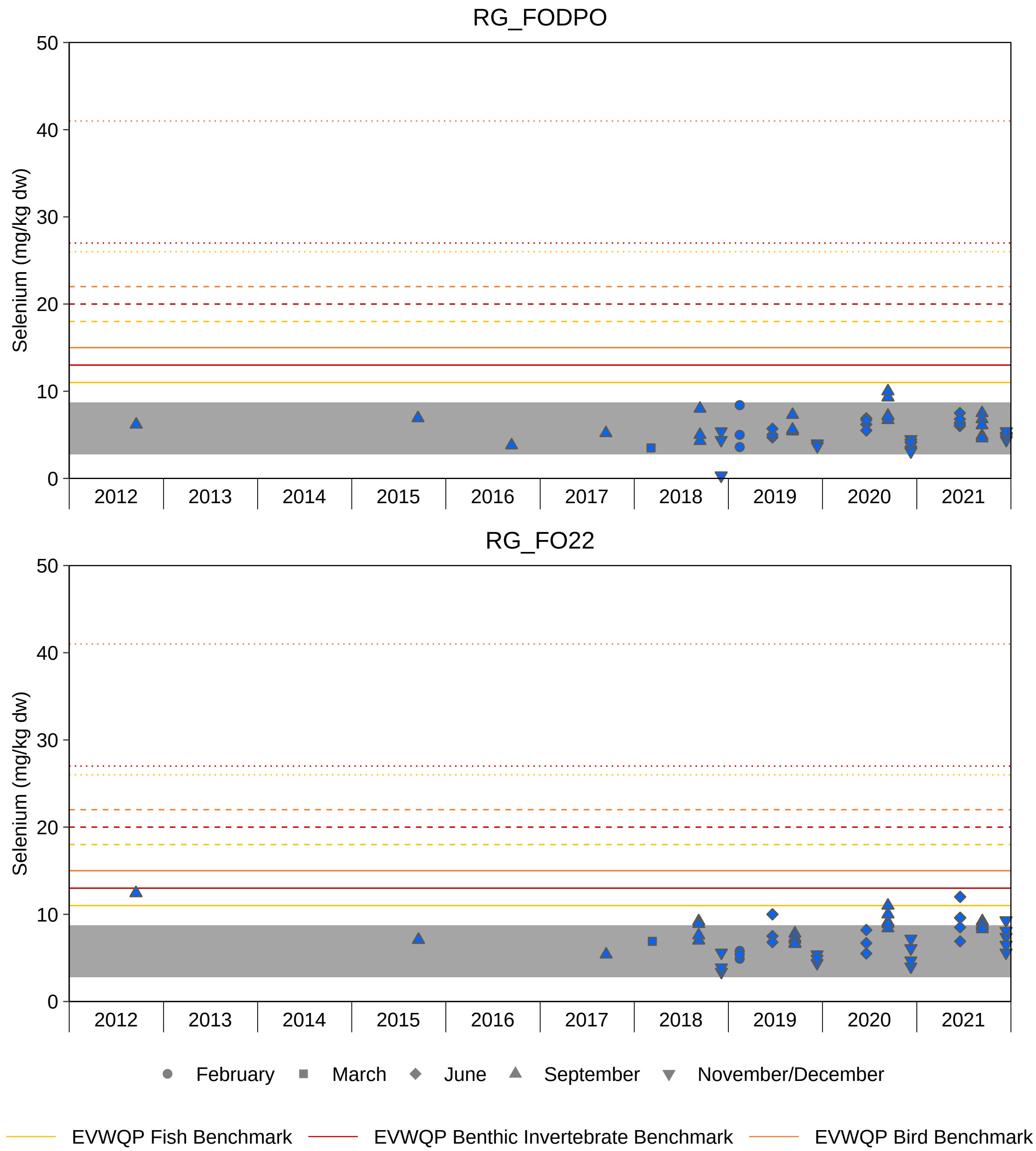


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

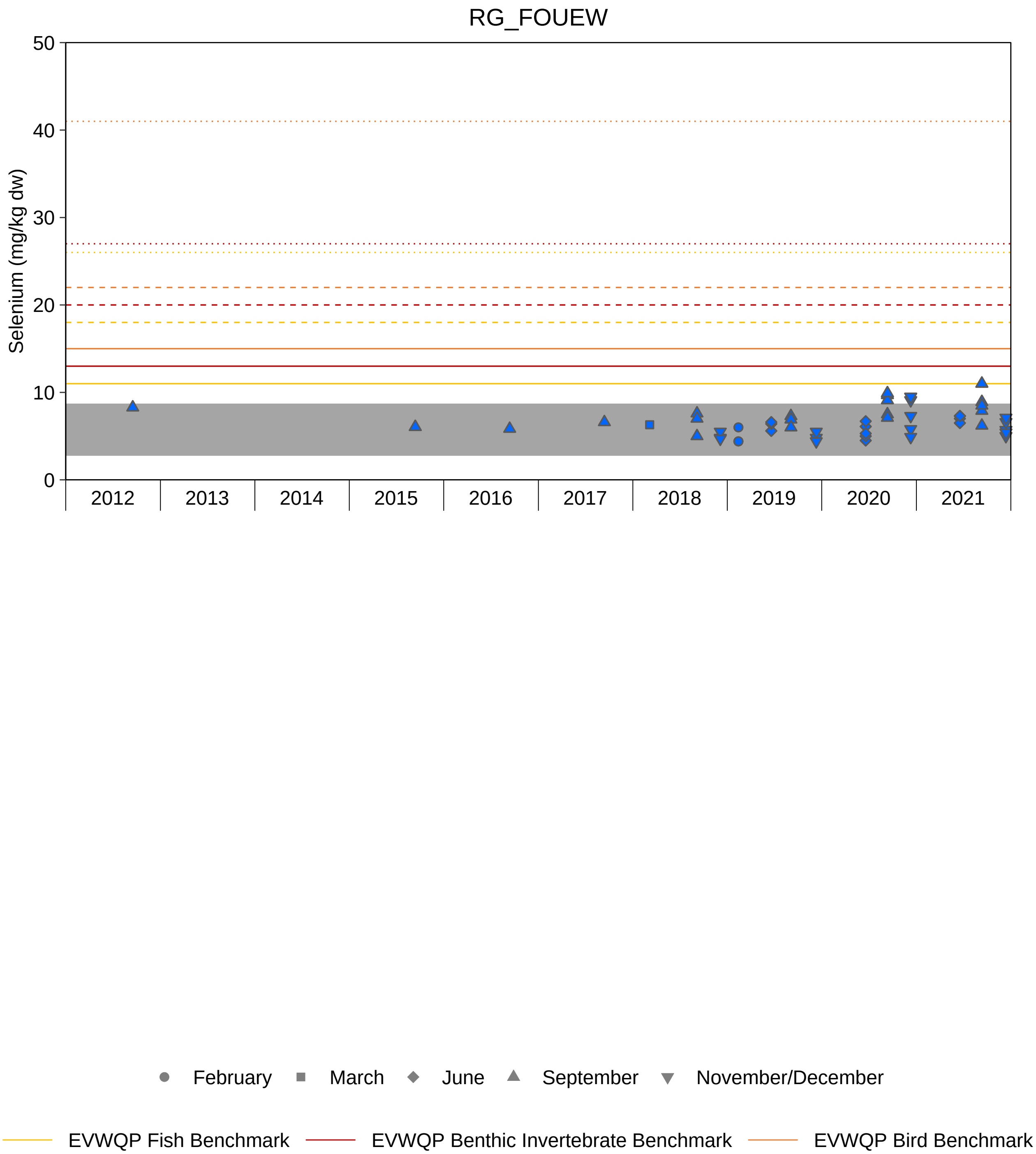


Figure E.3: Composite−taxa Benthic Invertebrate Tissue Concentrations, FRO LAEMP, 2012 to 2021

Notes: Green represents reference stations and blue represents mine−exposed stations. Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. Level 1 benchmarks are shown with a solid line, Level 2 benchmarks are shown with a dashed line, and Level 3 benchmarks are shown with a dotted line.

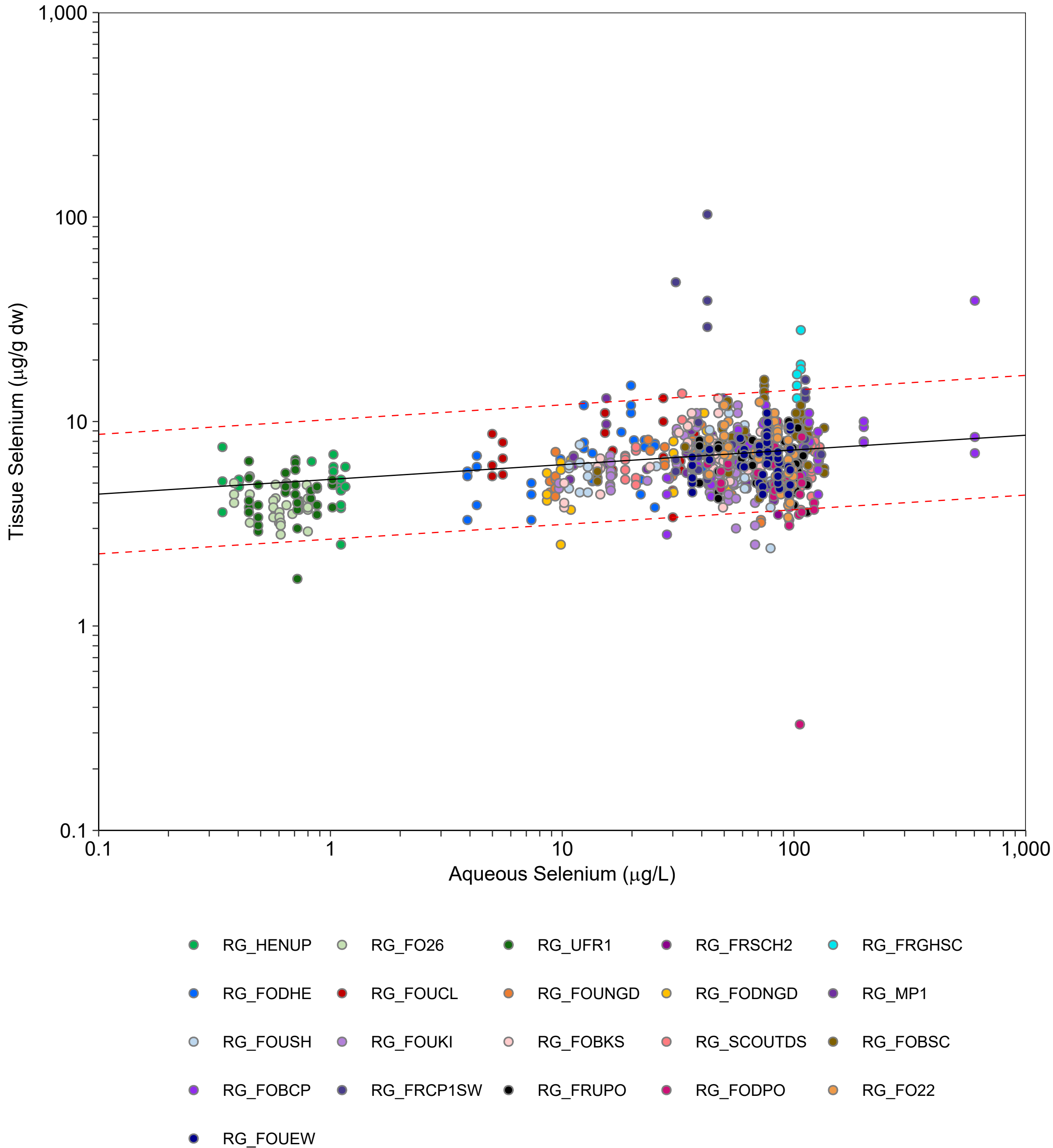


Figure E.4: Observed and Modelled Selenium Concentrations in Benthic Invertebrate Composite-taxa Samples Relative to Aqueous Selenium Concentrations at Biological Monitoring Areas Upstream and Downstream of Fording River Operations, FRO LAEMP, 2012 to 2021

Notes: Mean benthic invertebrate selenium concentrations (solid black line) were estimated using a one-step water to benthic invertebrate selenium accumulation model: log10[Se]benthic invertebrate=0.717+0.072 x log10[Se]aq (Golder 2020). The 95% prediction limits for a single value from the one-step water to benthic invertebrate selenium accumulation model are plotted as dashed red lines. Reference areas are shown in green.

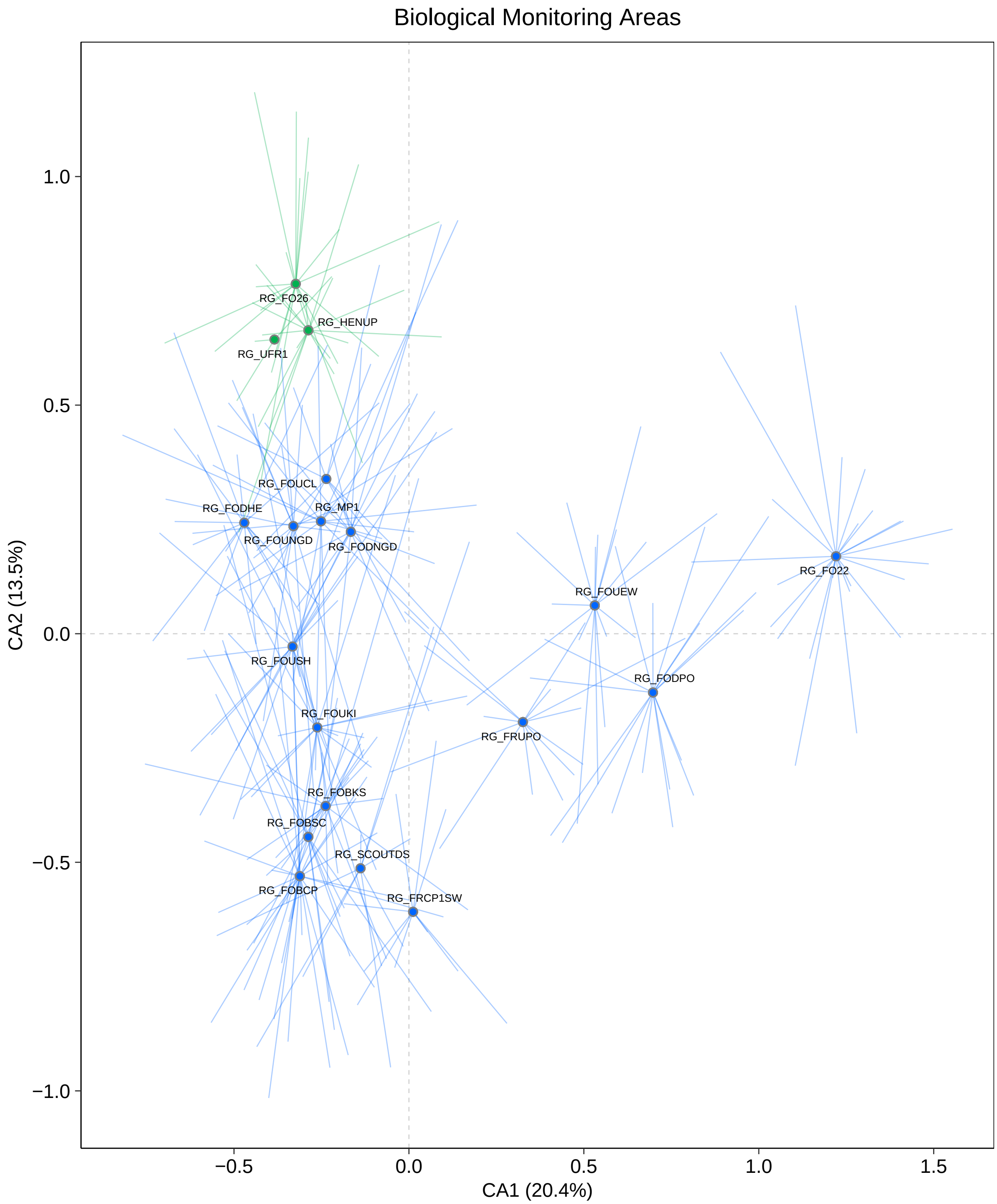


Figure E.5: Correspondence Analysis Bi−plot for Benthic Invertebrate Community Measured in FRO LAEMP, September 2012 to 2021

Notes: Reference areas are shown in green and mine−exposed areas are shown in blue. Analysis was completed on log10(x+1) transformed data. Areas with fewer than five taxa present were removed from analysis. Taxa that were present at less than five areas and contributed less 0.05% of the total abundance were removed from analysis.

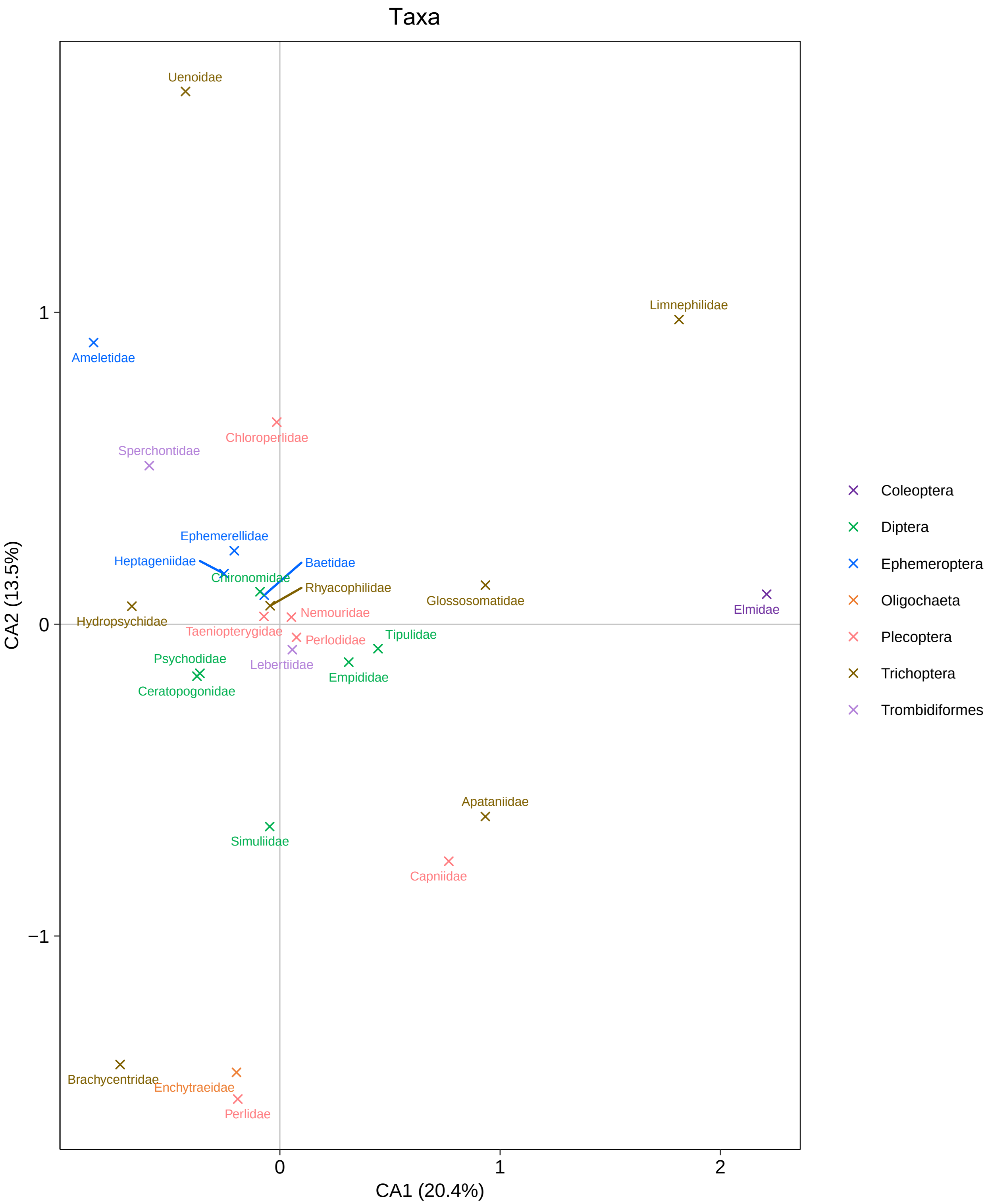


Figure E.6: Family Level Correspondence Analysis Bi−plot for Benthic Invertebrate Community Measured in FRO LAEMP, September 2012 to 2021

Notes: Reference areas are shown in green and mine−exposed areas are shown in blue. Analysis was completed on log10(x+1) transformed data. Areas with fewer than five taxa present were removed from analysis. Taxa that were present at less than five areas and contributed less 0.05% of the total abundance were removed from analysis. Different Colors represent different taxa orders outlined in the legend

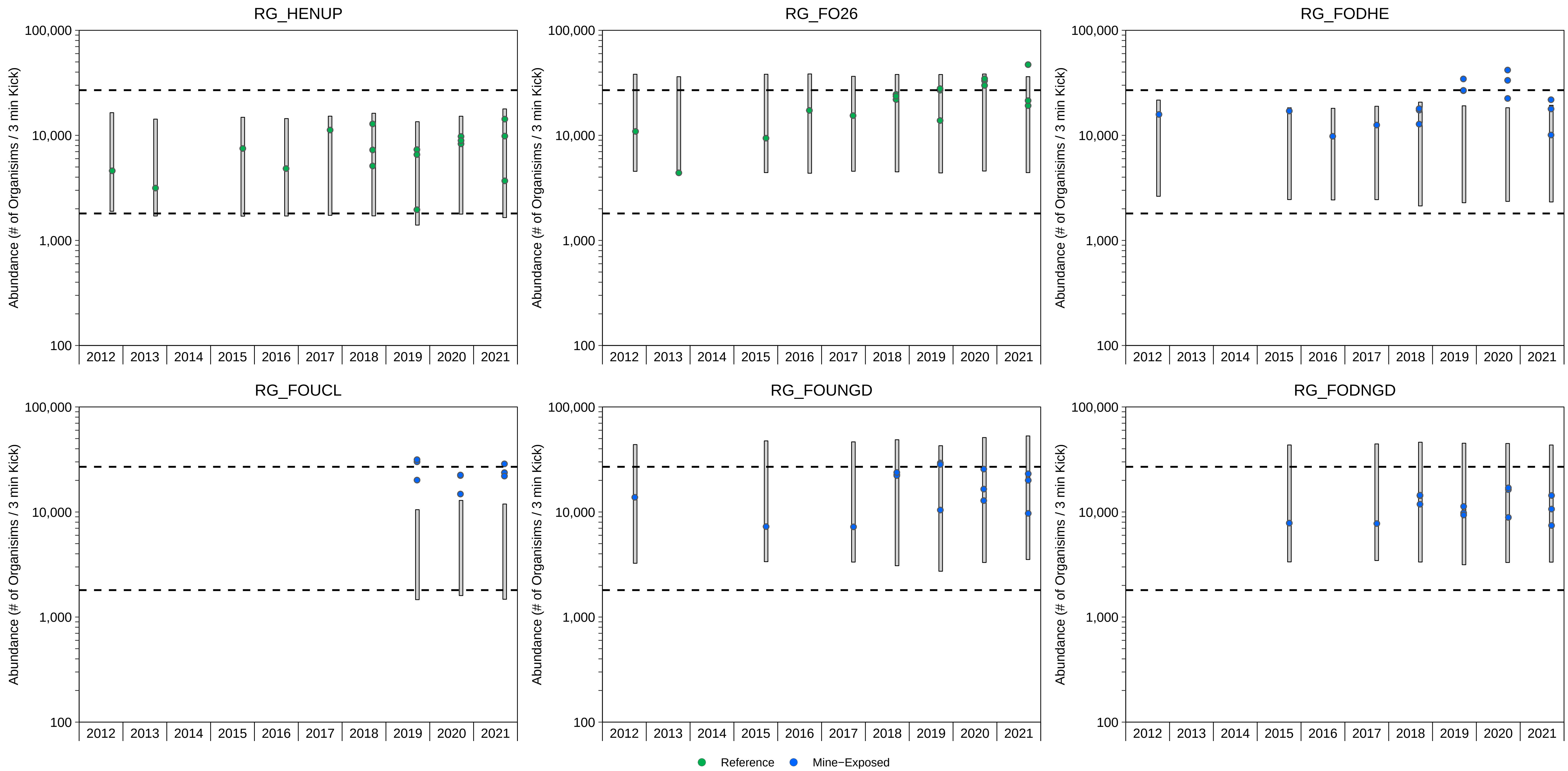


Figure E.7: Benthic Invertebrate Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

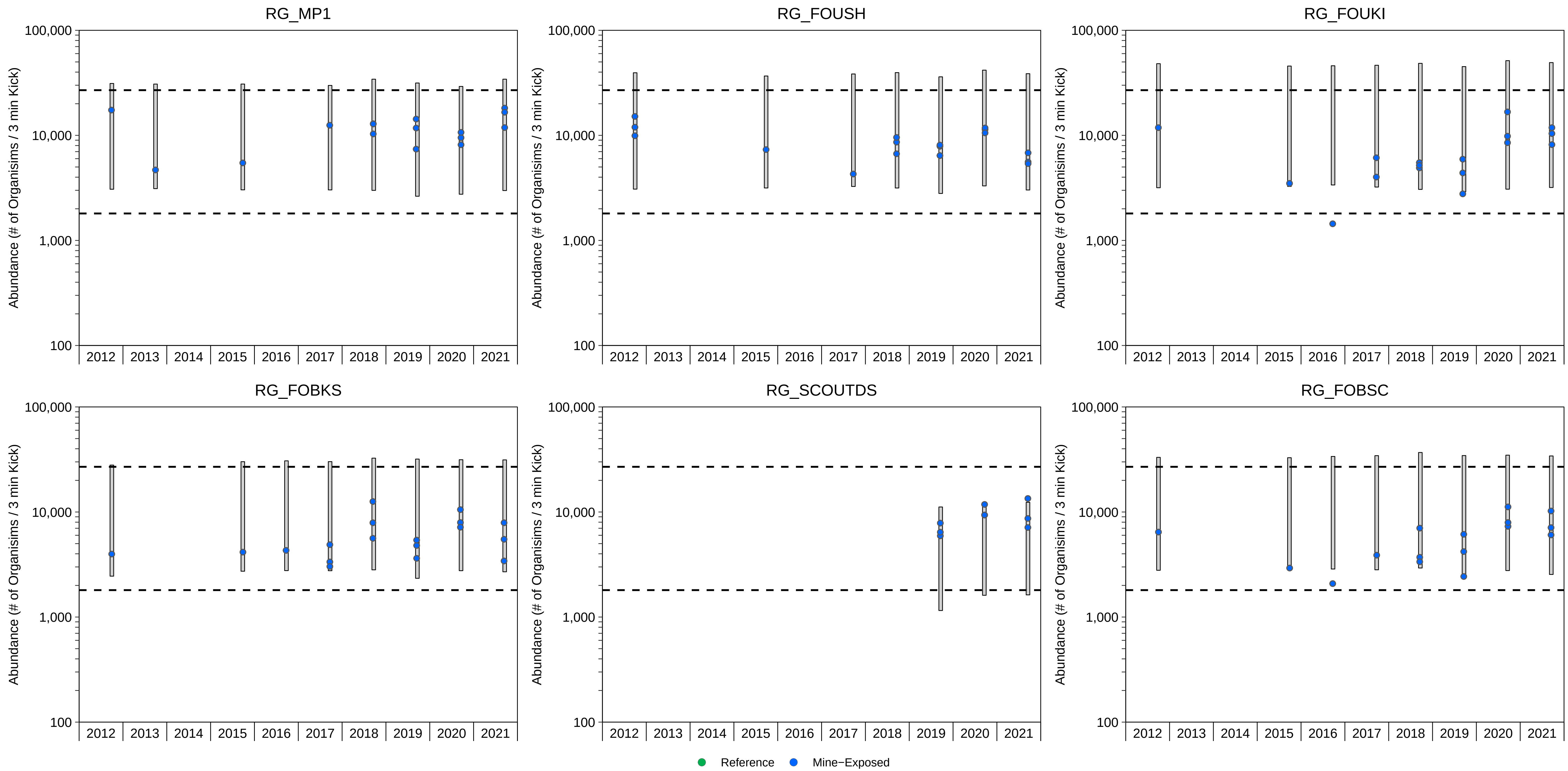


Figure E.7: Benthic Invertebrate Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

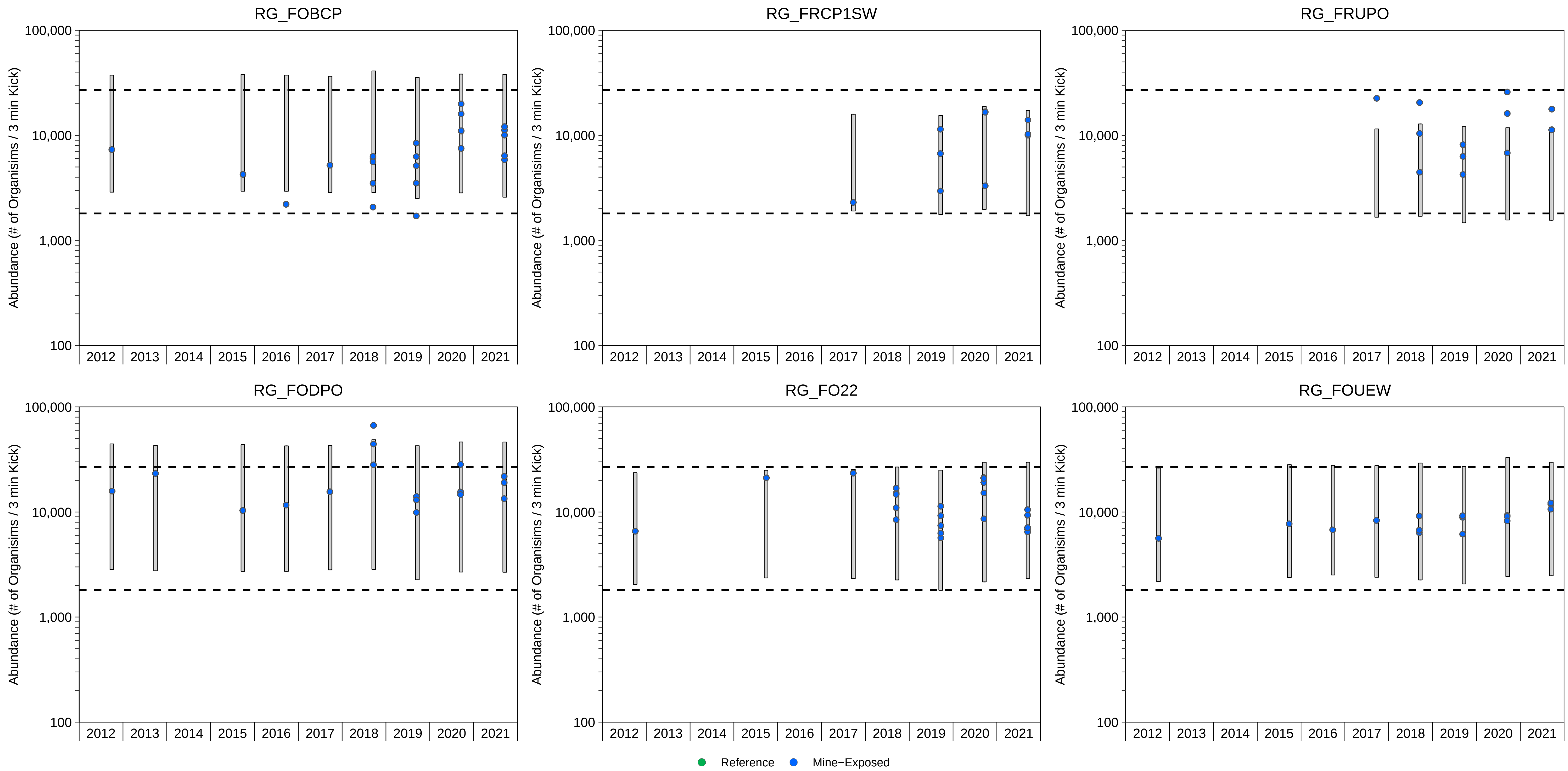


Figure E.7: Benthic Invertebrate Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

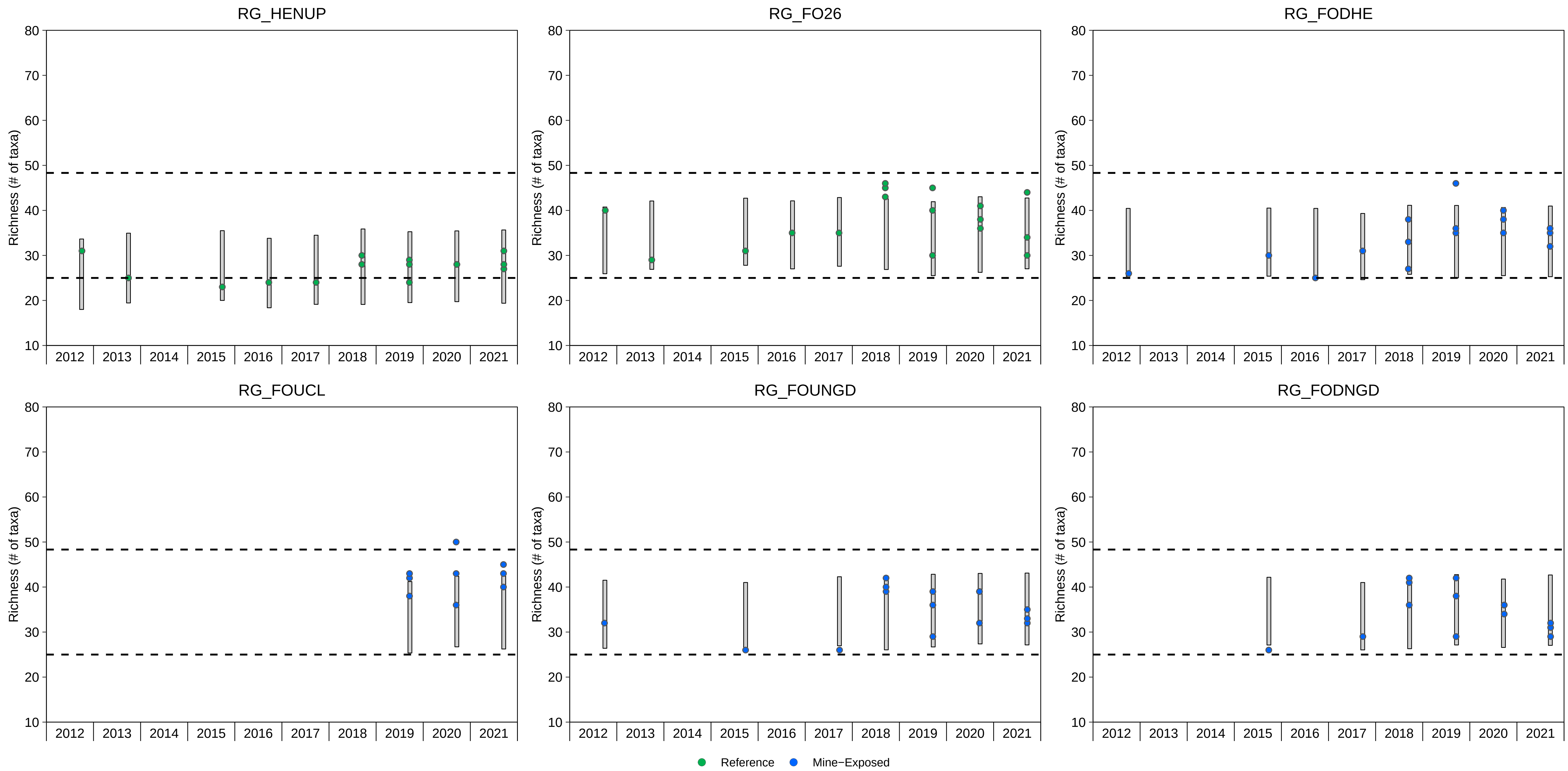


Figure E.8: Benthic Invertebrate Richness in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

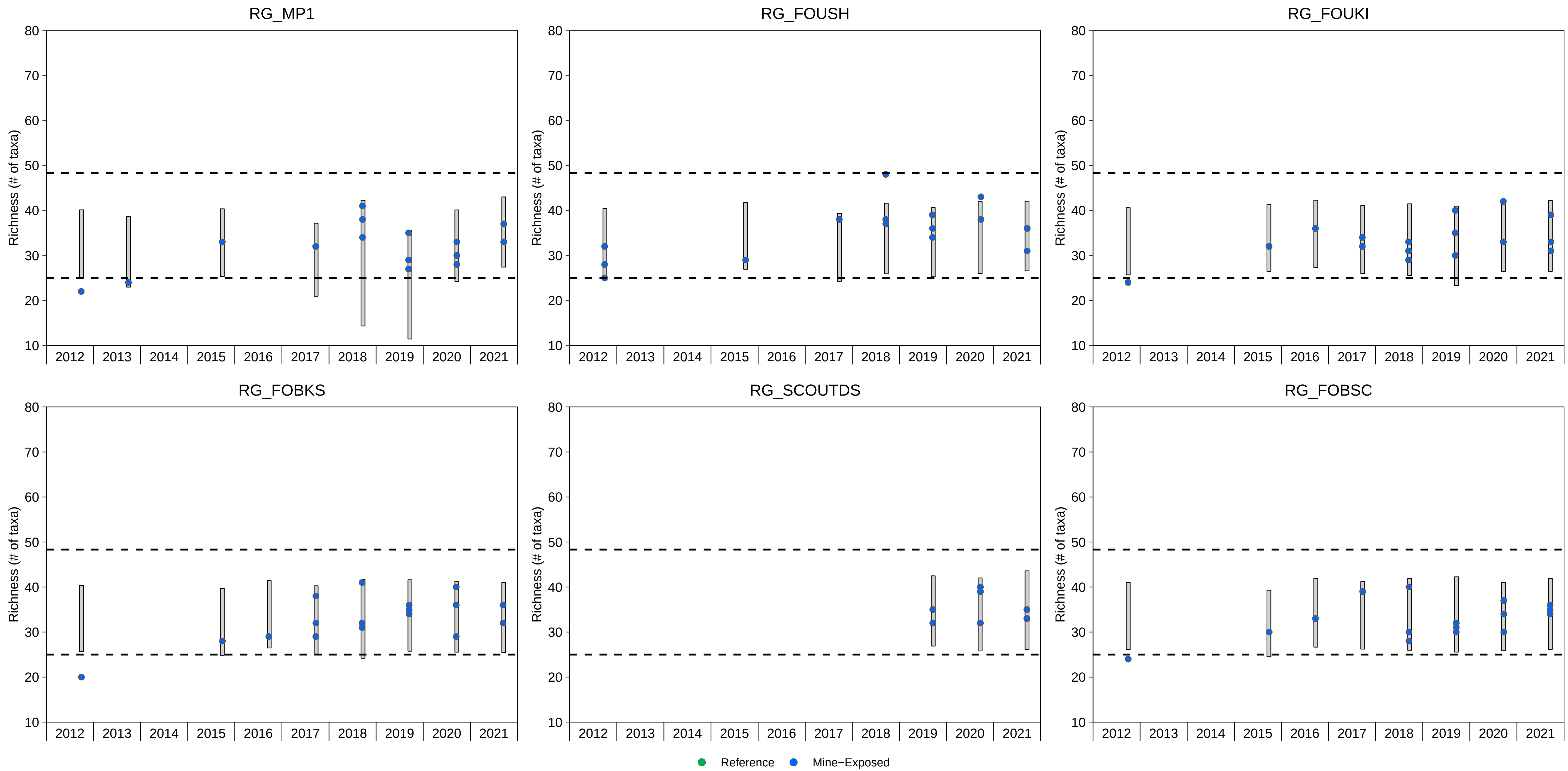


Figure E.8: Benthic Invertebrate Richness in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

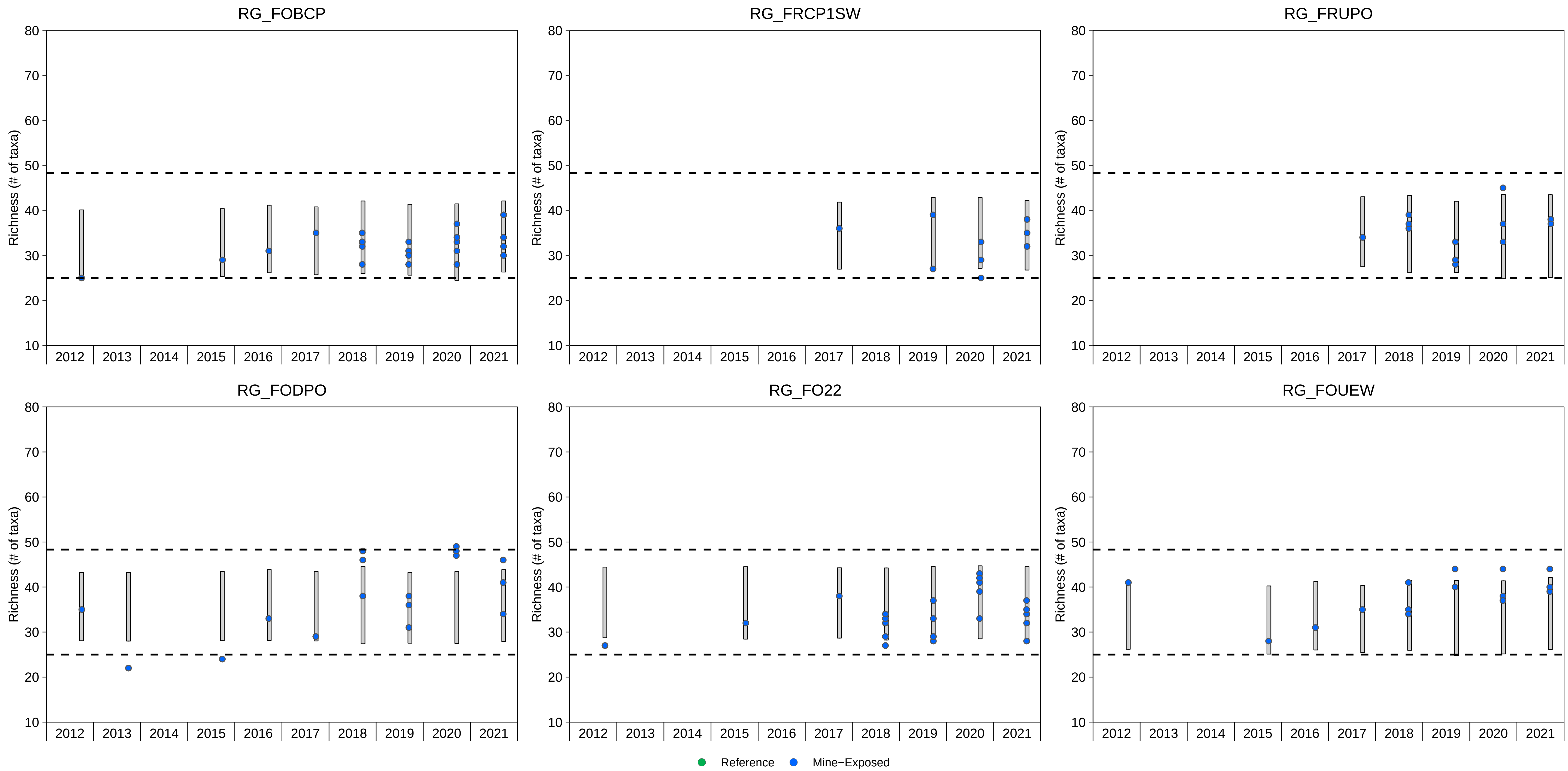


Figure E.8: Benthic Invertebrate Richness in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

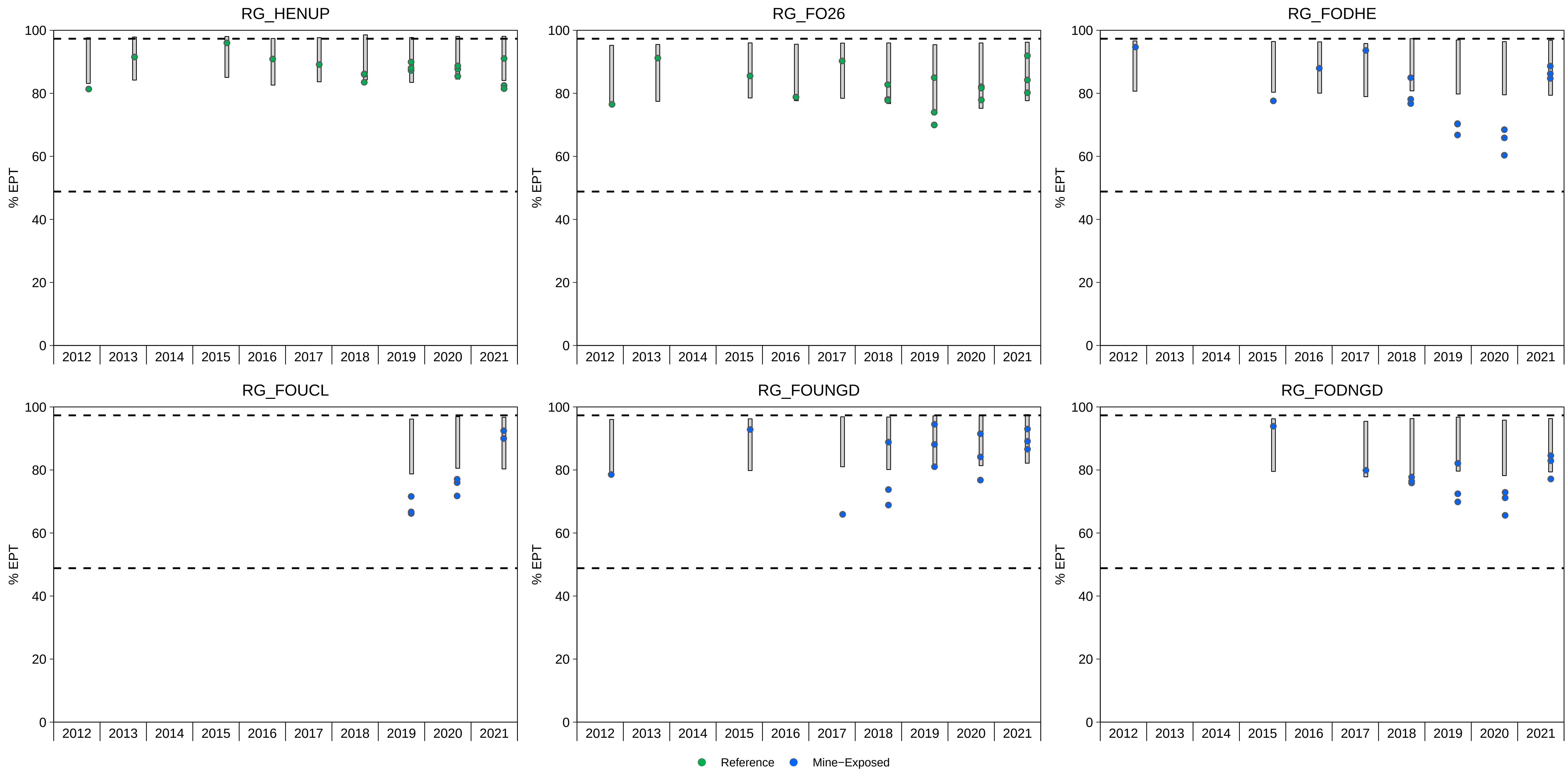


Figure E.9: Benthic Invertebrate % EPT in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

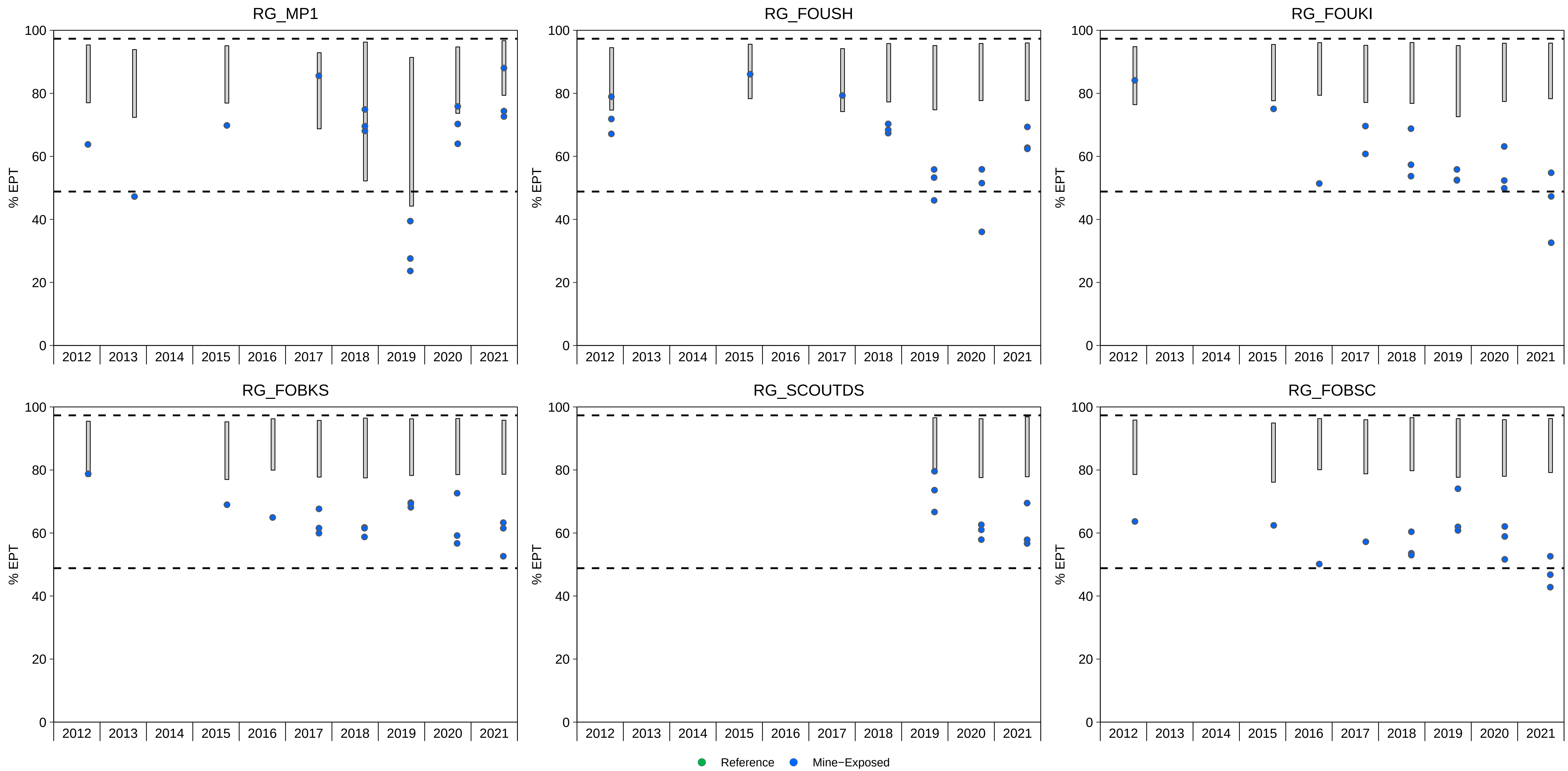


Figure E.9: Benthic Invertebrate % EPT in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

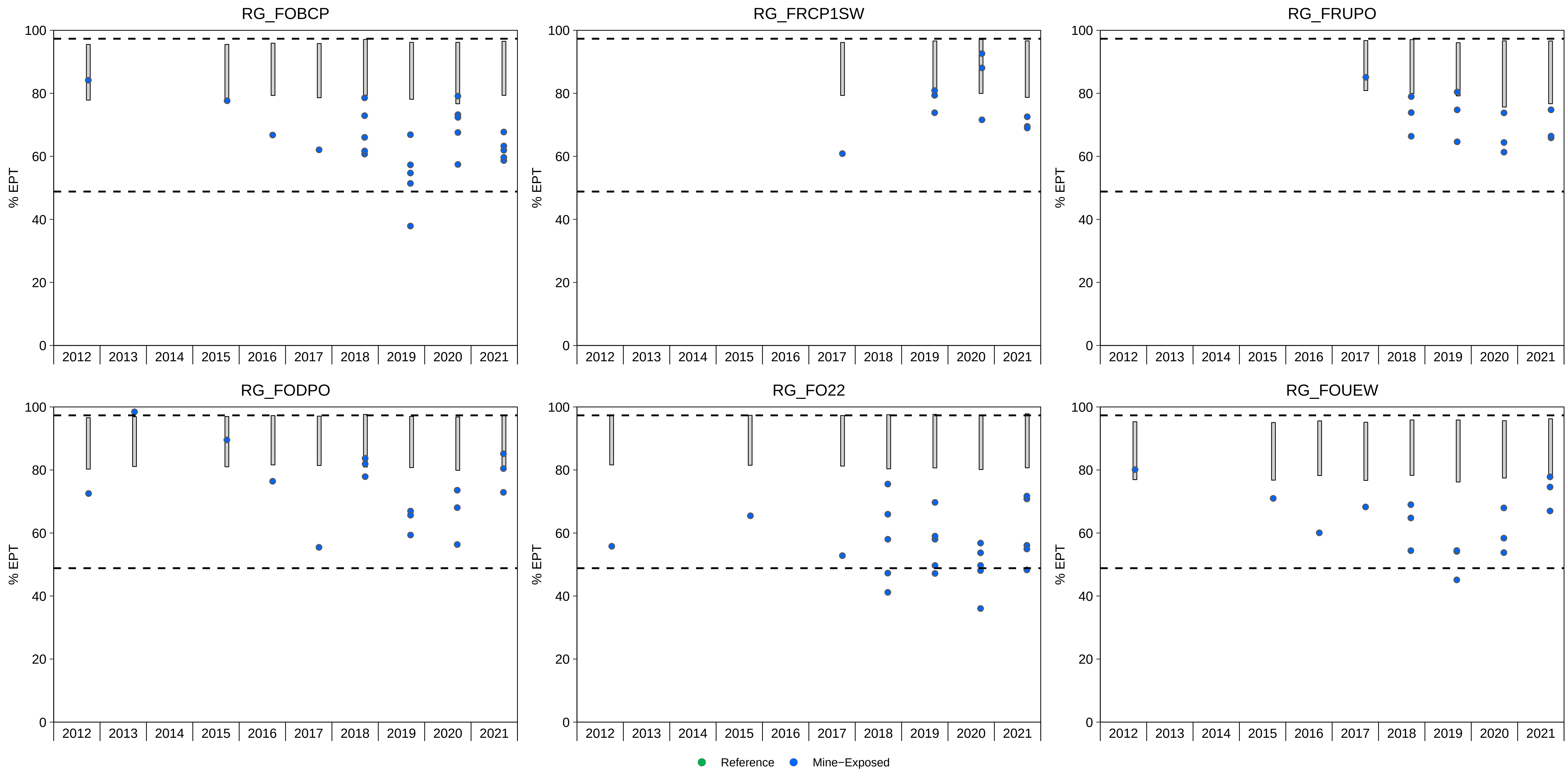


Figure E.9: Benthic Invertebrate % EPT in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

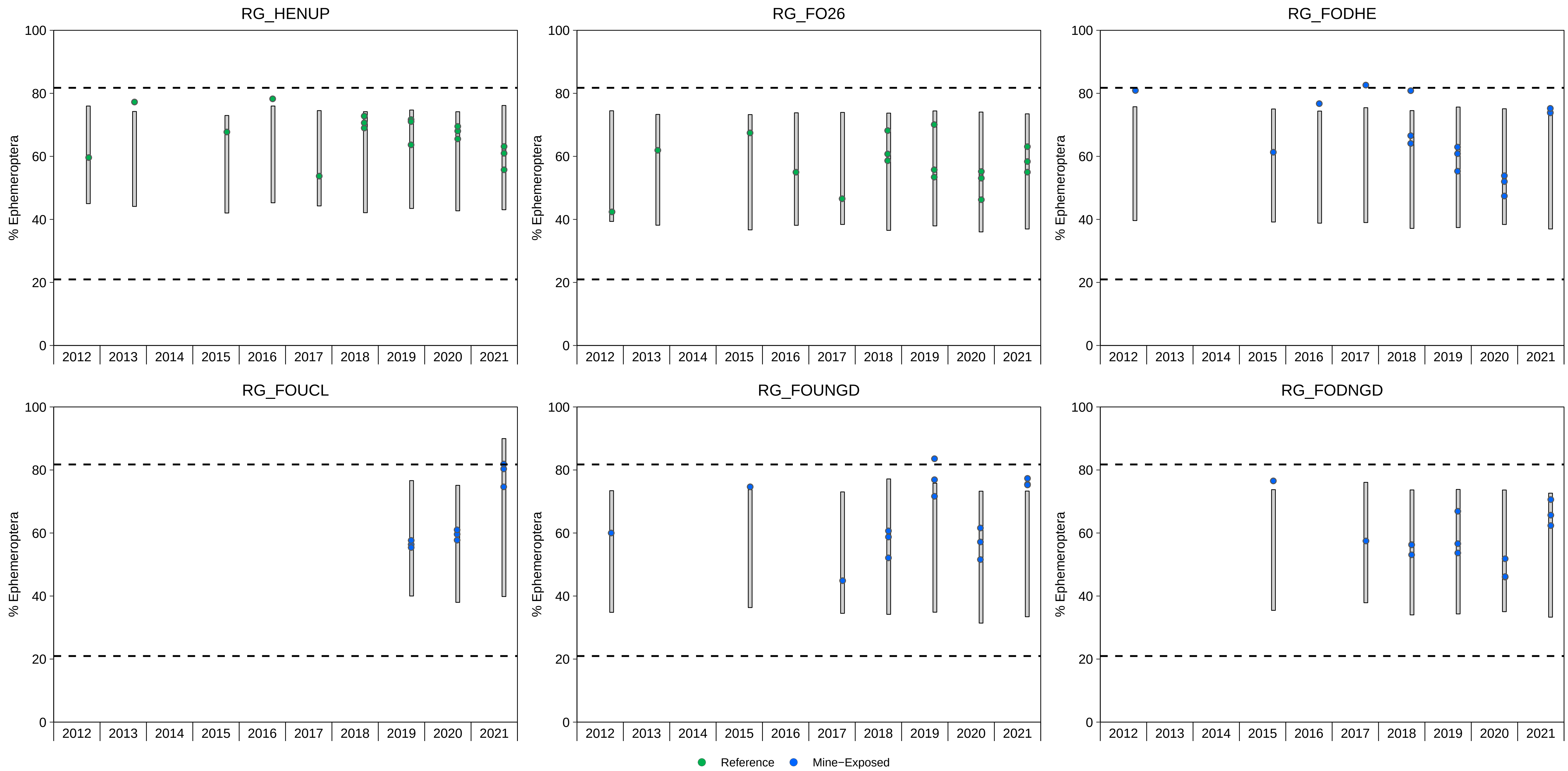


Figure E.10: Benthic Invertebrate % Ephemeroptera in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

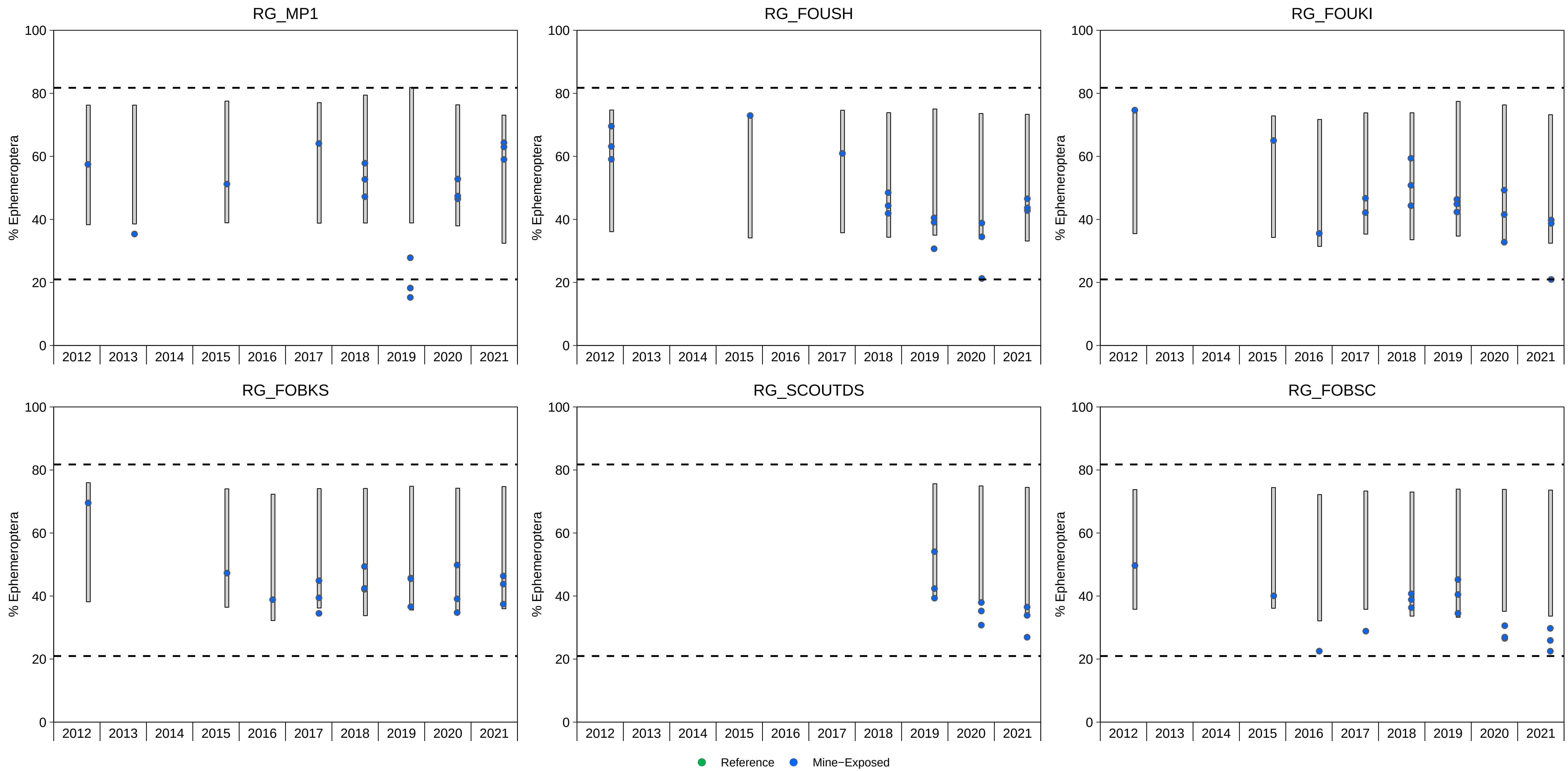


Figure E.10: Benthic Invertebrate % Ephemeroptera in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

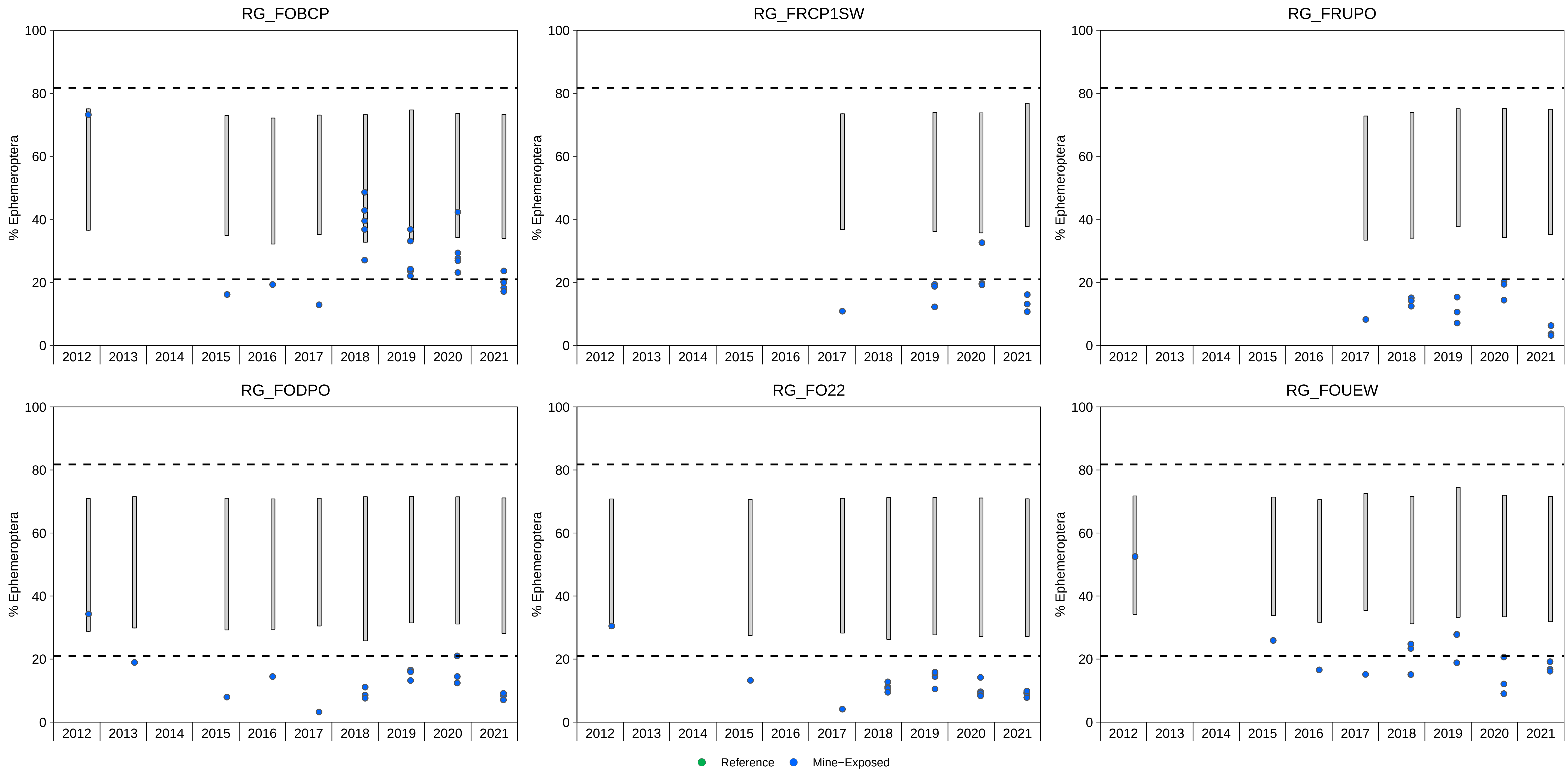


Figure E.10: Benthic Invertebrate % Ephemeroptera in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

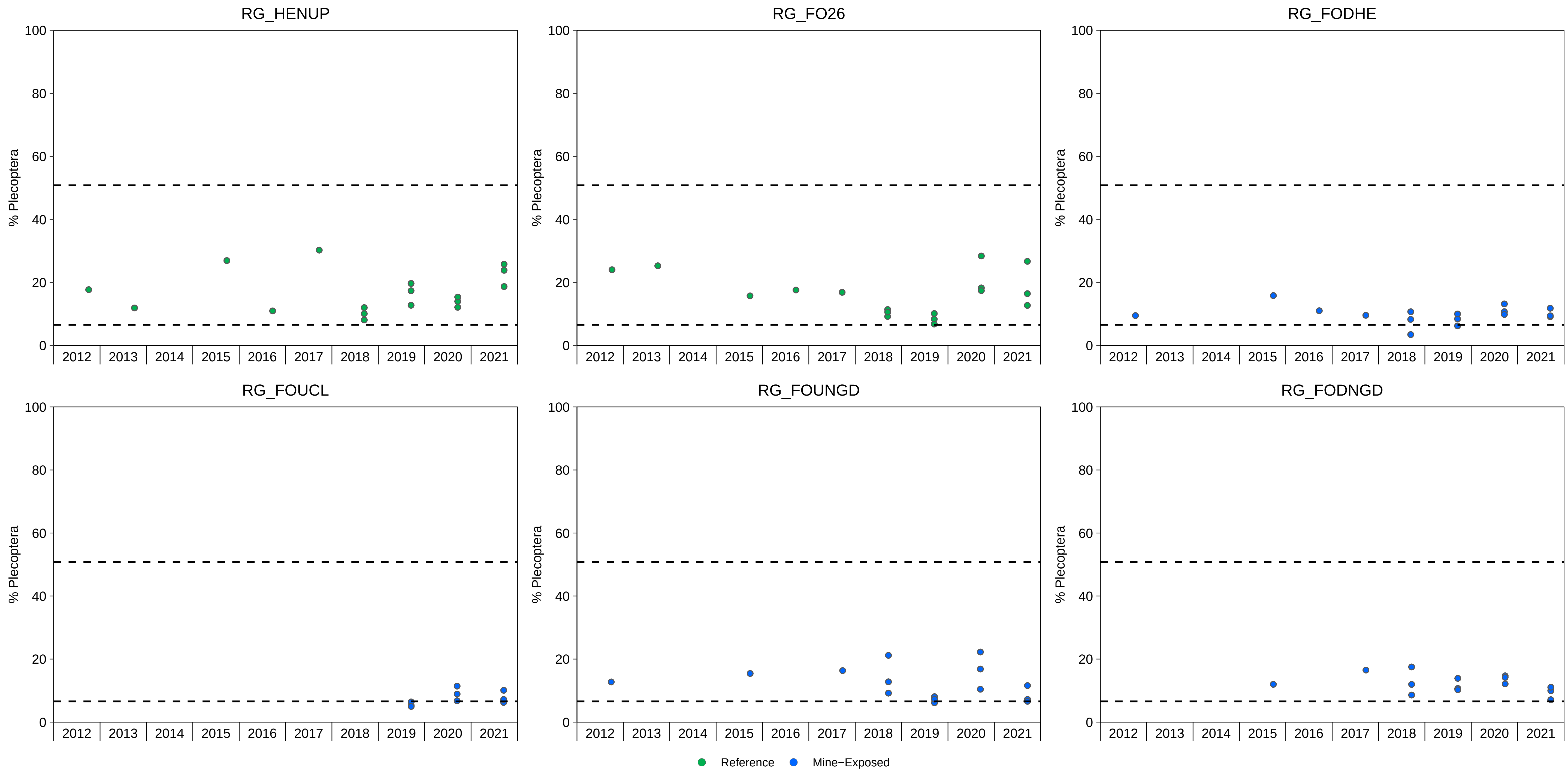


Figure E.11: Benthic Invertebrate % Plecoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

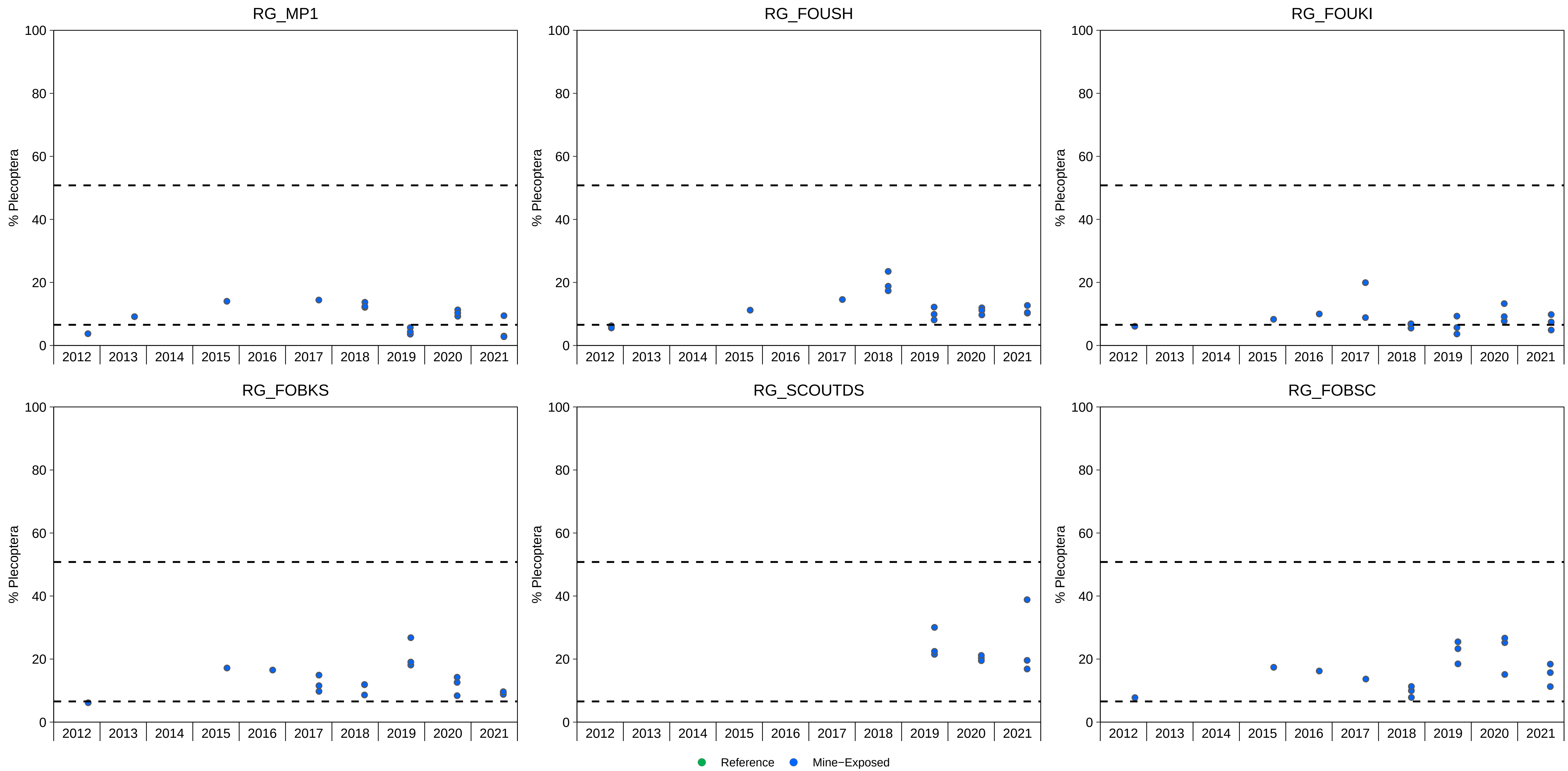


Figure E.11: Benthic Invertebrate % Plecoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

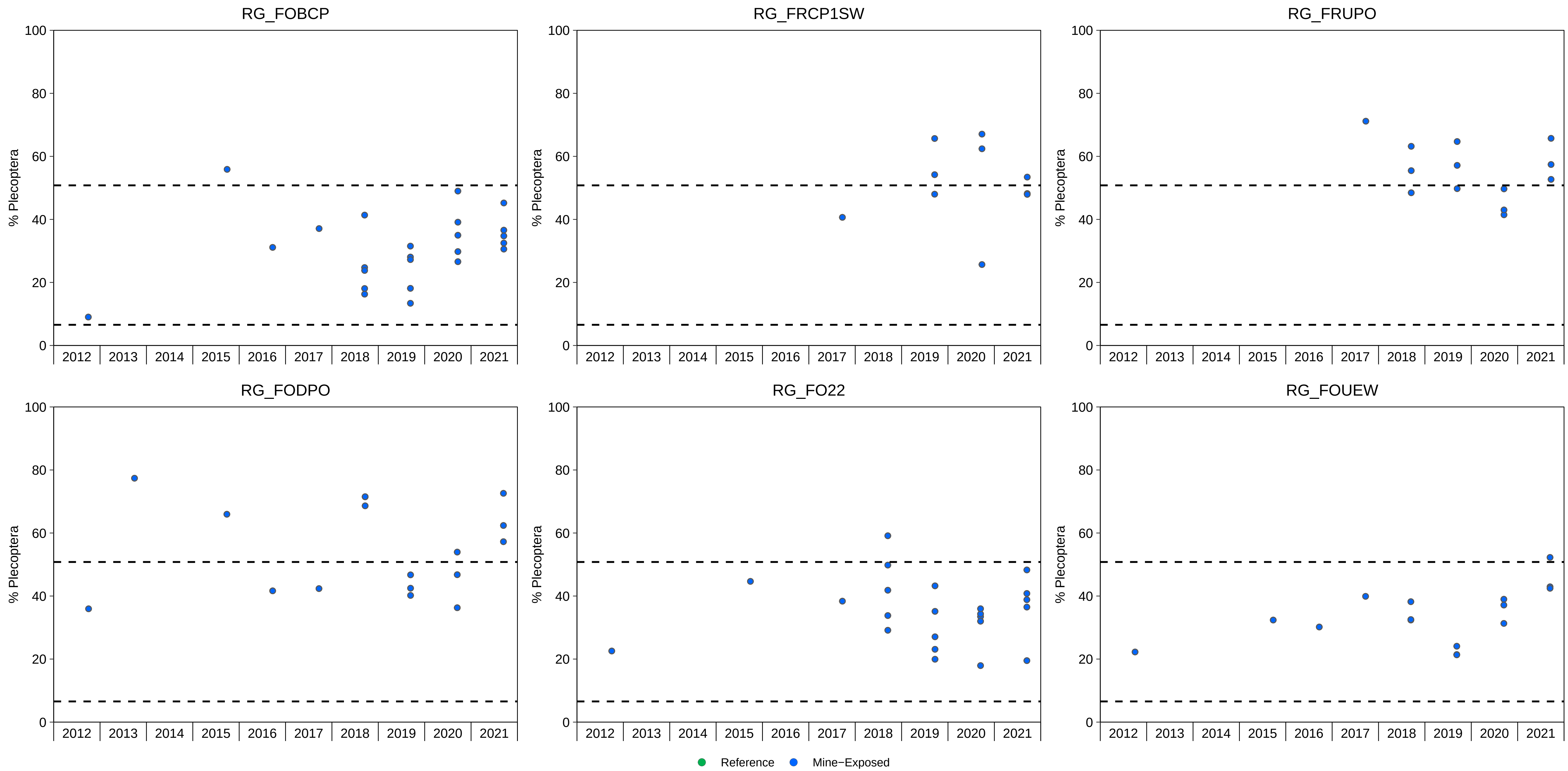


Figure E.11: Benthic Invertebrate % Plecoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

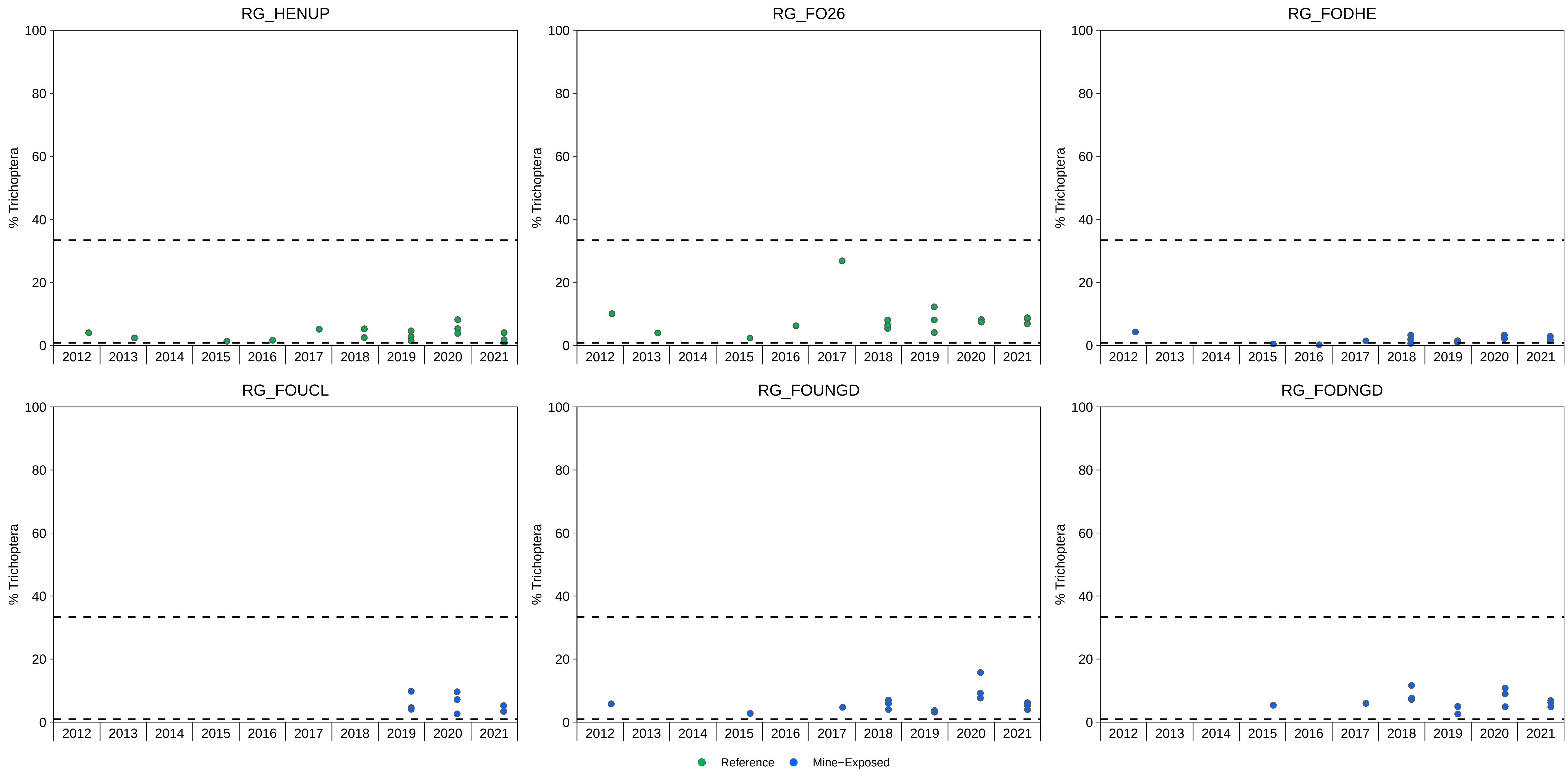


Figure E.12: Benthic Invertebrate % Trichoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

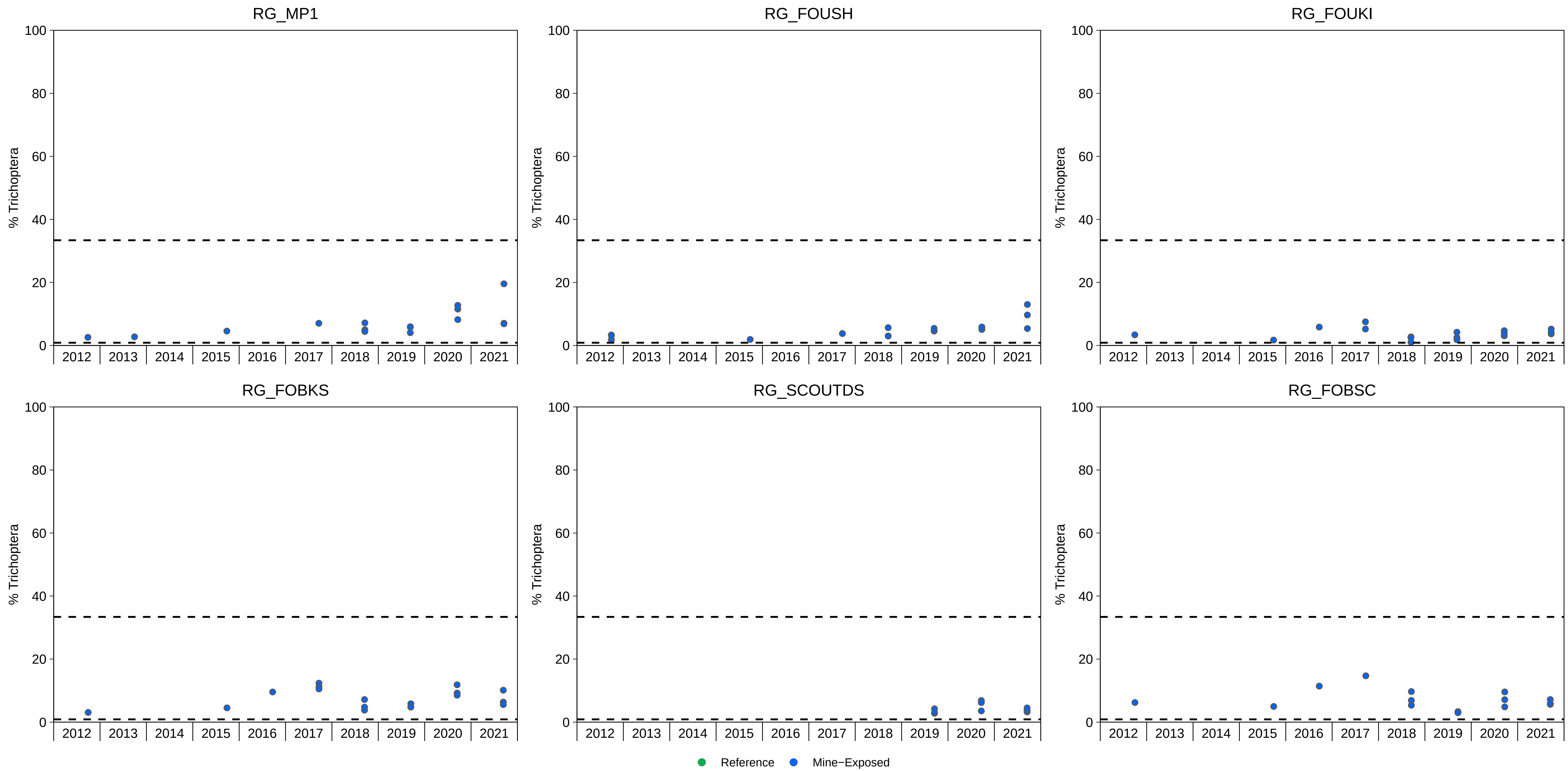


Figure E.12: Benthic Invertebrate % Trichoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

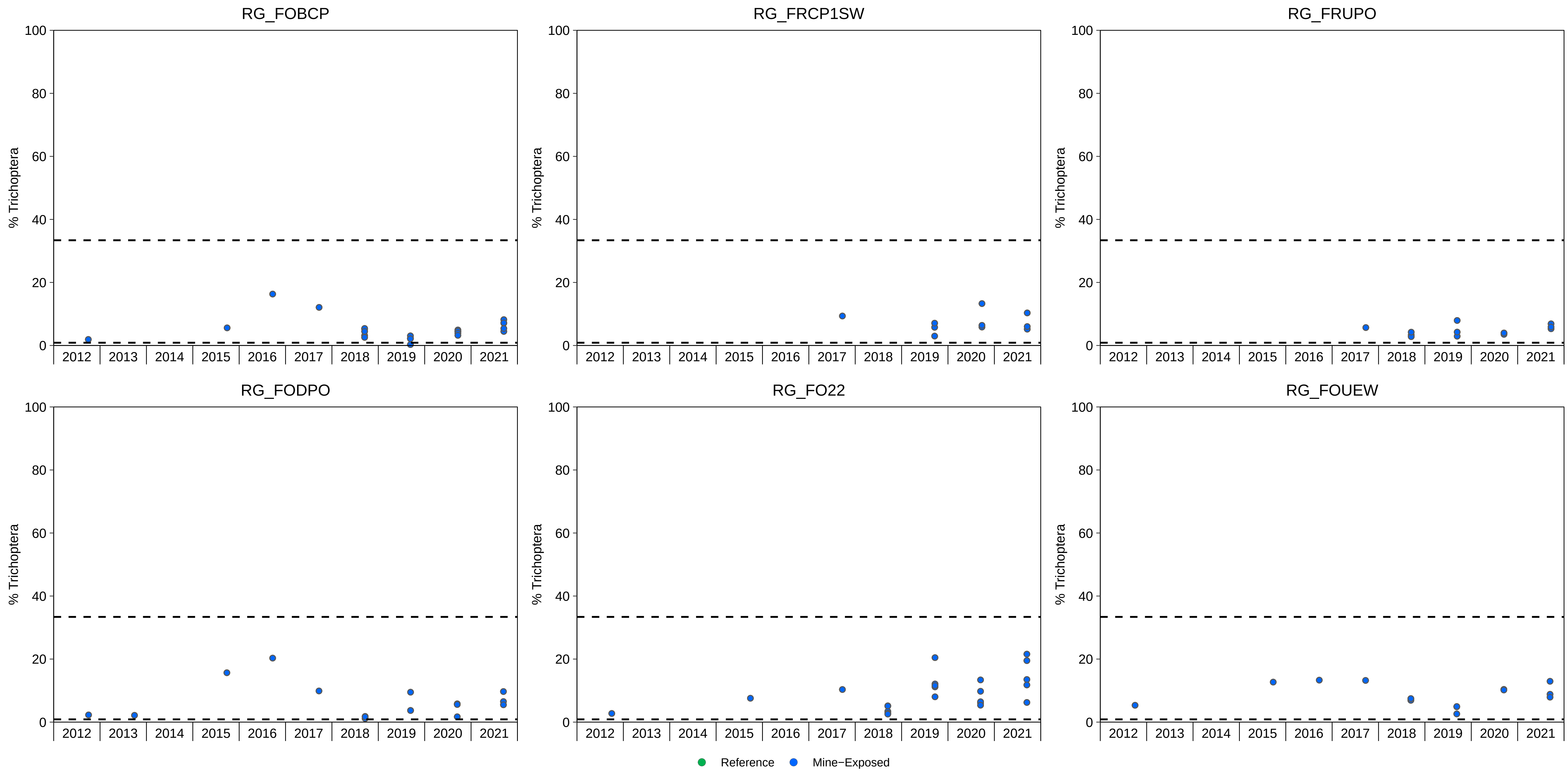


Figure E.12: Benthic Invertebrate % Trichoptera in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

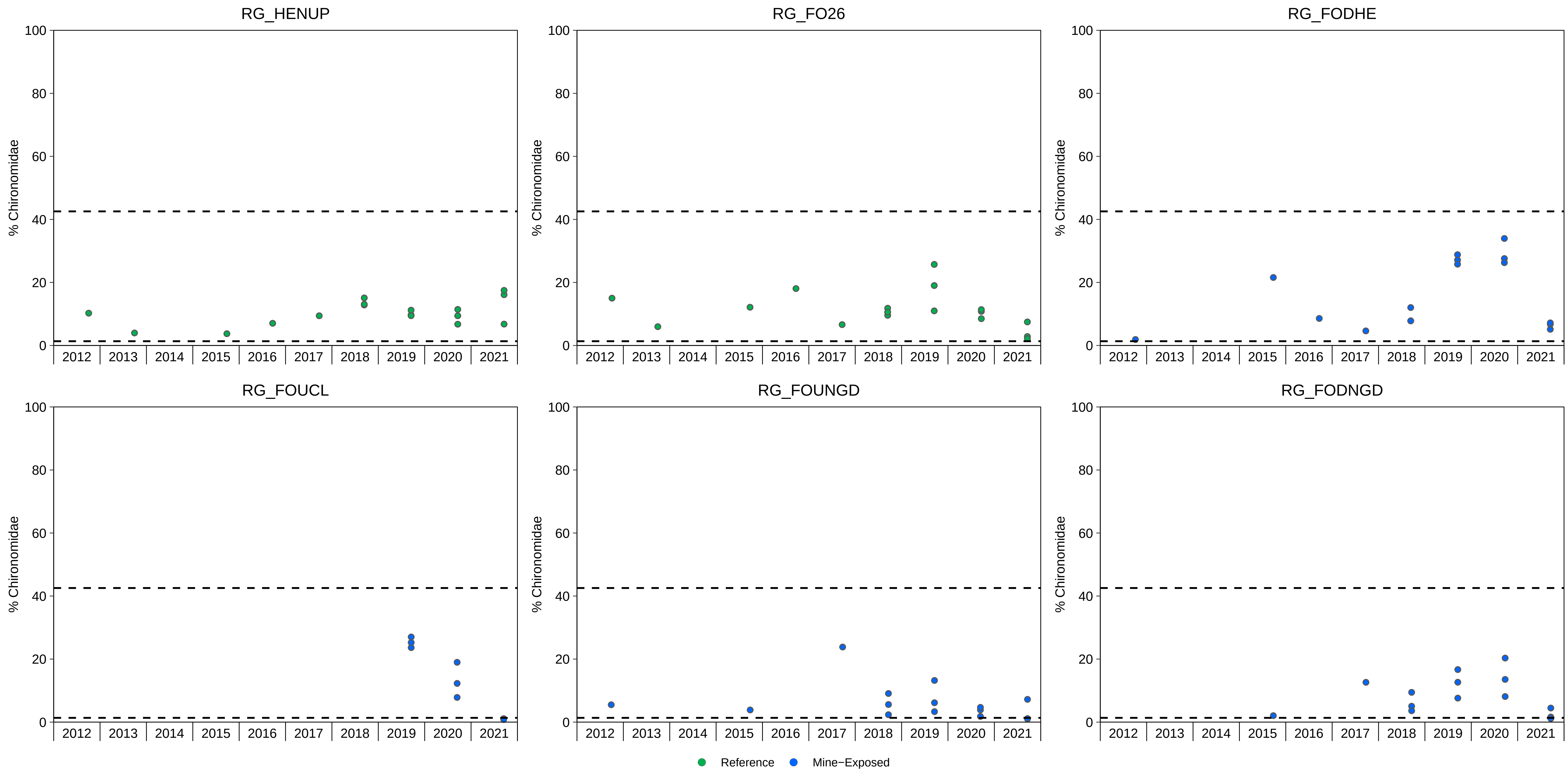


Figure E.13: Benthic Invertebrate % Chironomidae in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

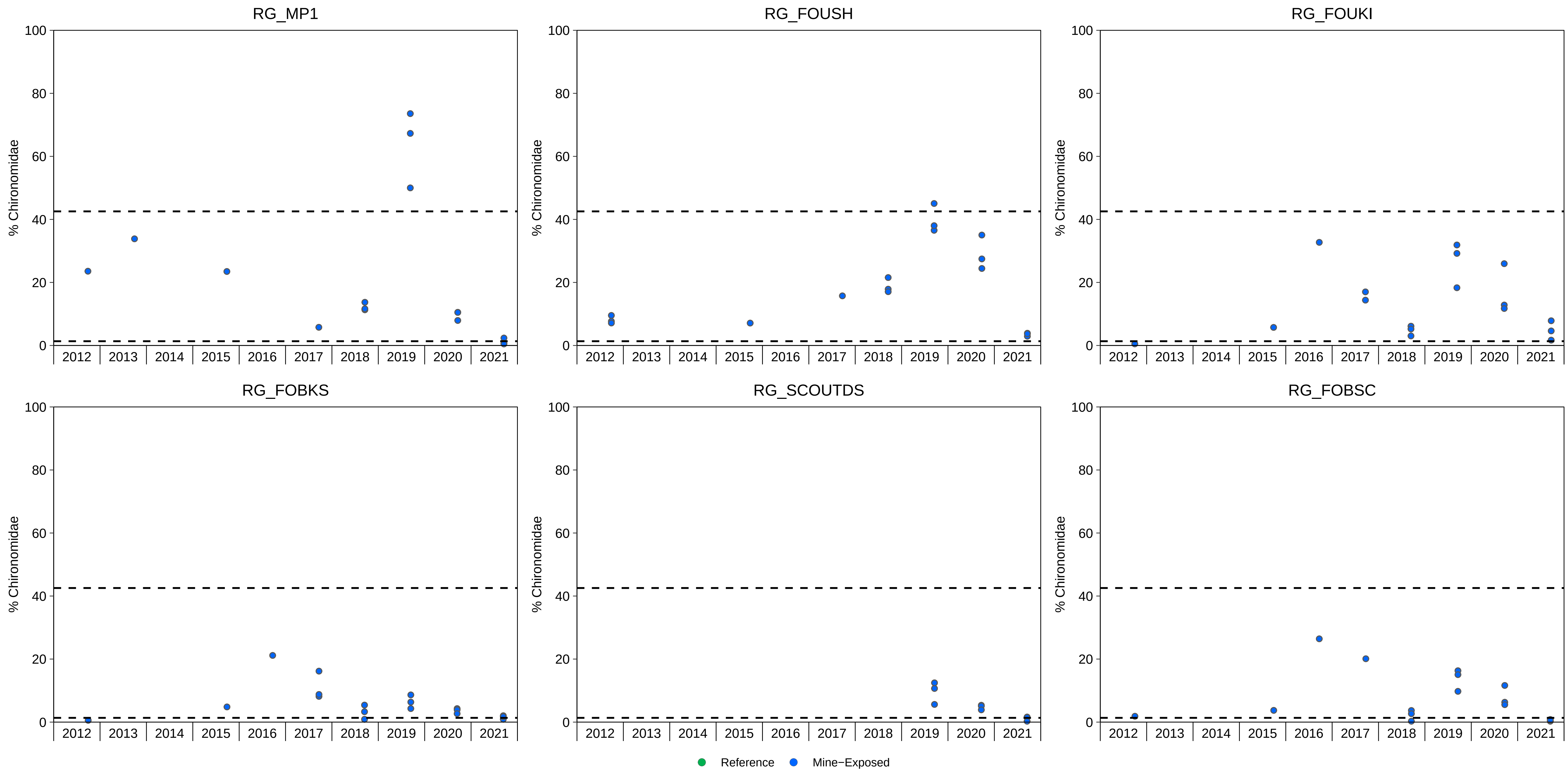


Figure E.13: Benthic Invertebrate % Chironomidae in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

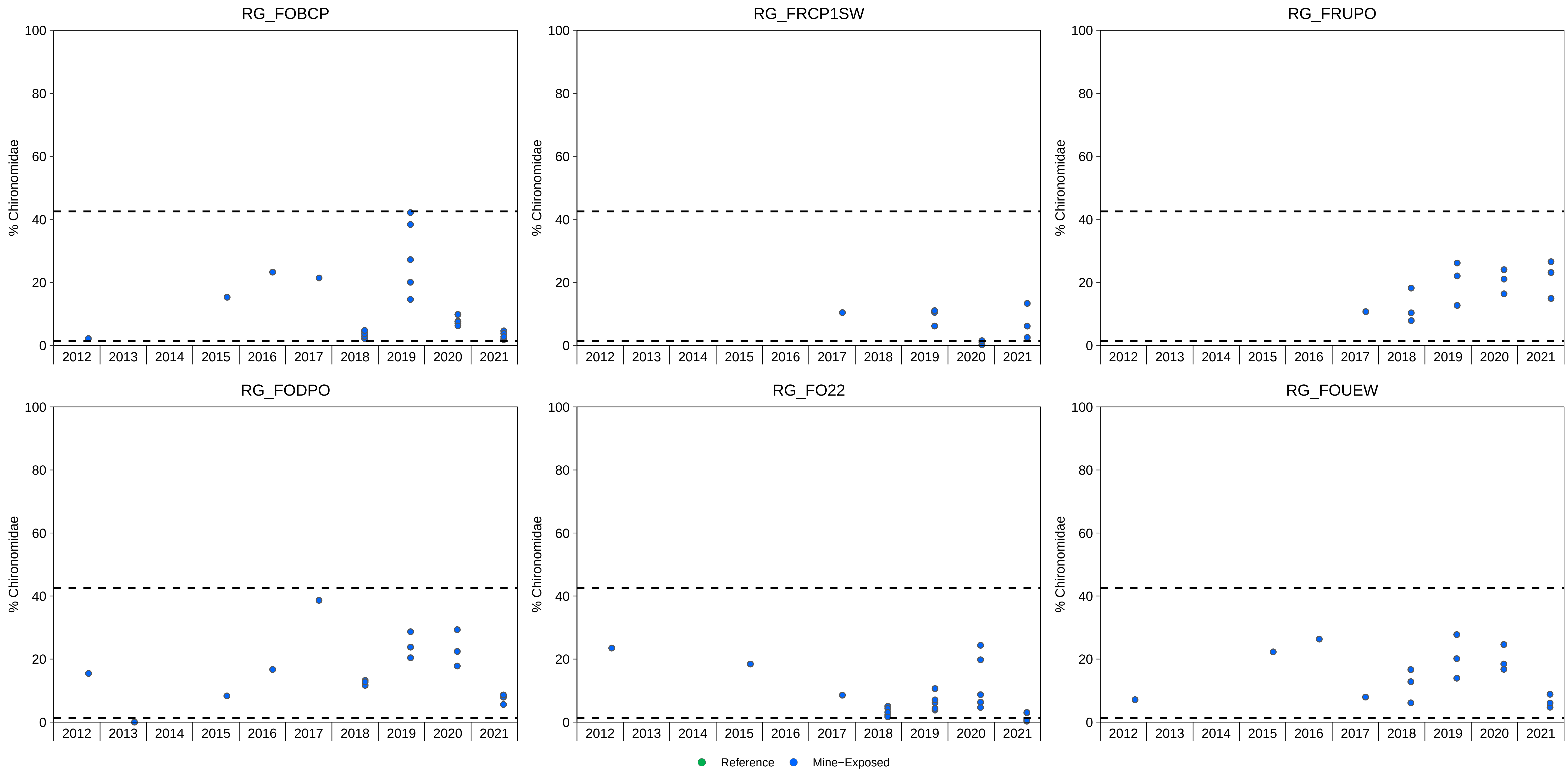


Figure E.13: Benthic Invertebrate % Chironomidae in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

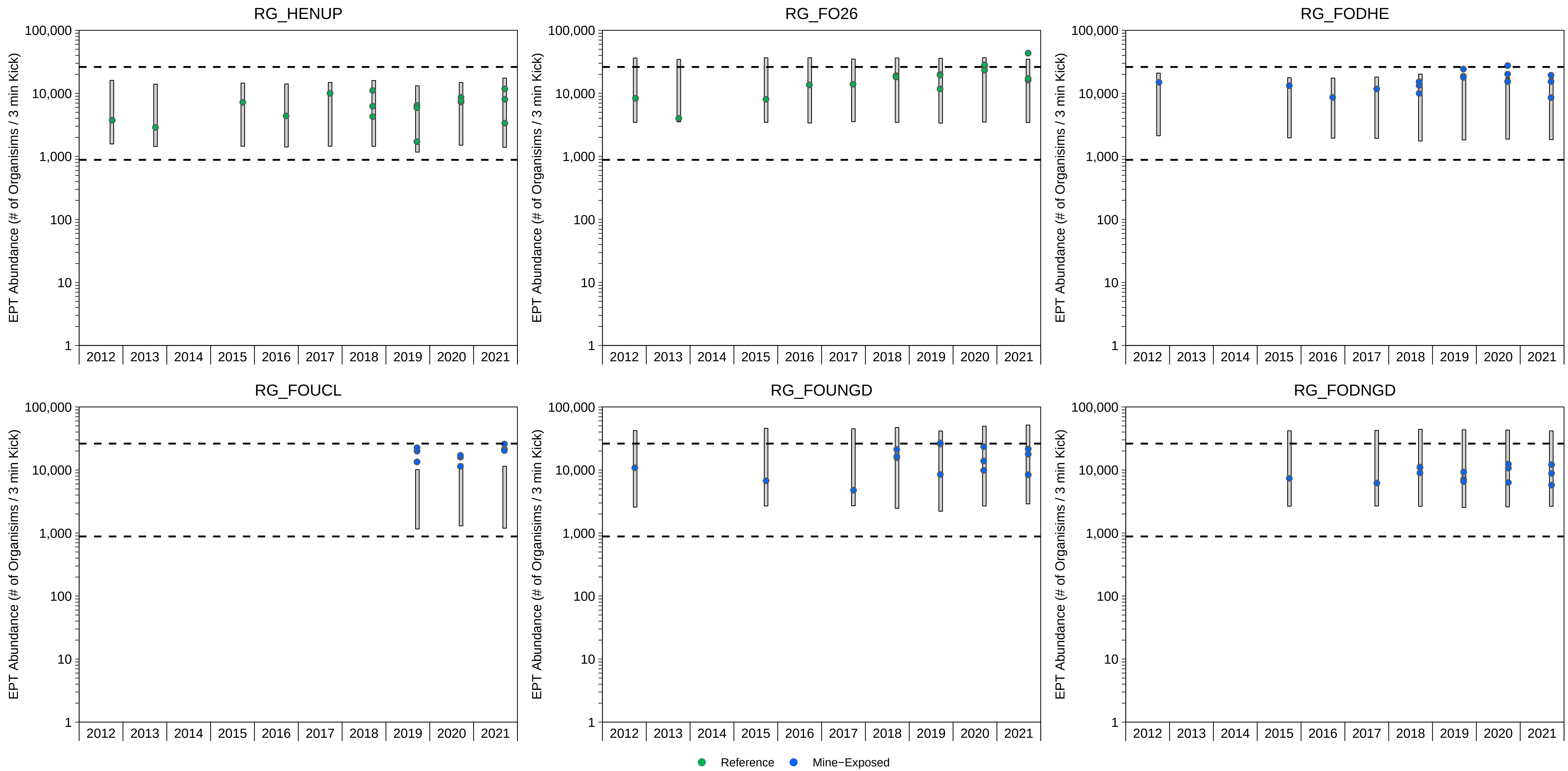


Figure E.14: Benthic Invertebrate EPT Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

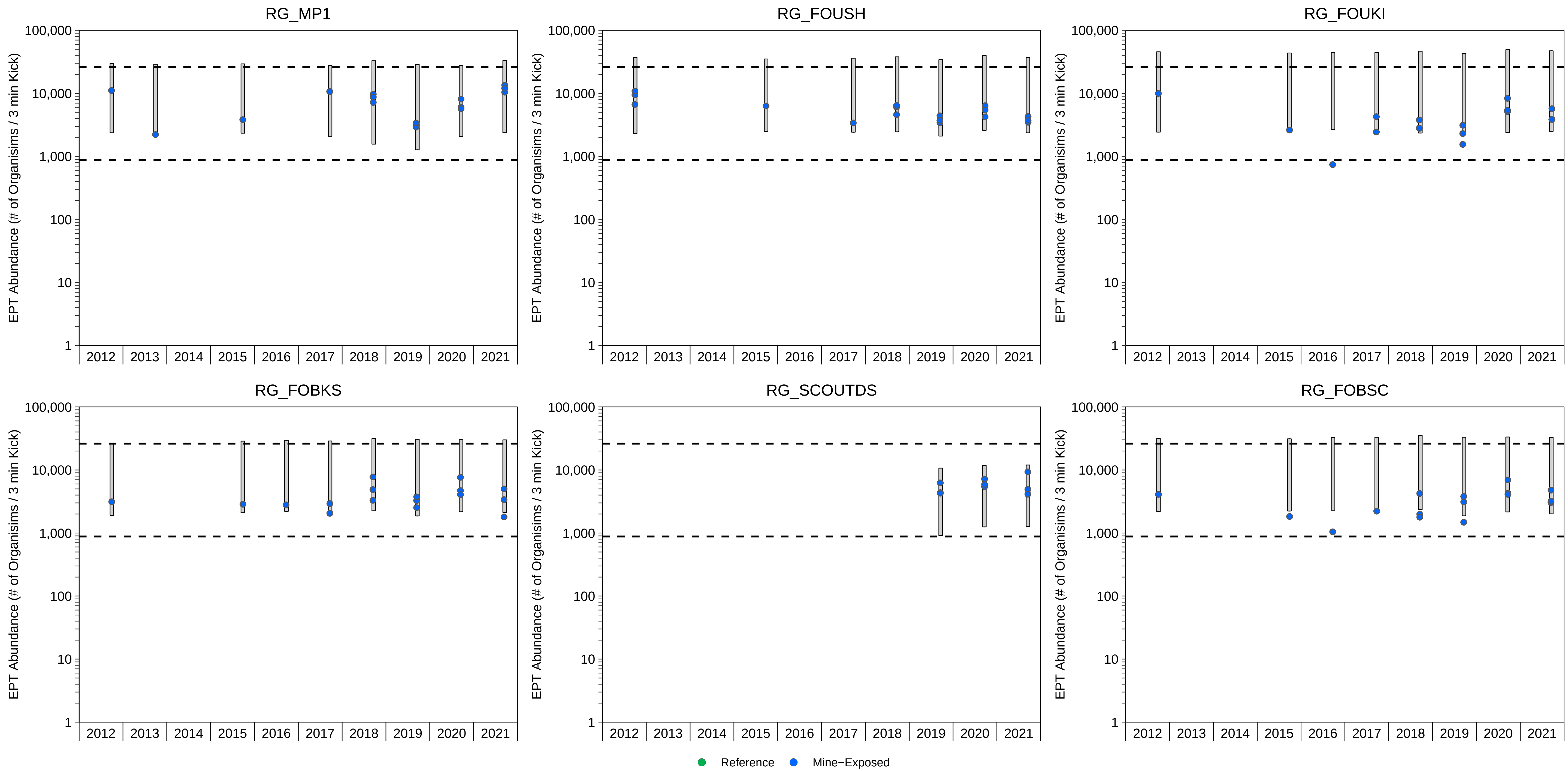


Figure E.14: Benthic Invertebrate EPT Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

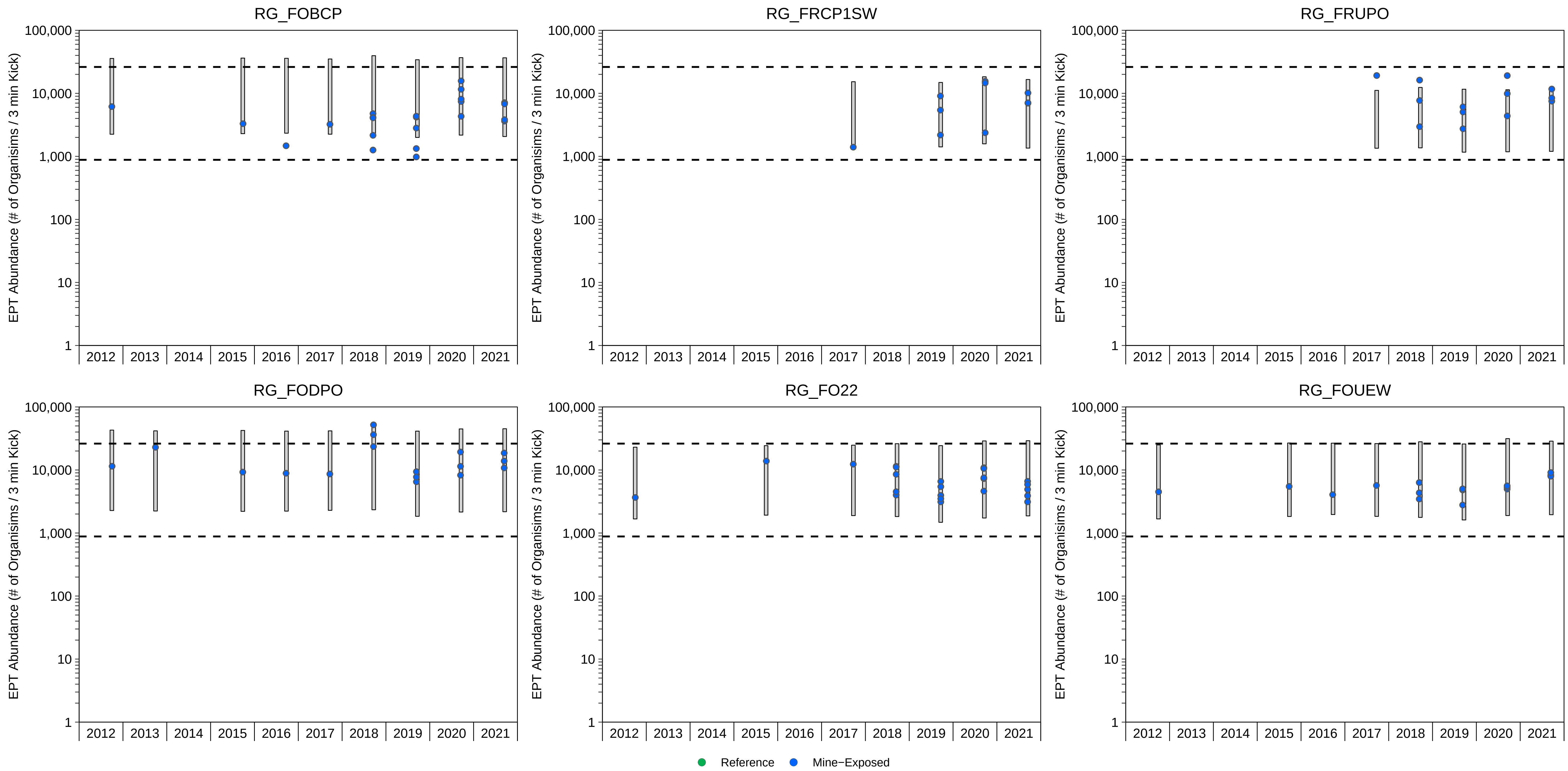


Figure E.14: Benthic Invertebrate EPT Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

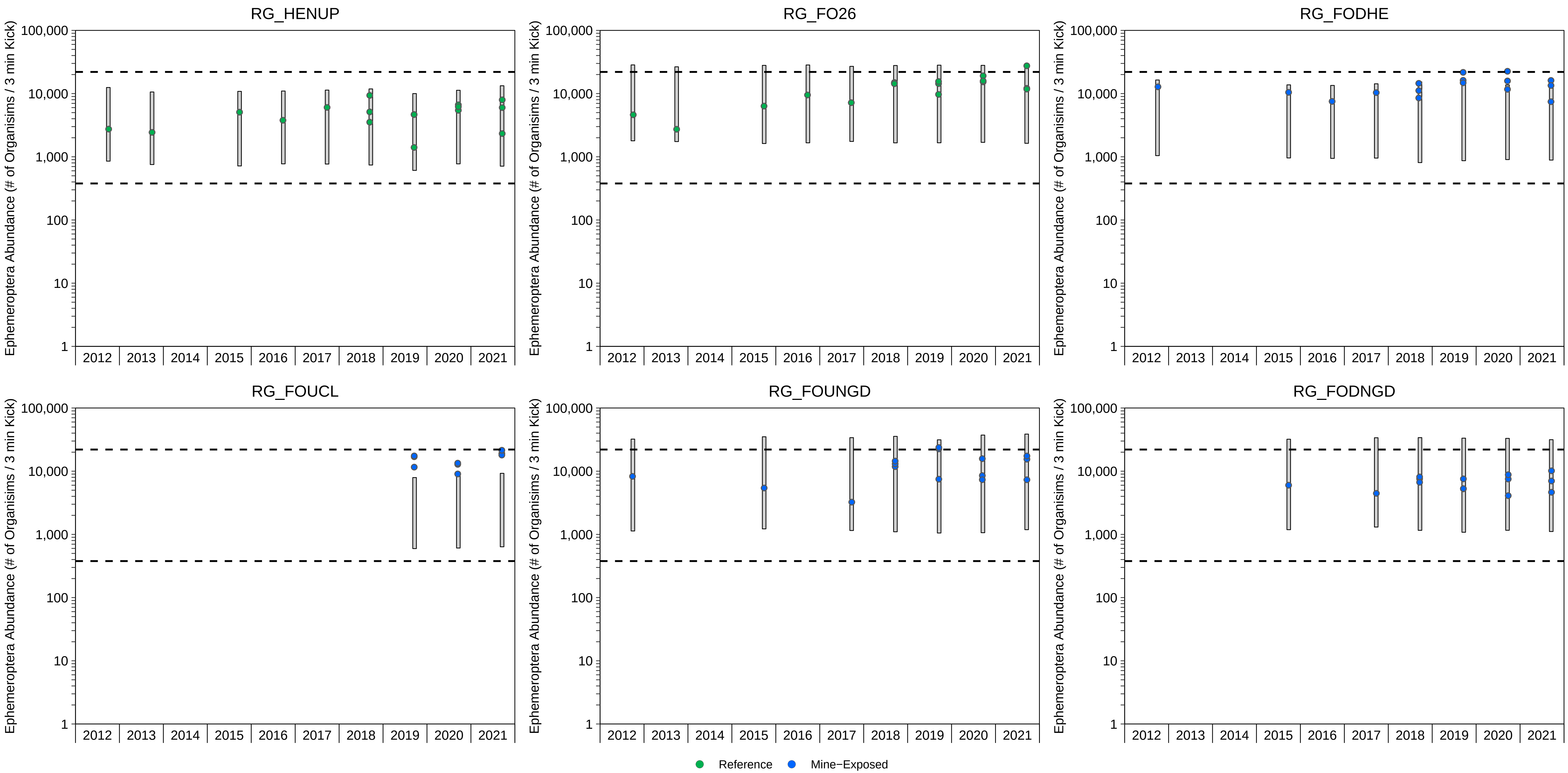


Figure E.15: Benthic Invertebrate Ephemeroptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

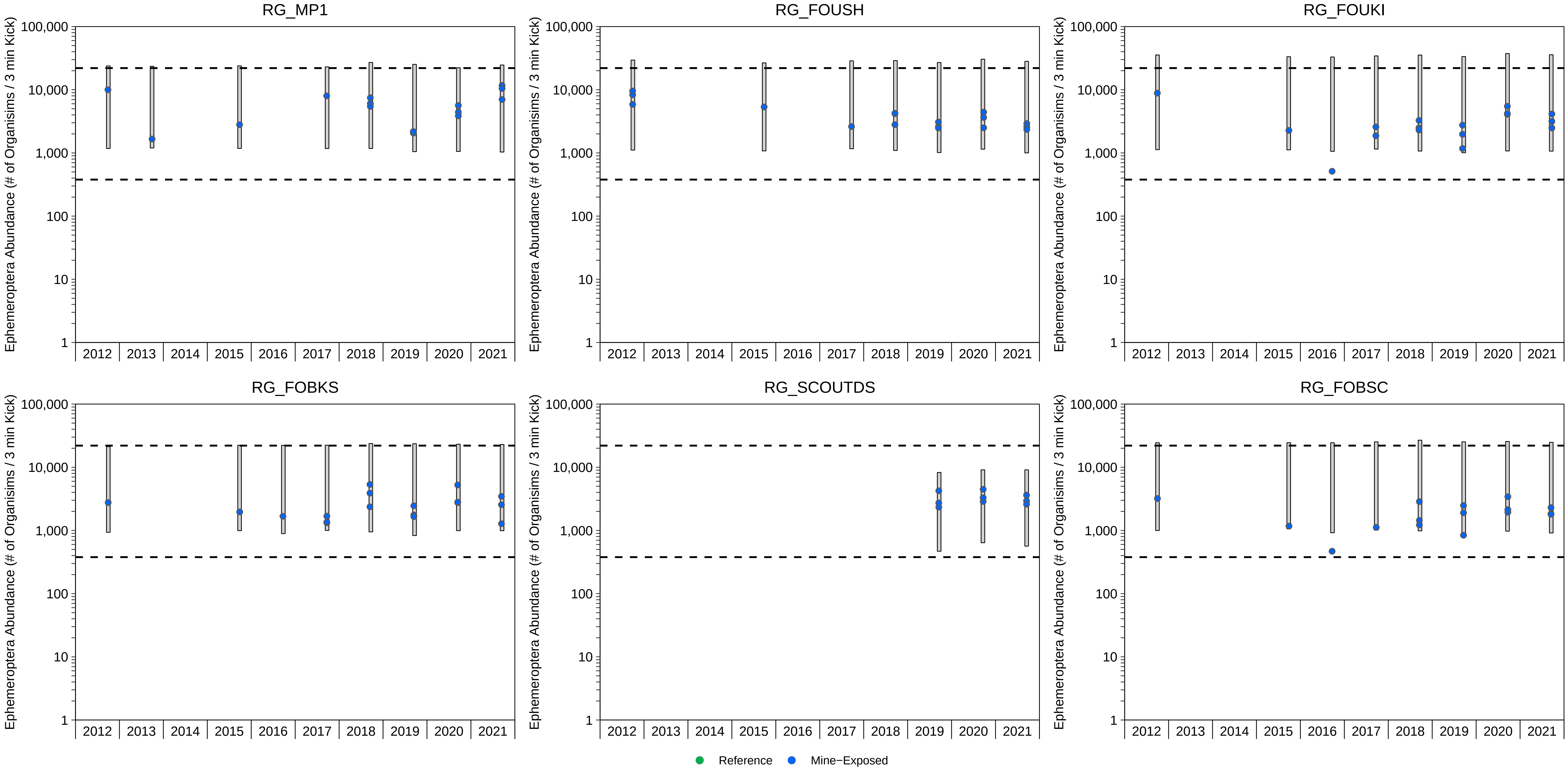


Figure E.15: Benthic Invertebrate Ephemeroptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

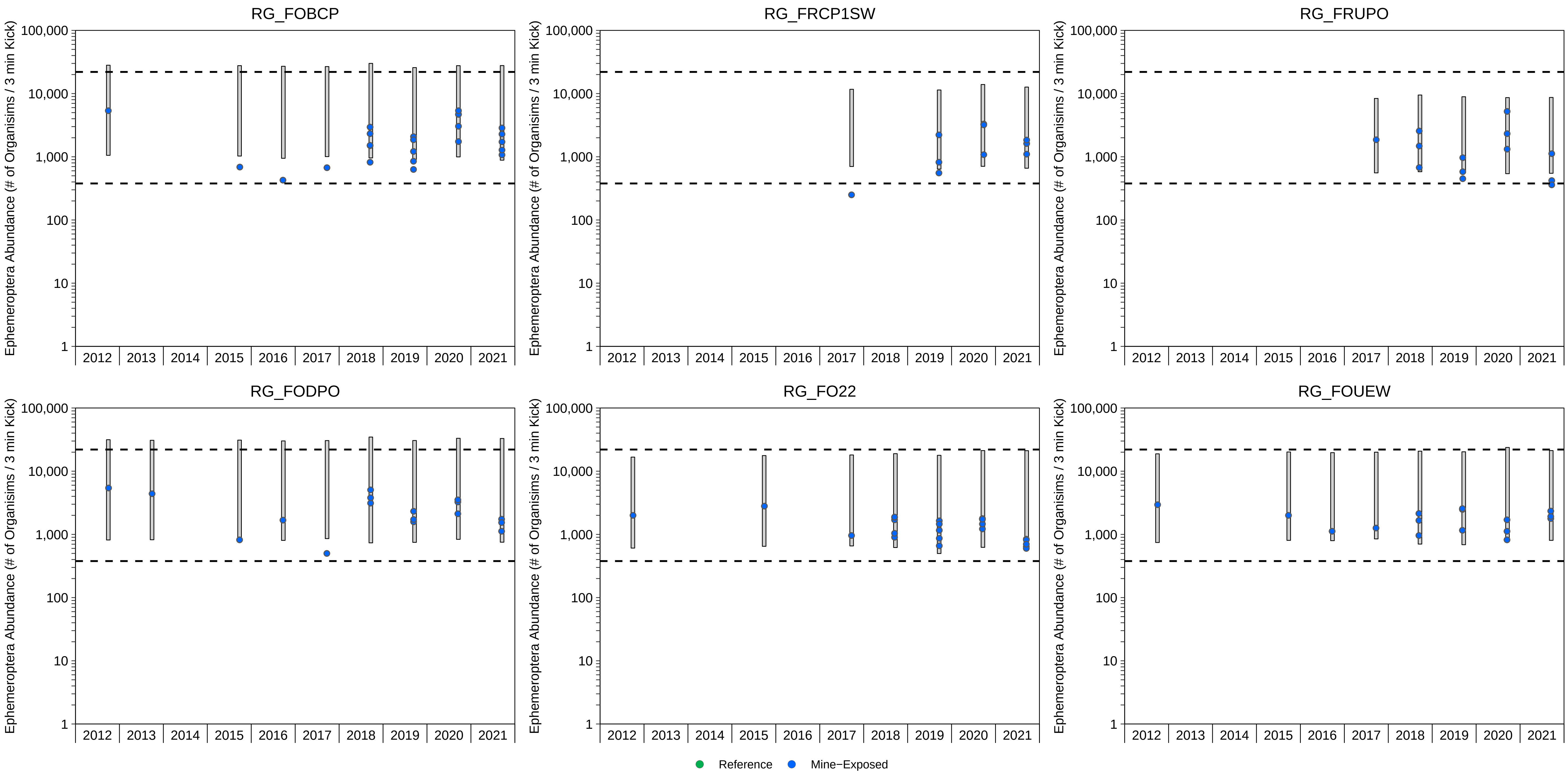


Figure E.15: Benthic Invertebrate Ephemeroptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Site specific normal ranges developed using regression models for the RAEMP (Minnow 2020a) are shown, when applicable, with grey shading (Minnow 2020a). Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

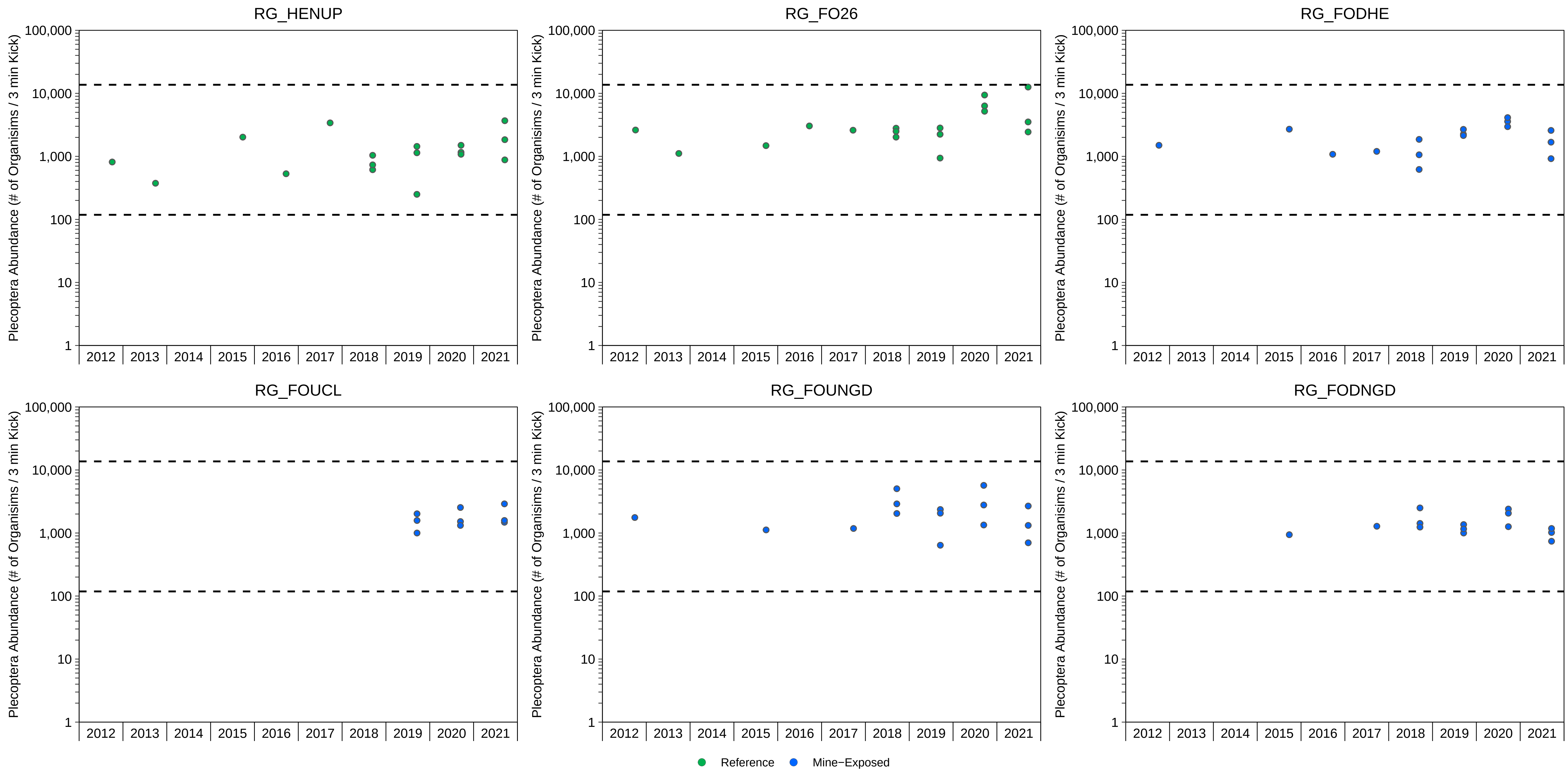


Figure E.16: **Benthic Invertebrate Plecoptera Abundance in September, FRO LAEMP, 2012 to 2021**

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

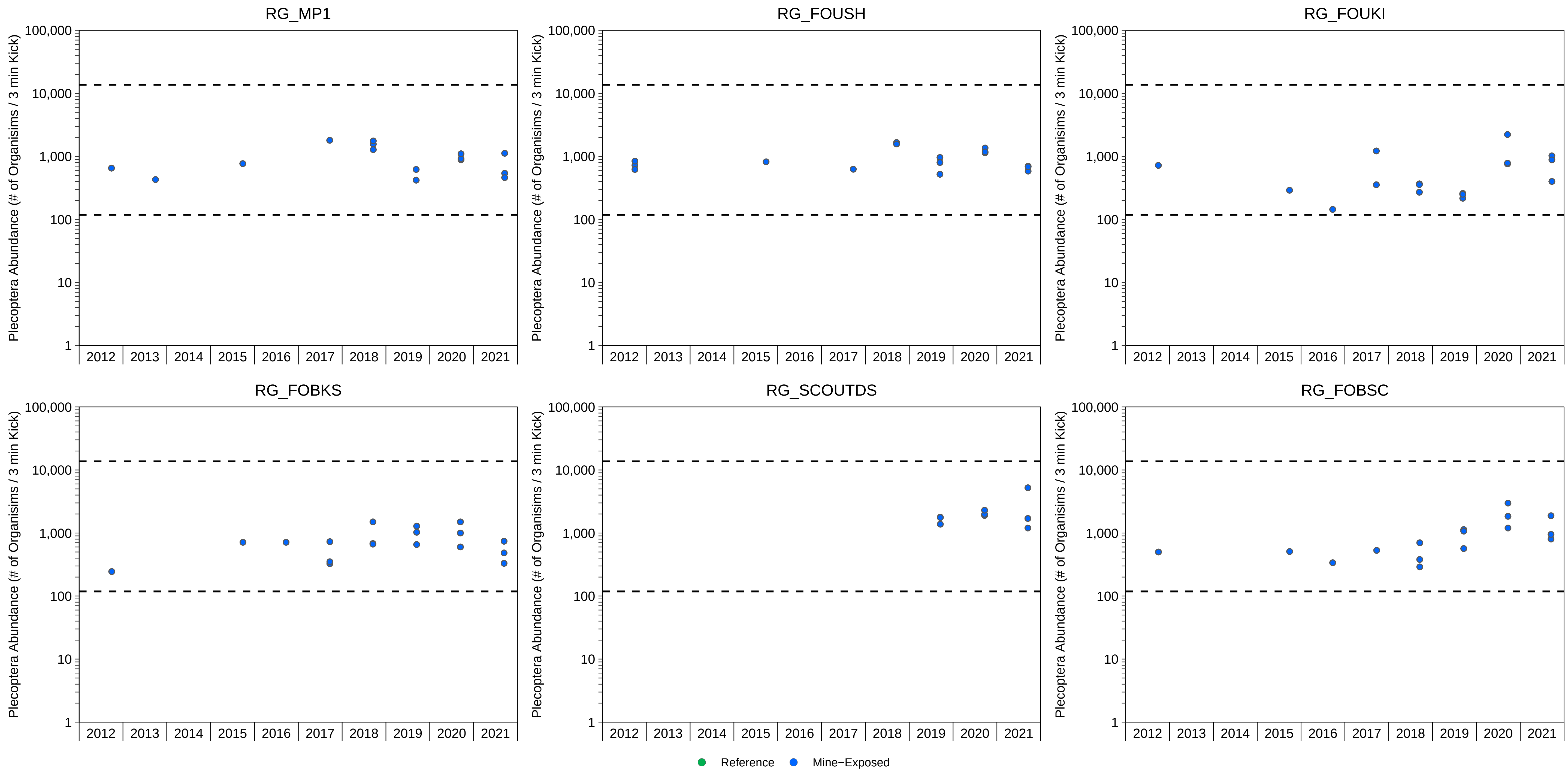


Figure E.16: Benthic Invertebrate Plecoptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

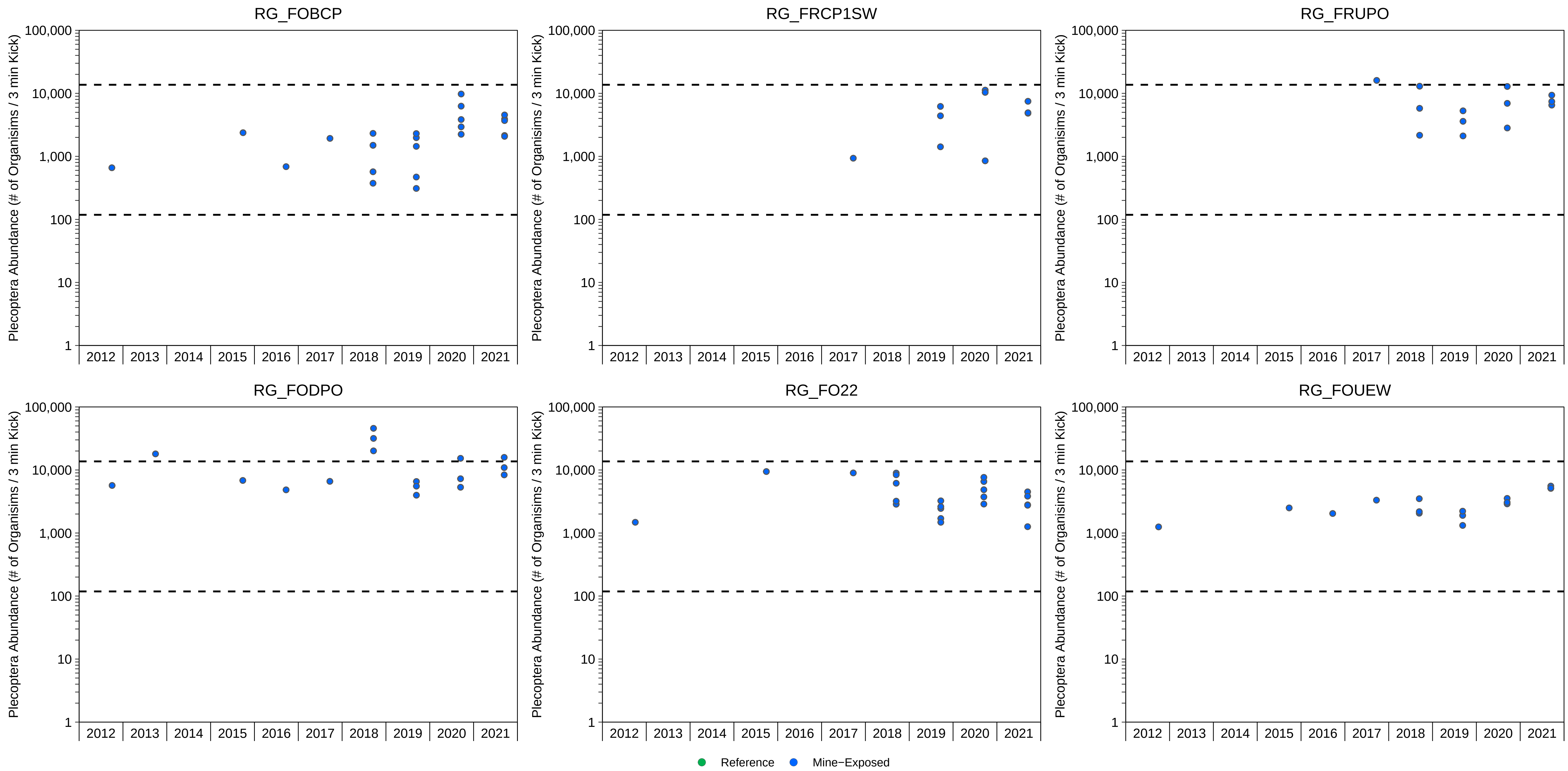


Figure E.16: Benthic Invertebrate Plecoptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

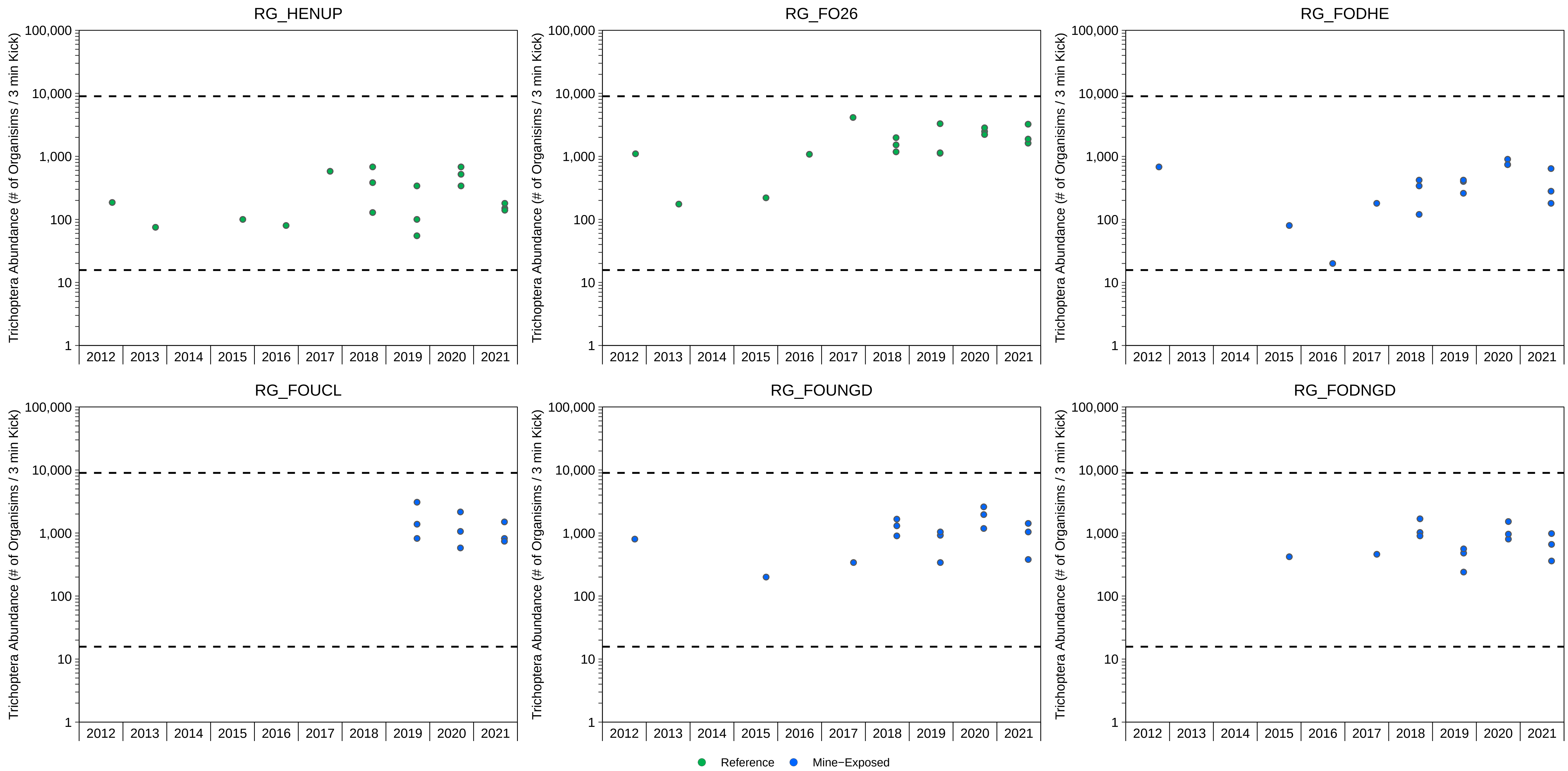


Figure E.17: Benthic Invertebrate Trichoptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

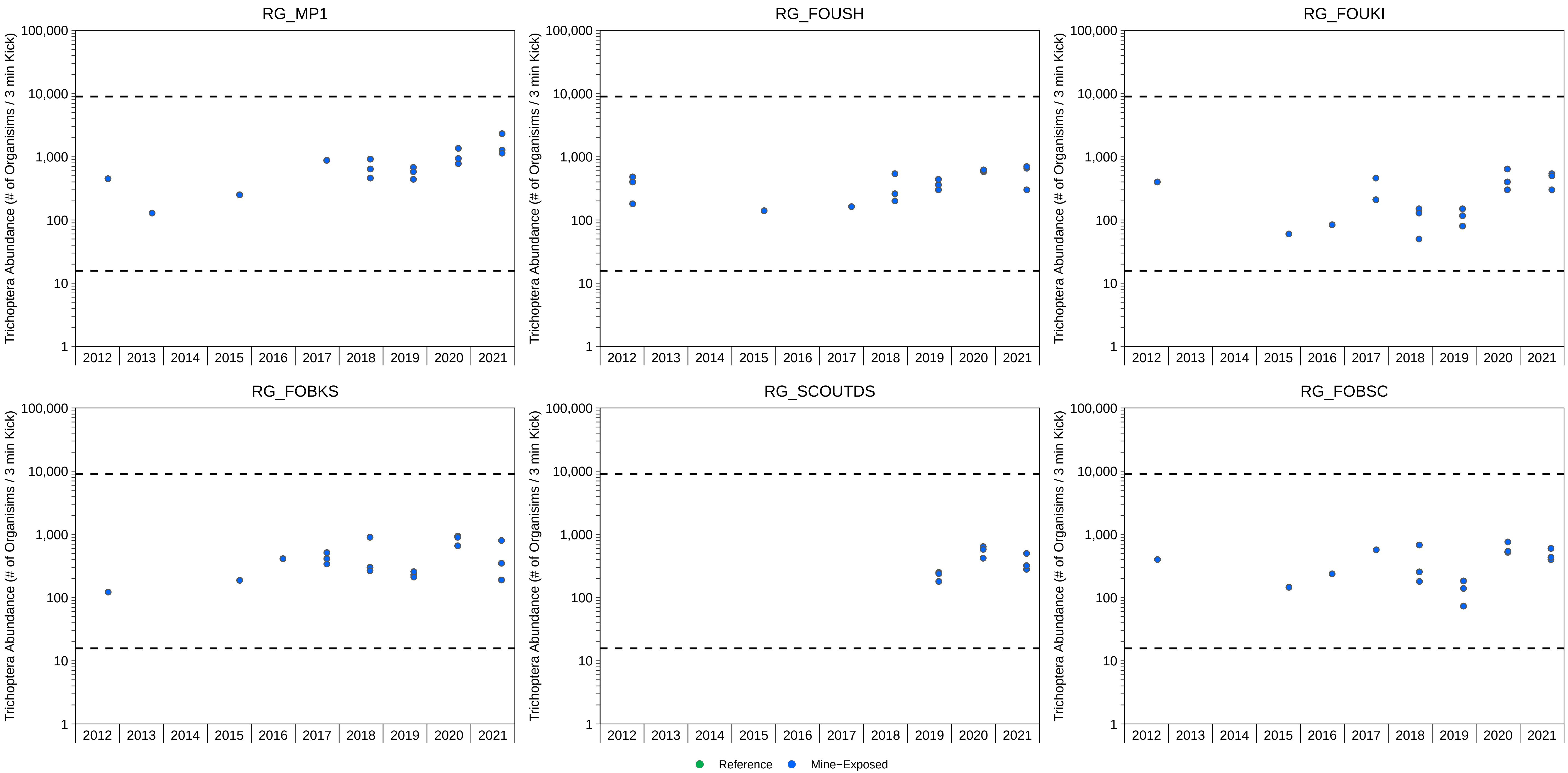


Figure E.17: Benthic Invertebrate Trichoptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

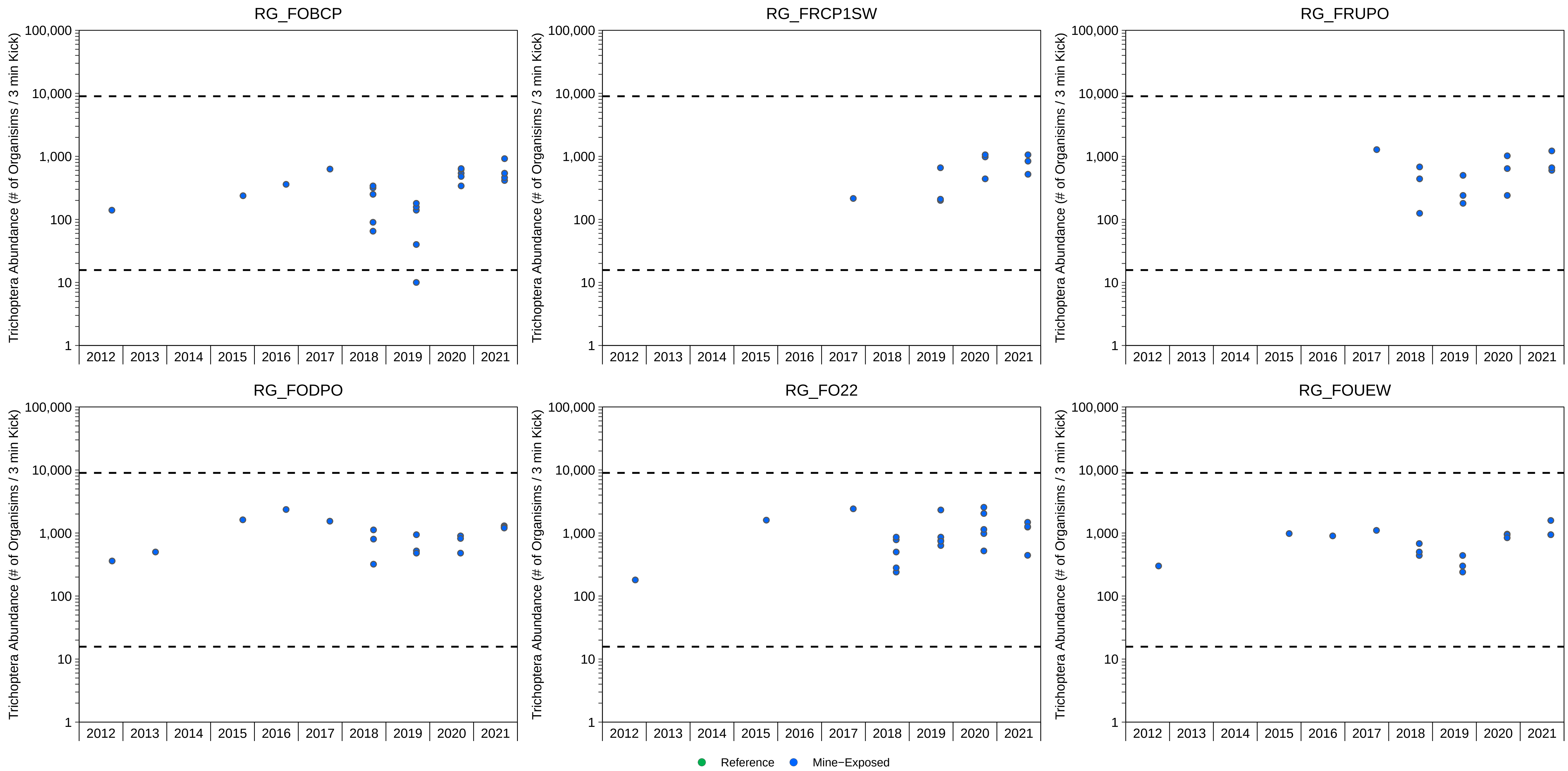


Figure E.17: Benthic Invertebrate Trichoptera Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

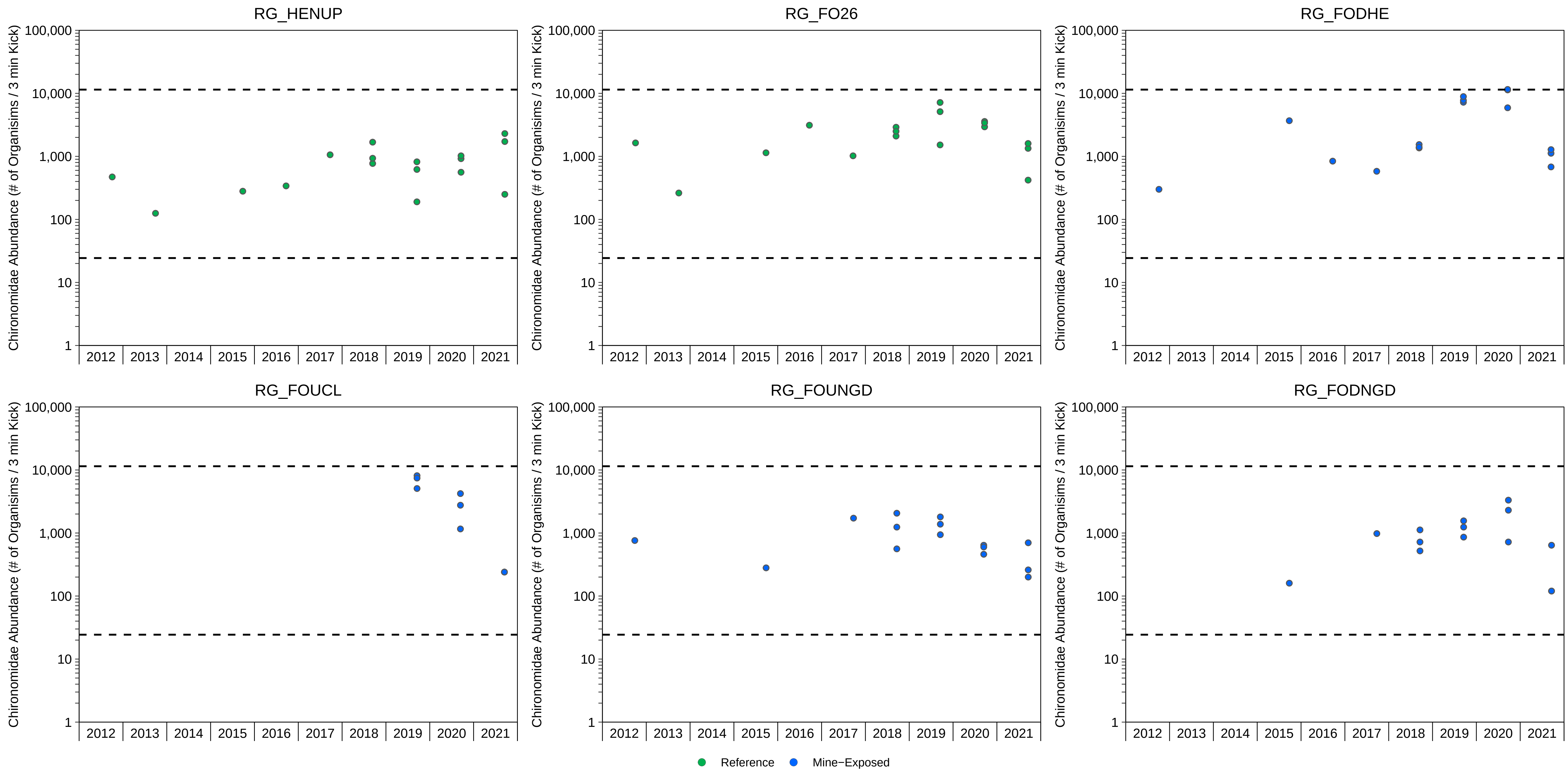


Figure E.18: Benthic Invertebrate Chironomidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

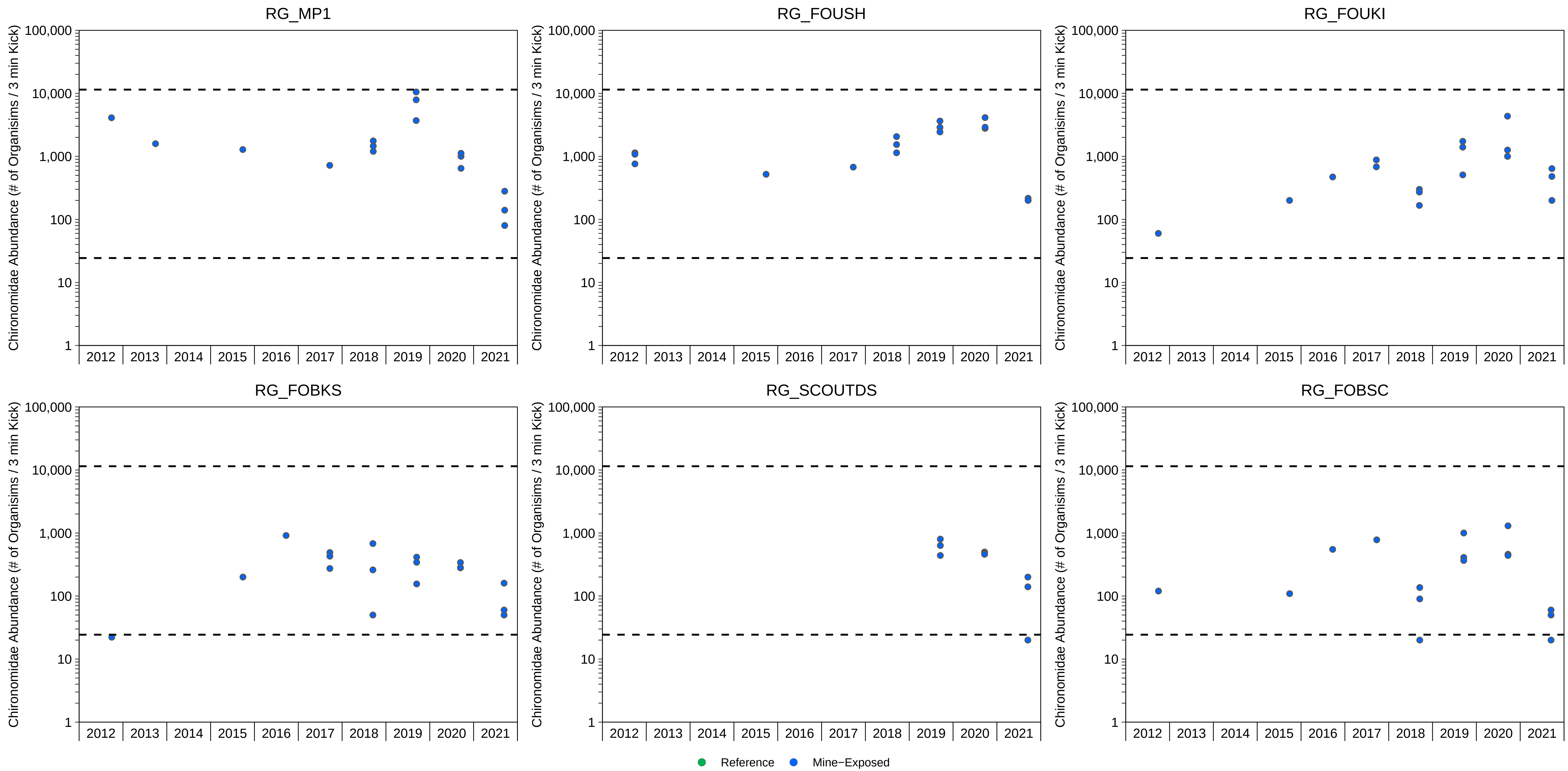


Figure E.18: Benthic Invertebrate Chironomidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

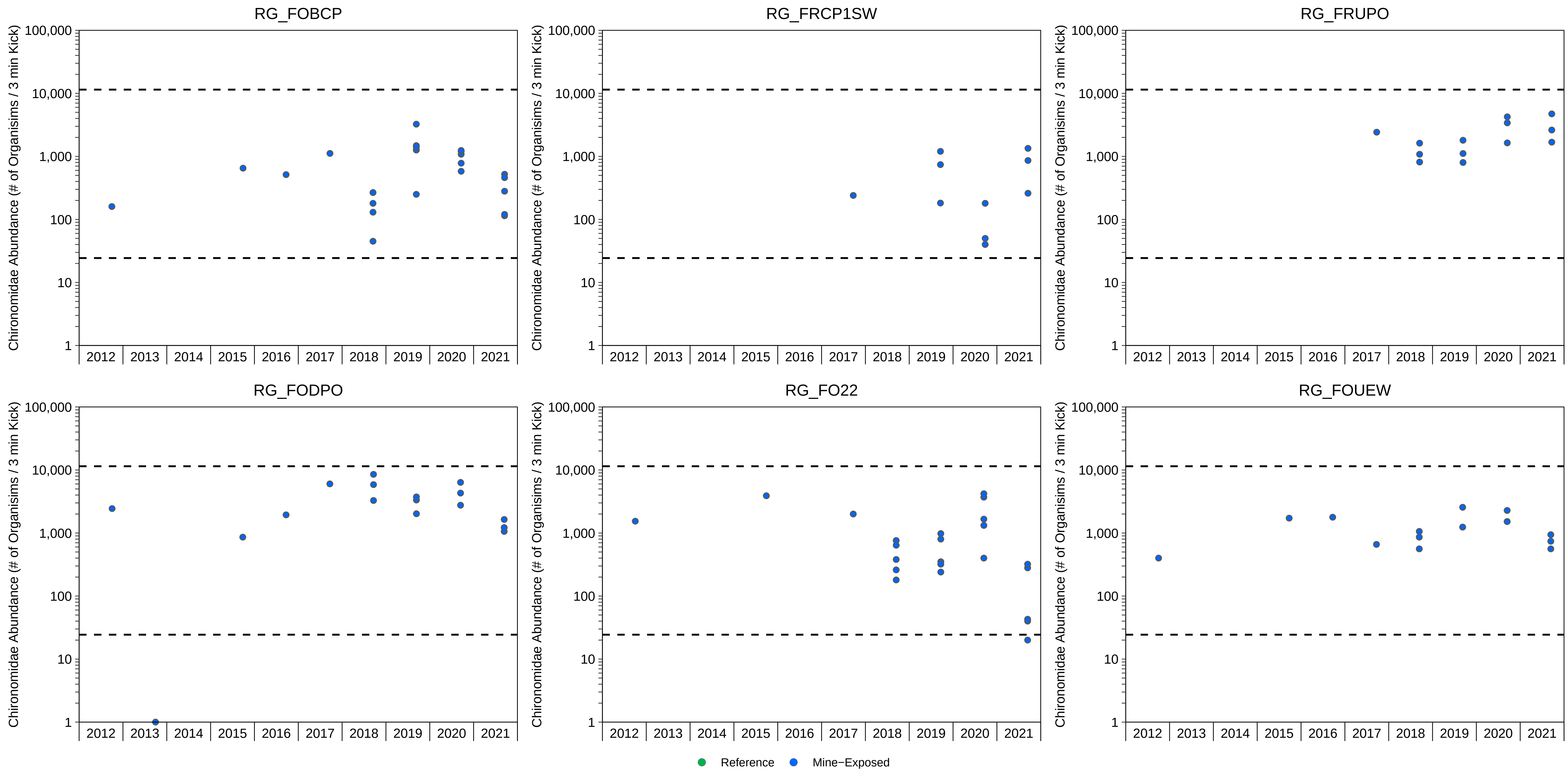


Figure E.18: Benthic Invertebrate Chironomidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

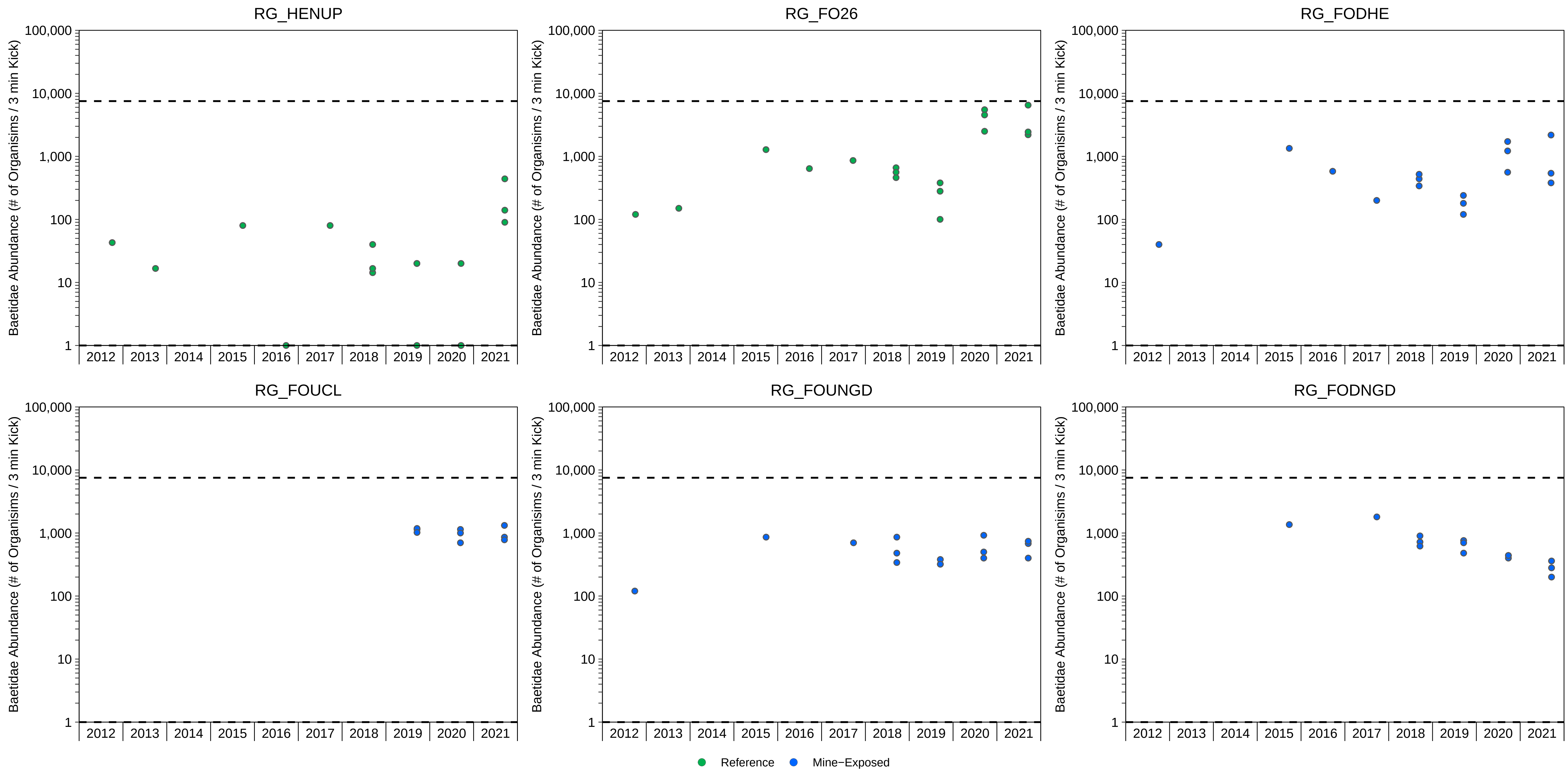


Figure E.19: Benthic Invertebrate Baetidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

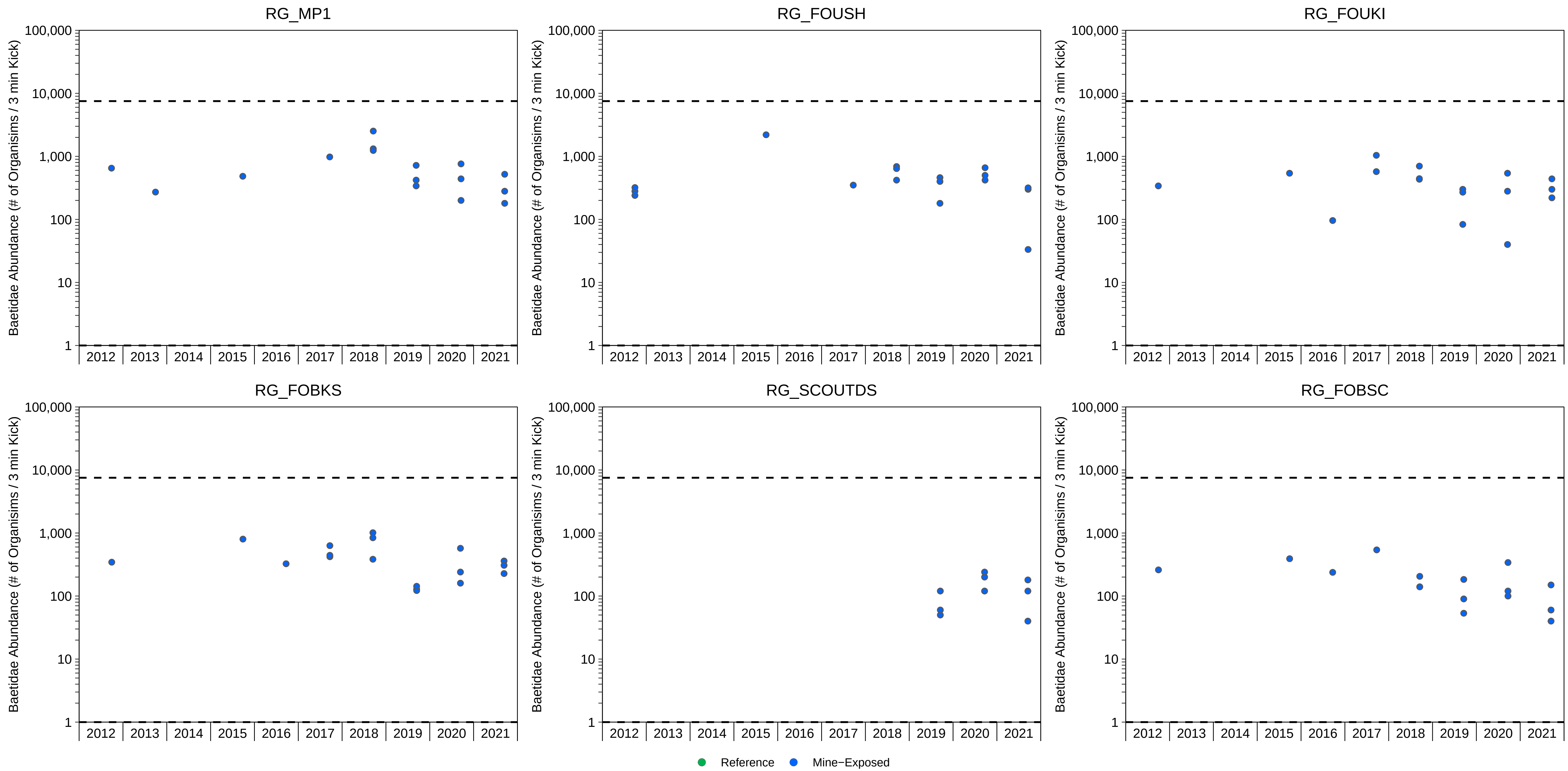


Figure E.19: Benthic Invertebrate Baetidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

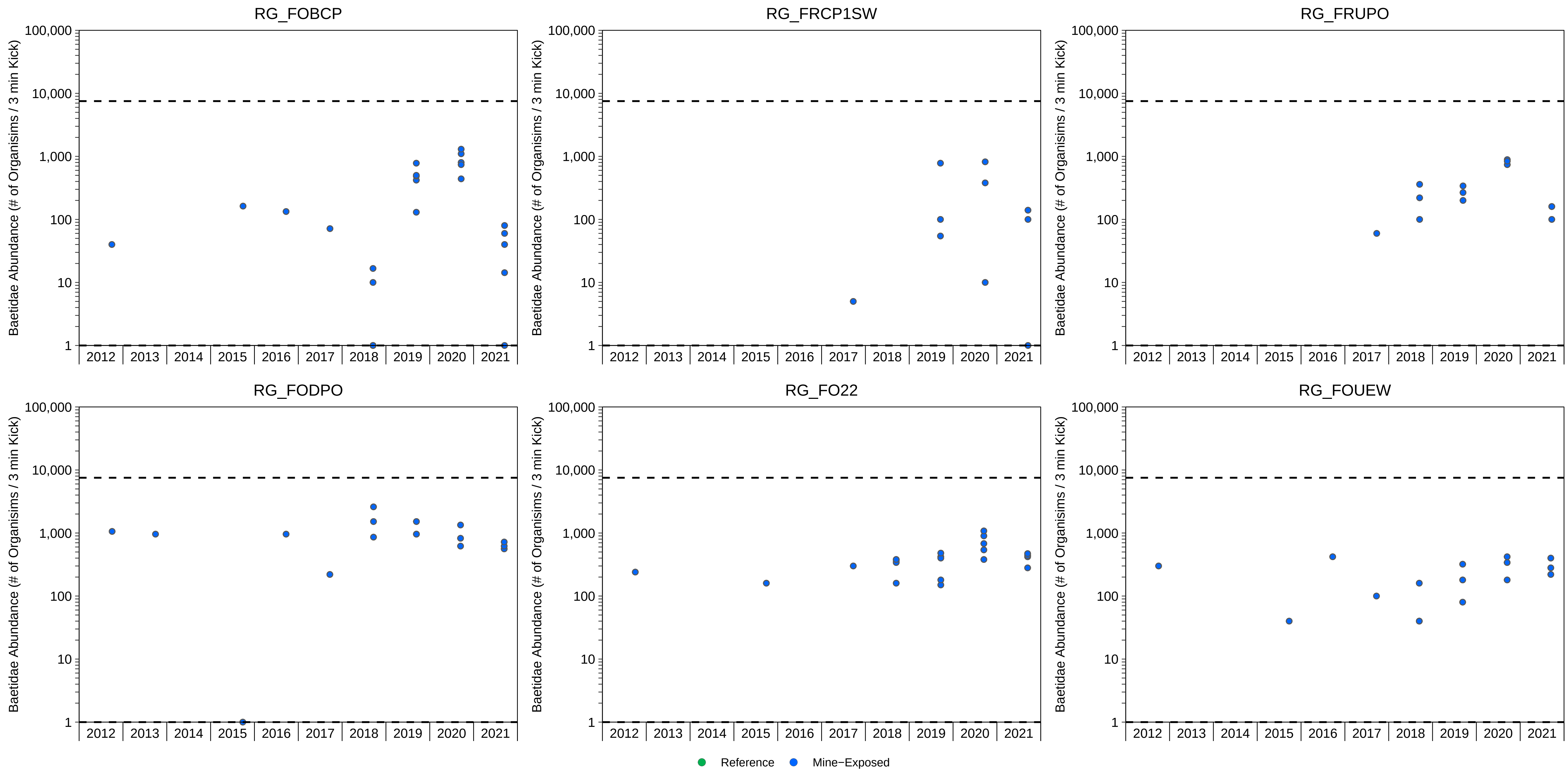


Figure E.19: Benthic Invertebrate Baetidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

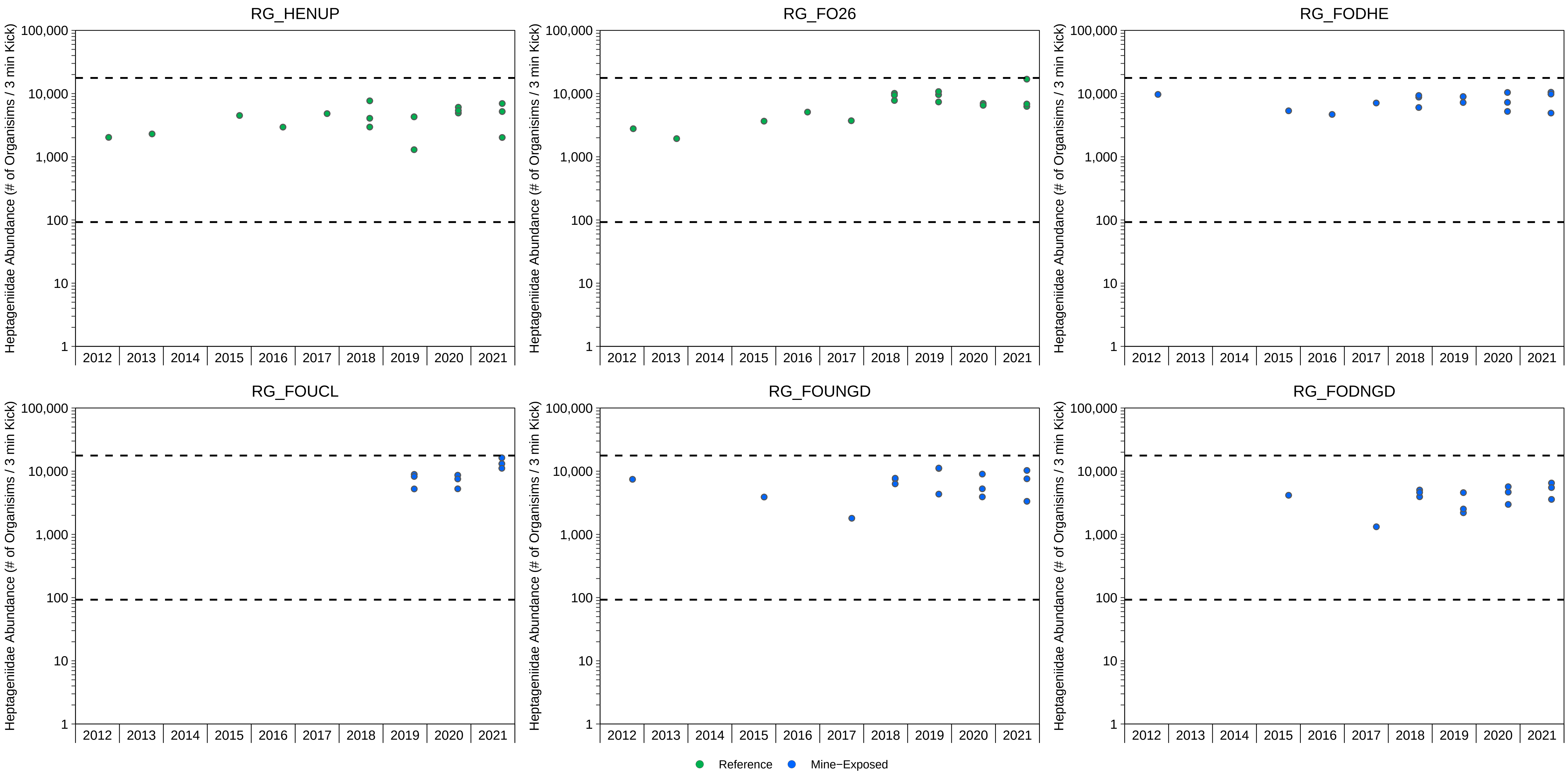


Figure E.20: Benthic Invertebrate Heptageniidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

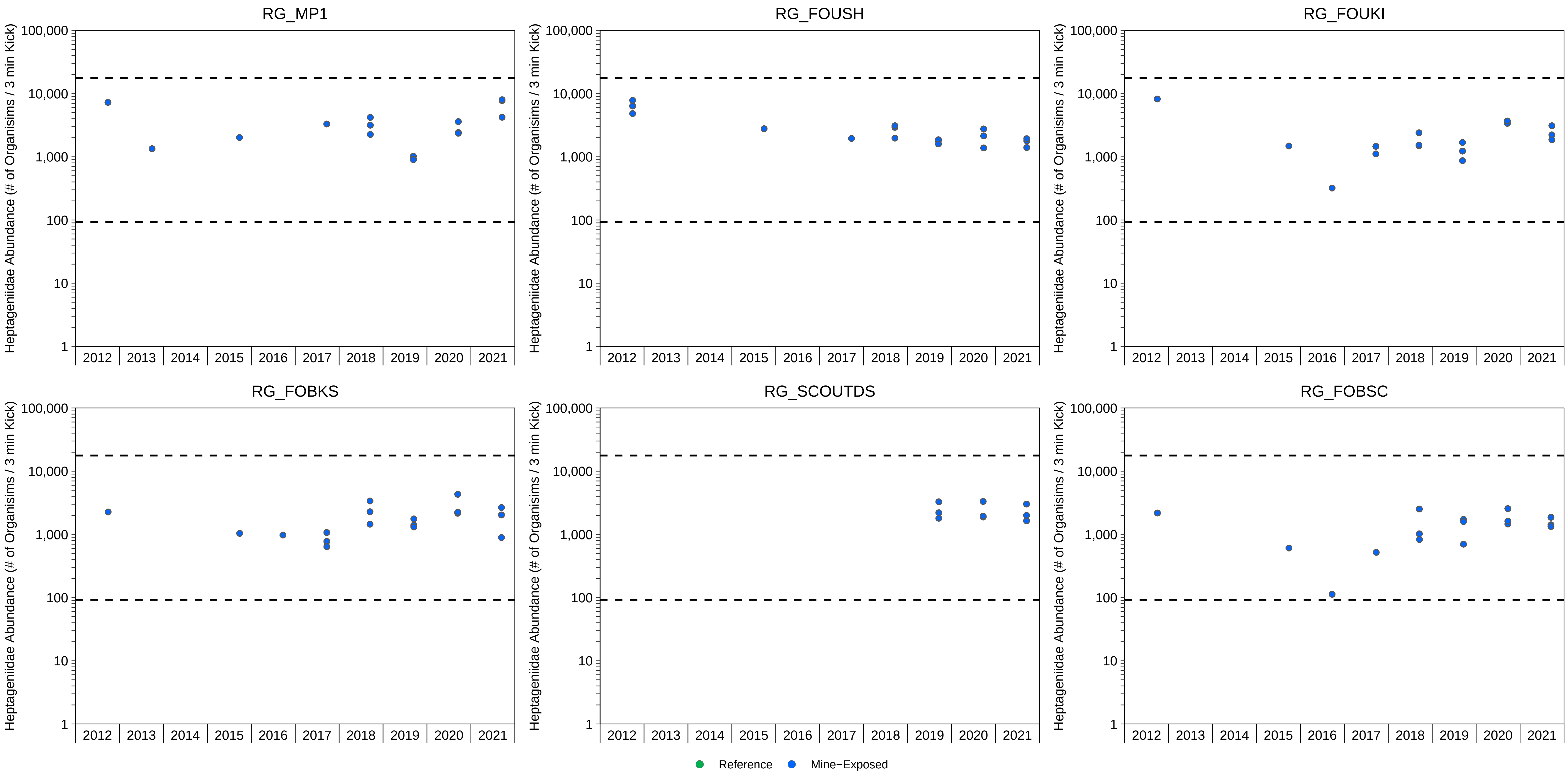


Figure E.20: Benthic Invertebrate Heptageniidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

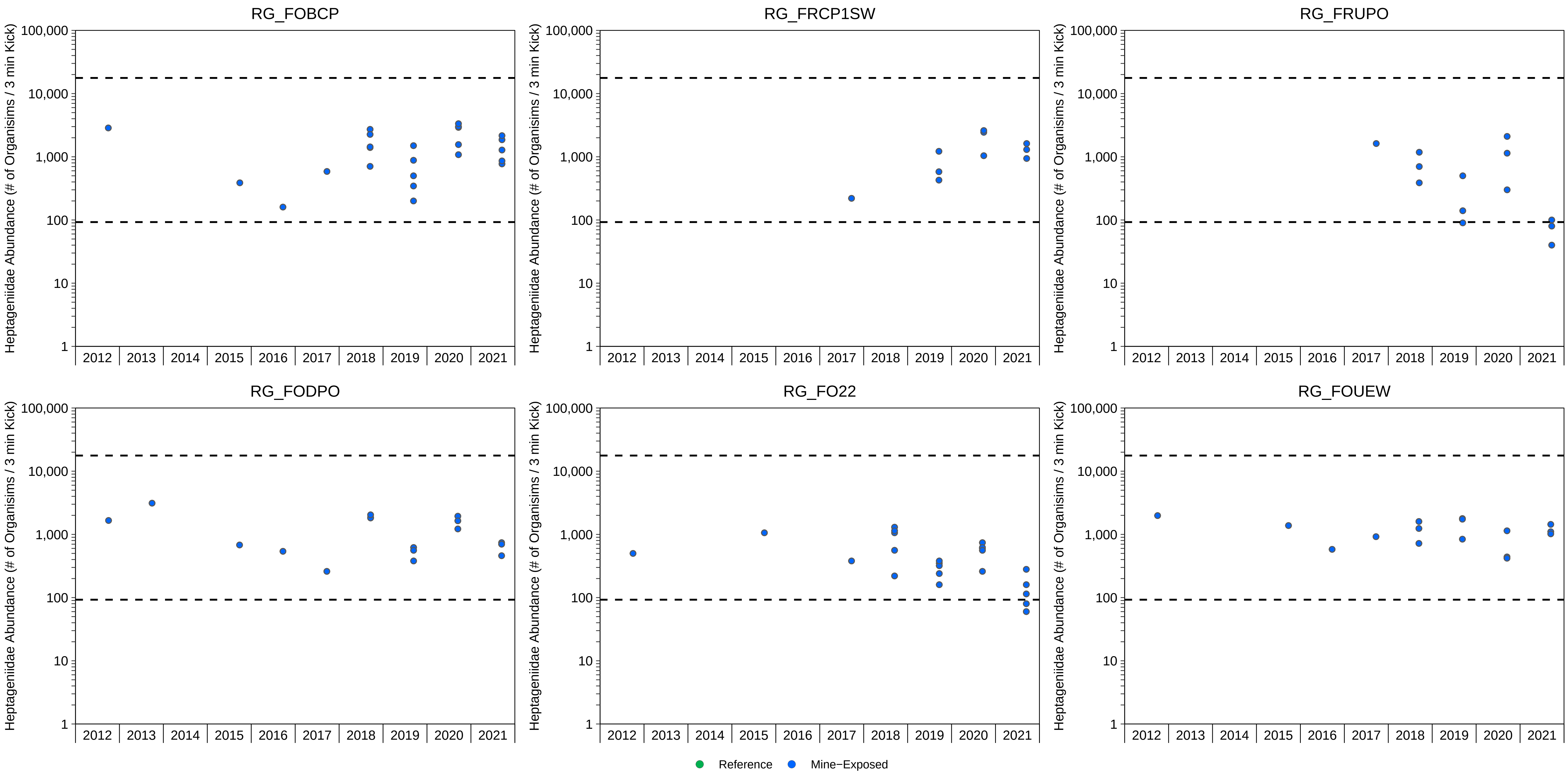


Figure E.20: Benthic Invertebrate Heptageniidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

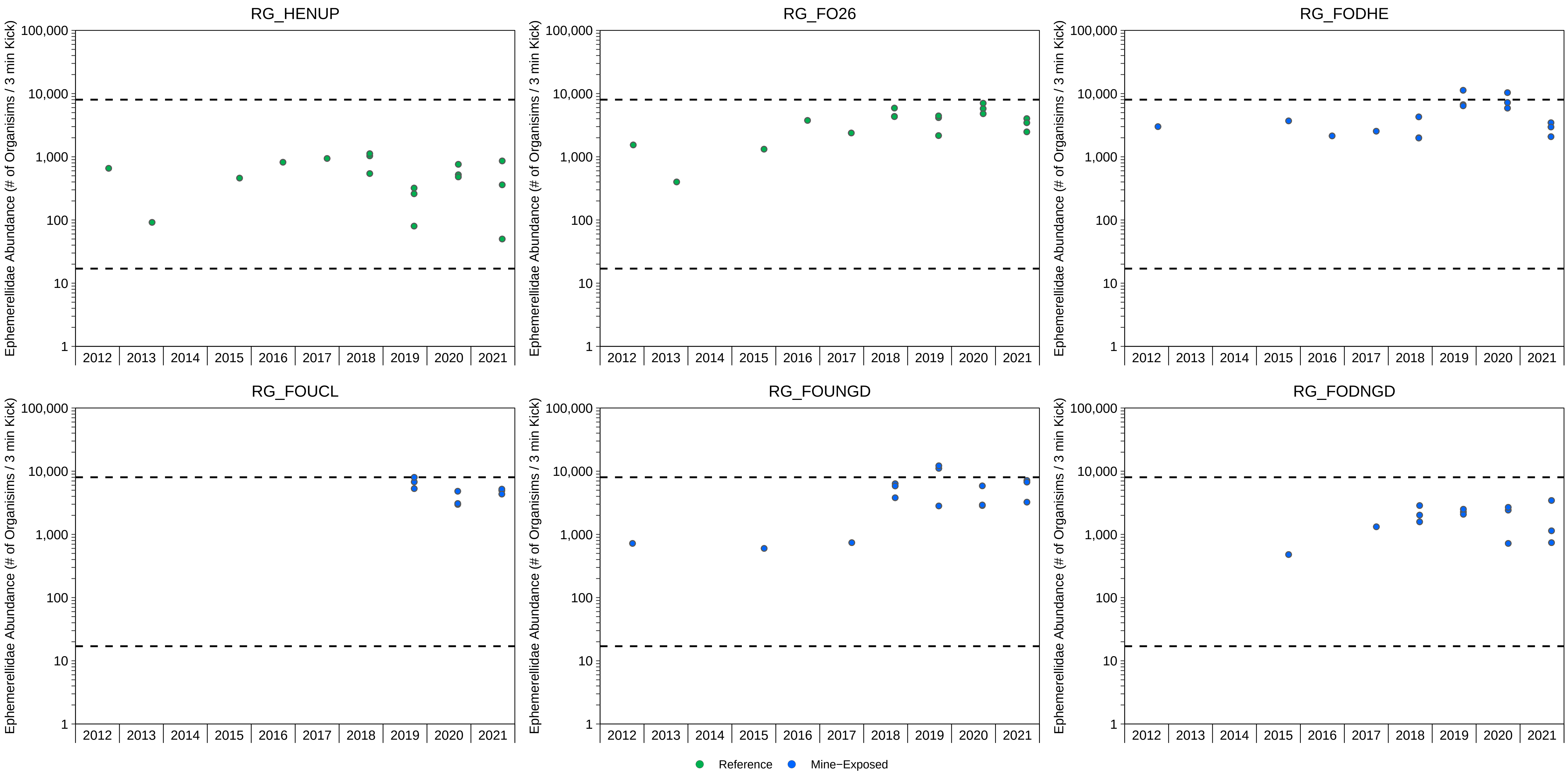


Figure E.21: Benthic Invertebrate Ephemerellidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

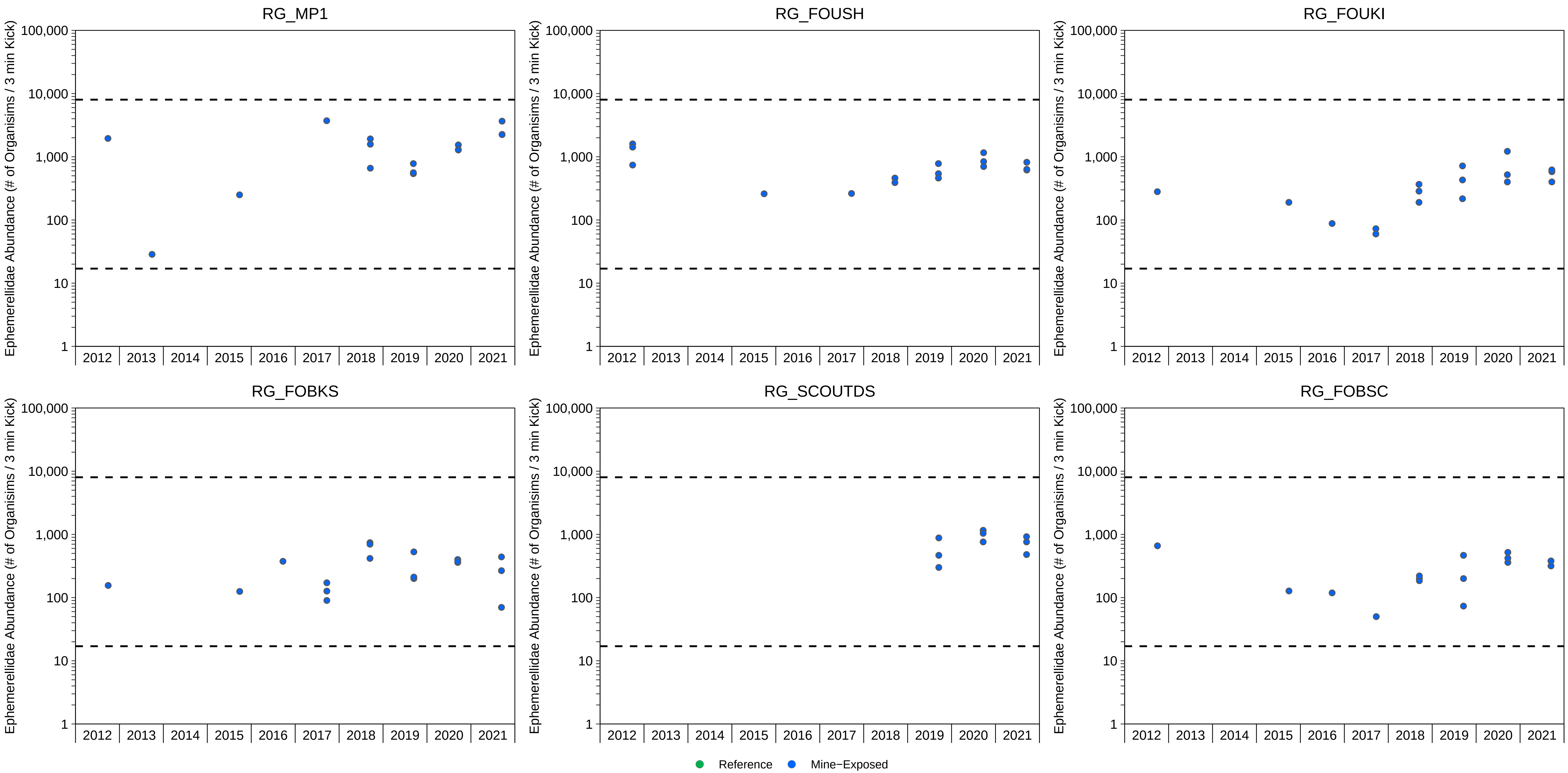


Figure E.21: Benthic Invertebrate Ephemerellidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

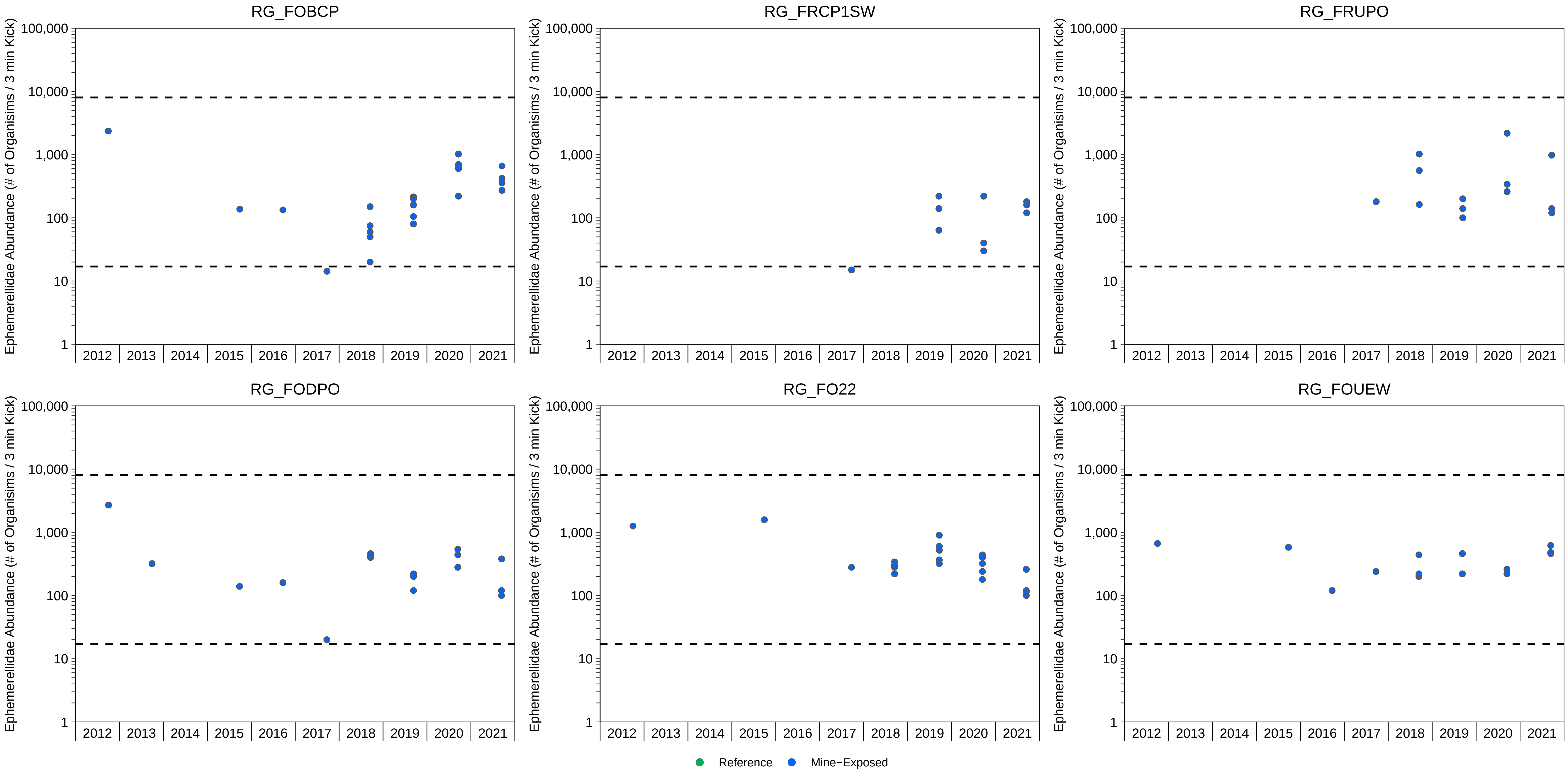


Figure E.21: Benthic Invertebrate Ephemerellidae Abundance in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

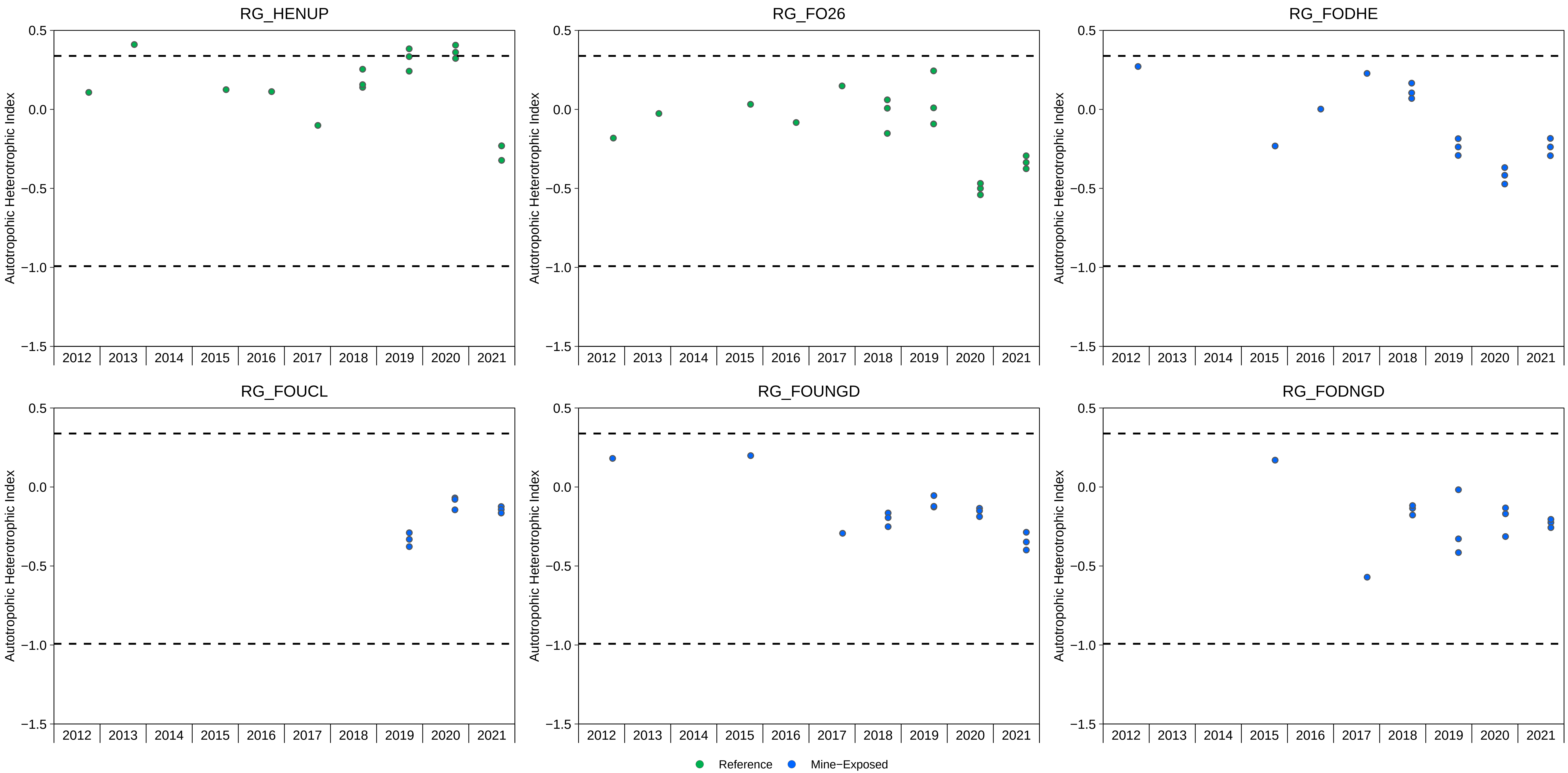


Figure E.22: Benthic Invertebrate Autotropohic Heterotrophic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

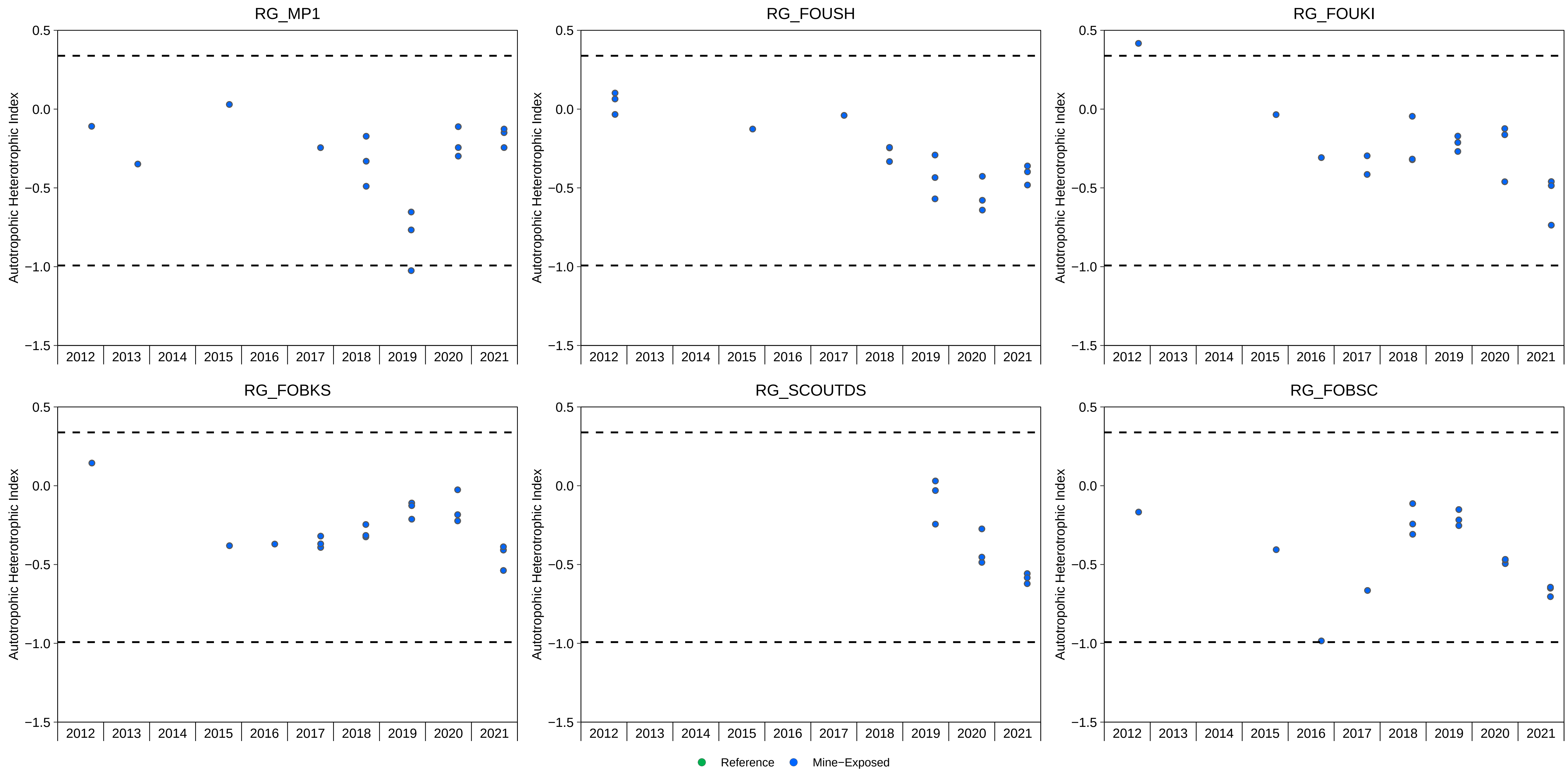


Figure E.22: Benthic Invertebrate Autotropohic Heterotrophic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

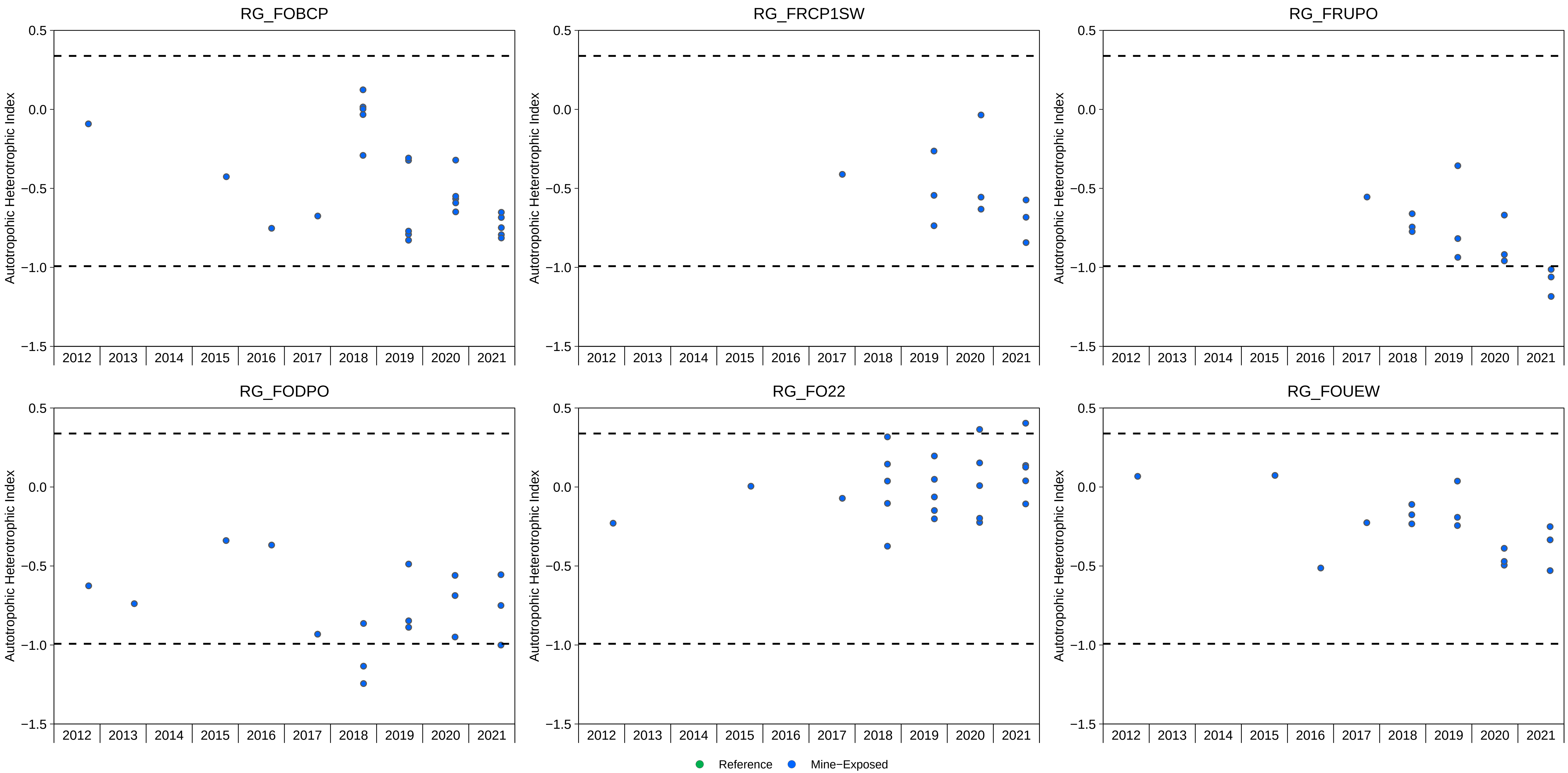


Figure E.22: Benthic Invertebrate Autotropohic Heterotrophic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

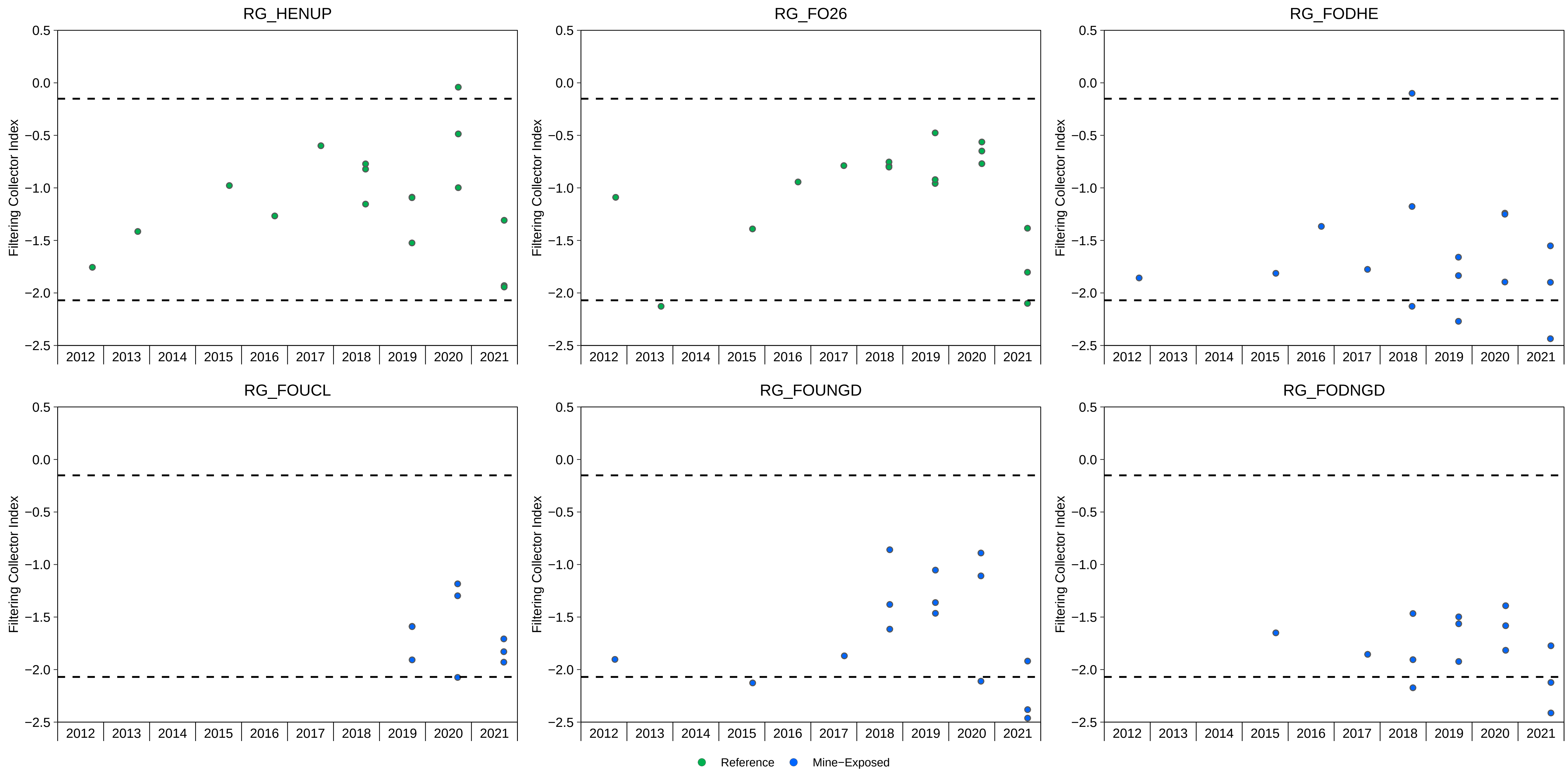


Figure E.23: Benthic Invertebrate Filtering Collector Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

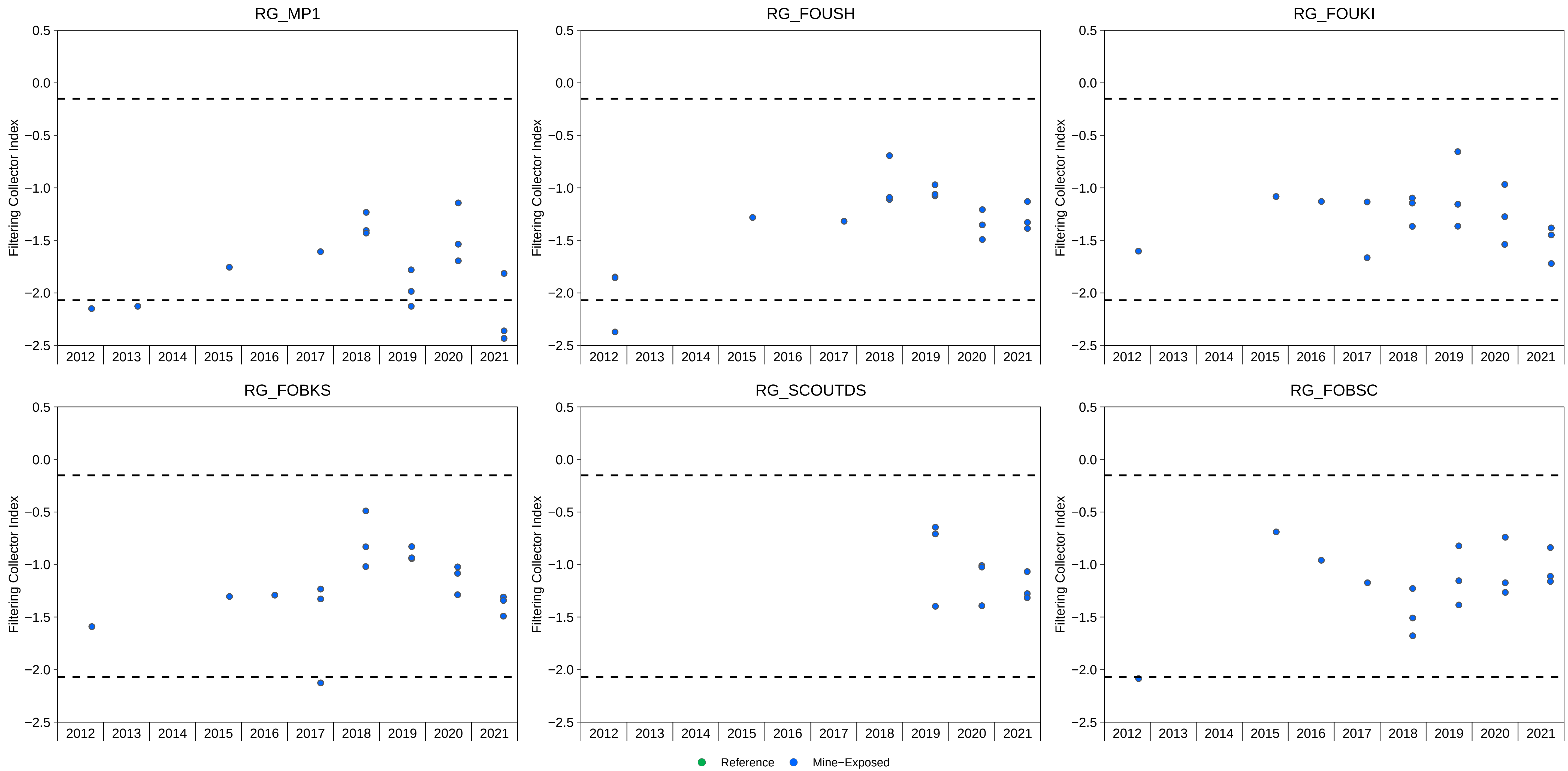


Figure E.23: Benthic Invertebrate Filtering Collector Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

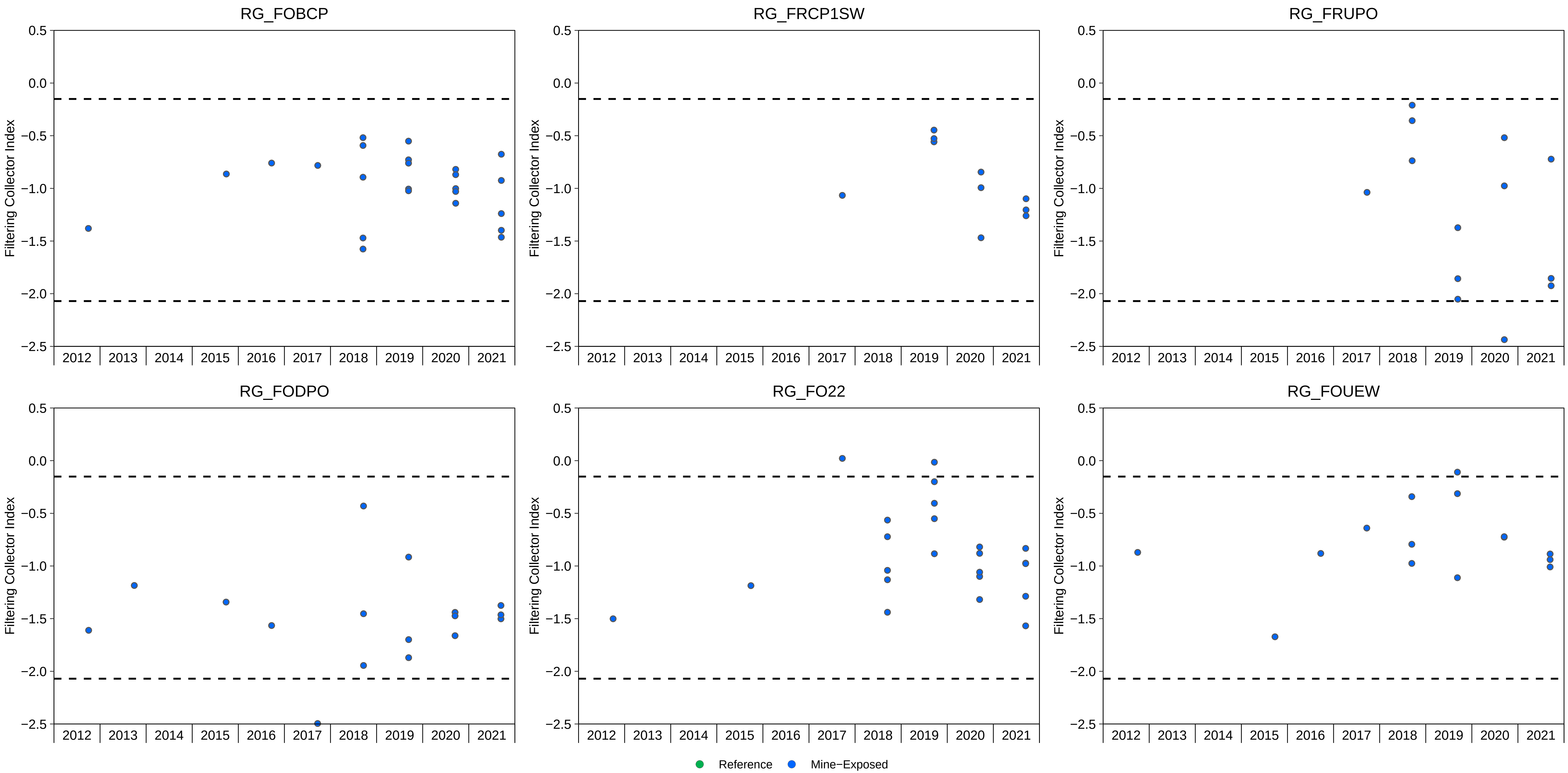


Figure E.23: Benthic Invertebrate Filtering Collector Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

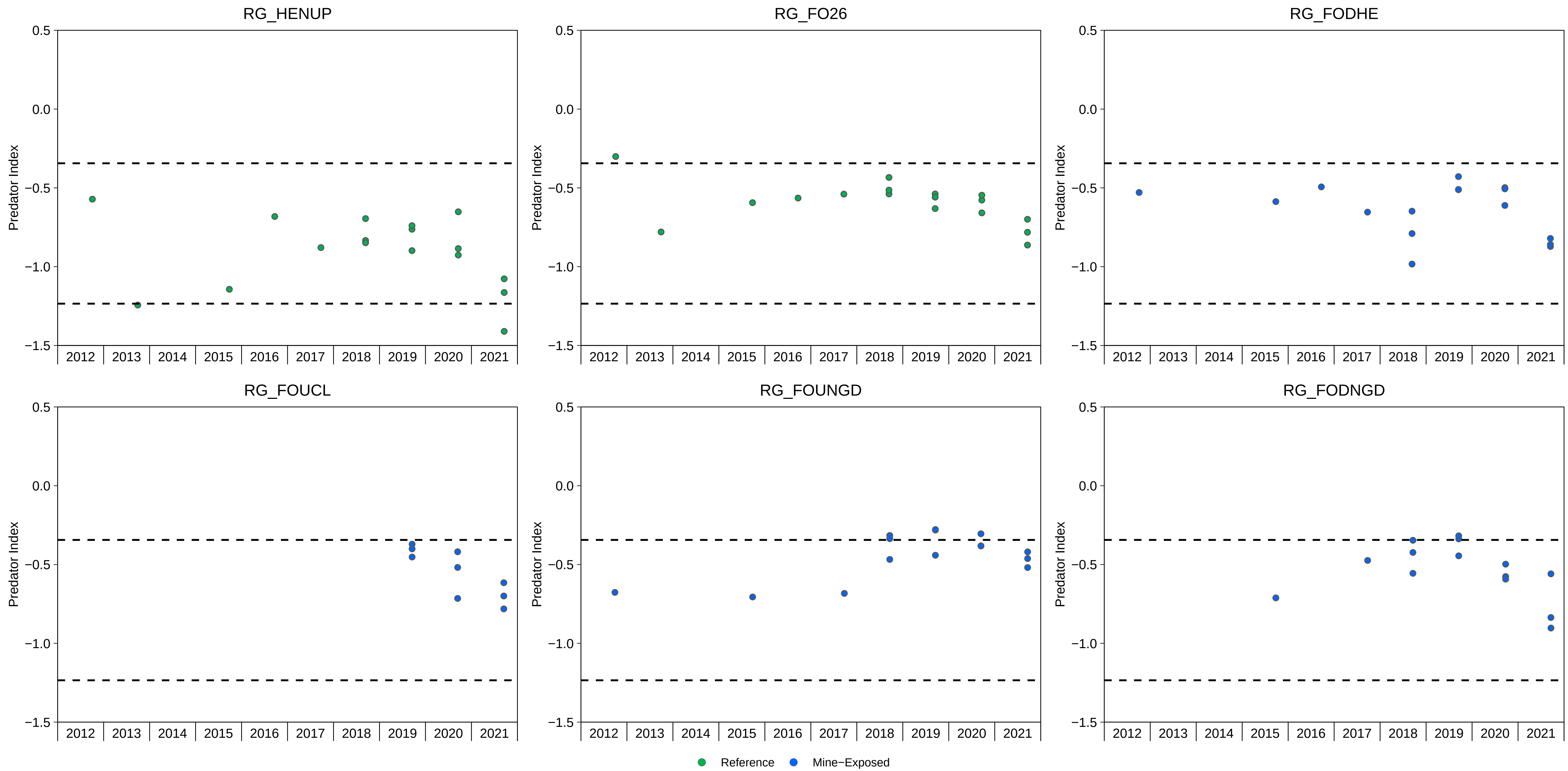


Figure E.24: Benthic Invertebrate Predator Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

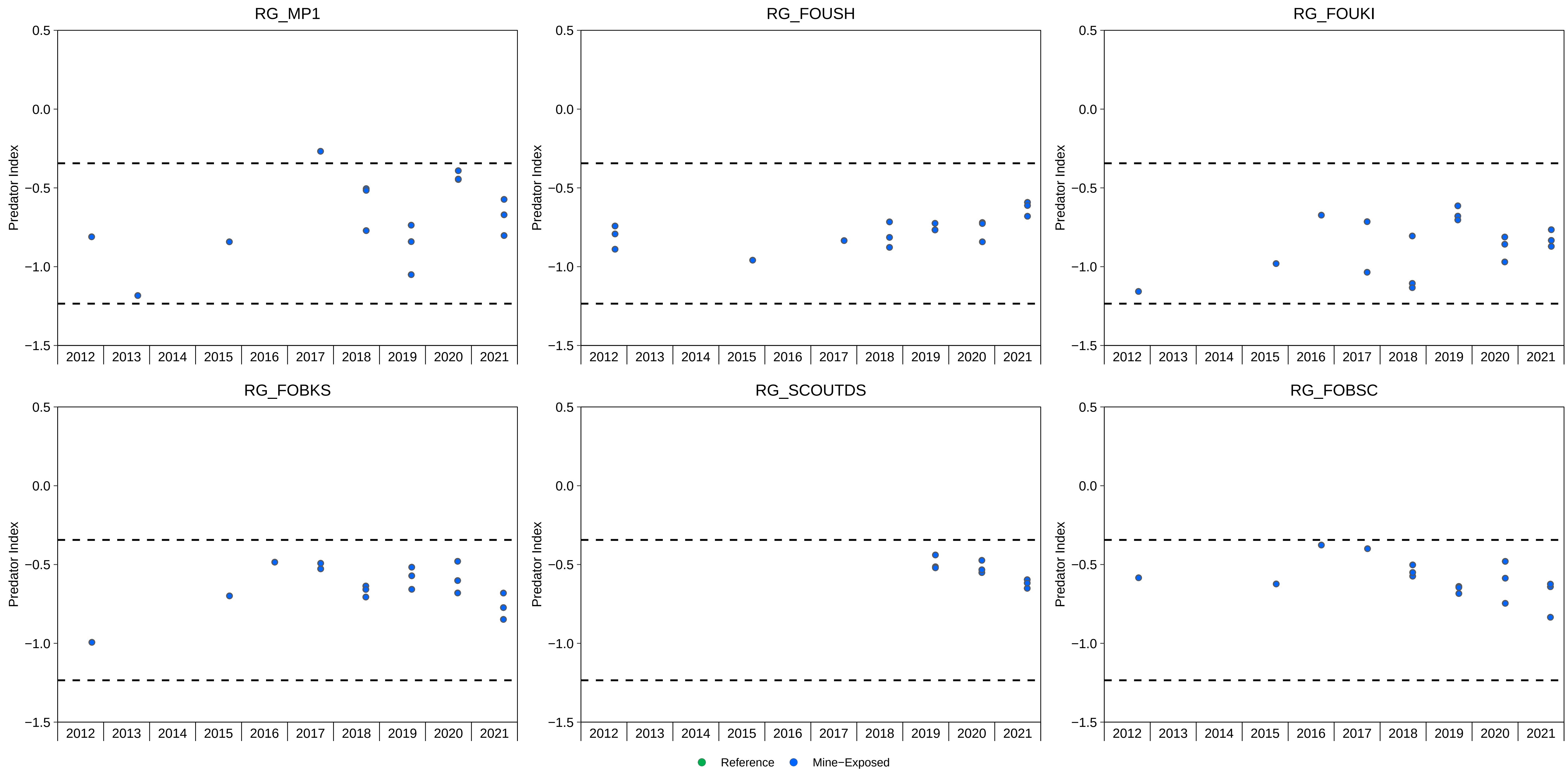


Figure E.24: Benthic Invertebrate Predator Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

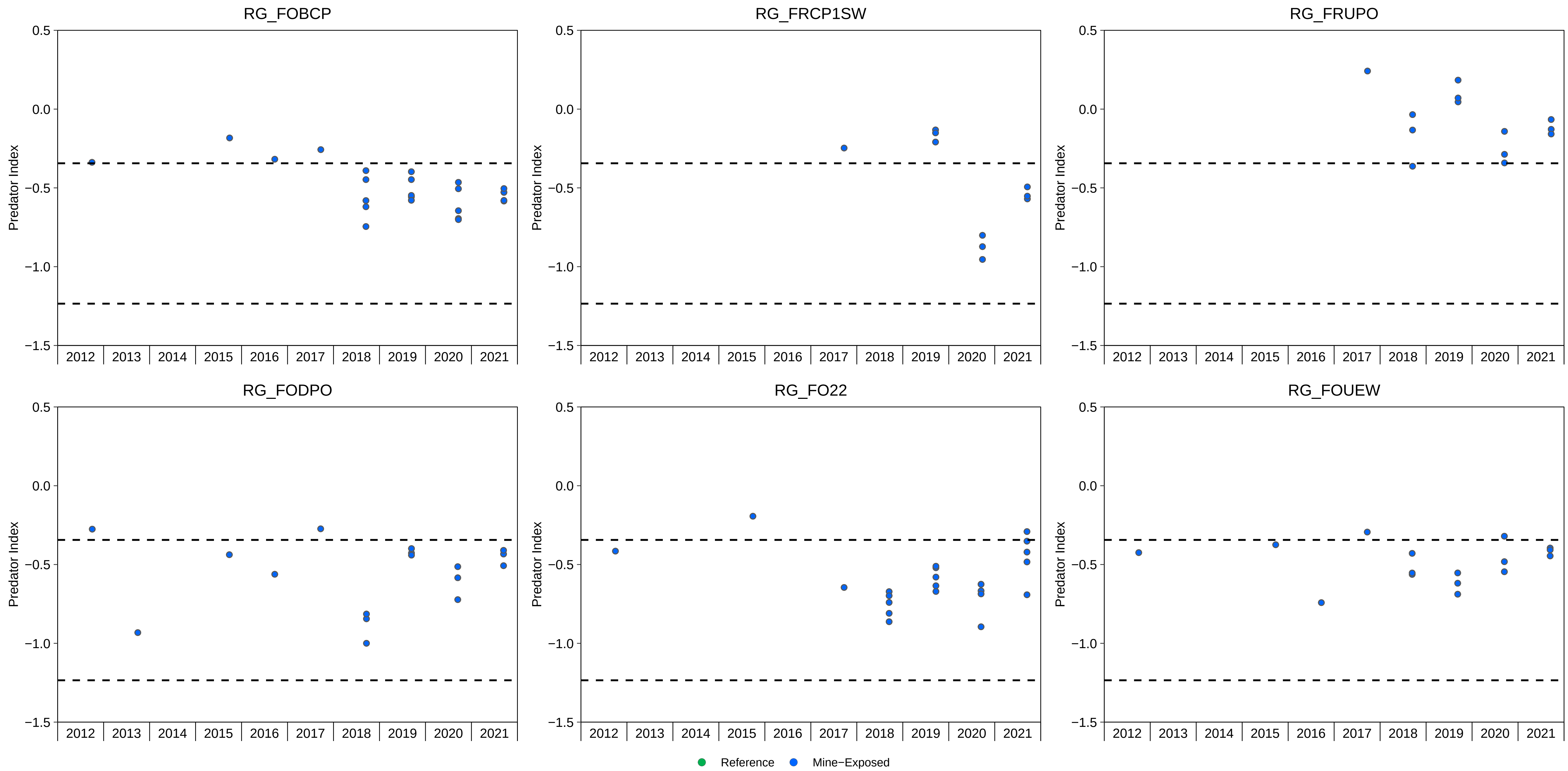


Figure E.24: Benthic Invertebrate Predator Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

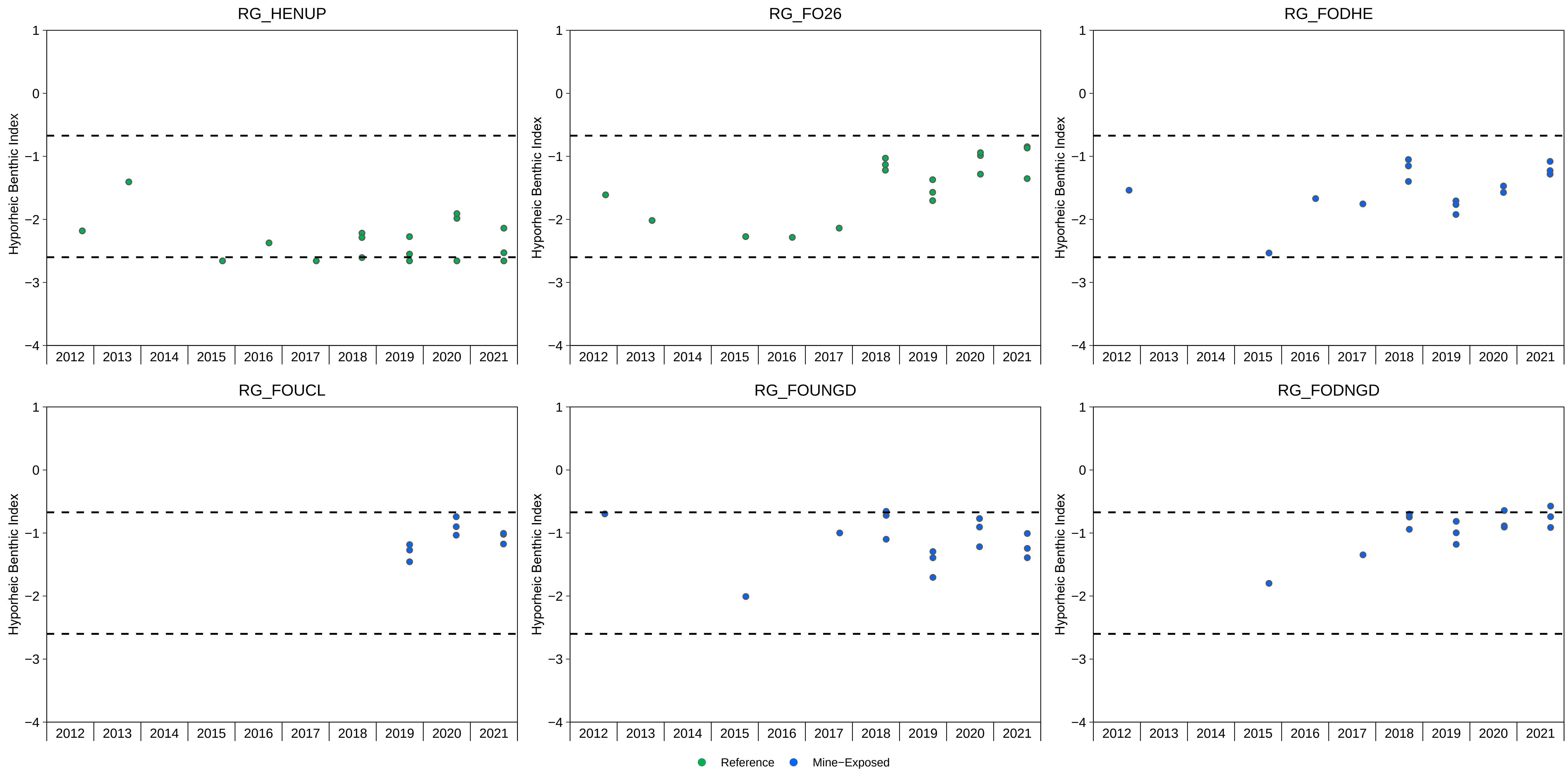


Figure E.25: Benthic Invertebrate Hyporheic Benthic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

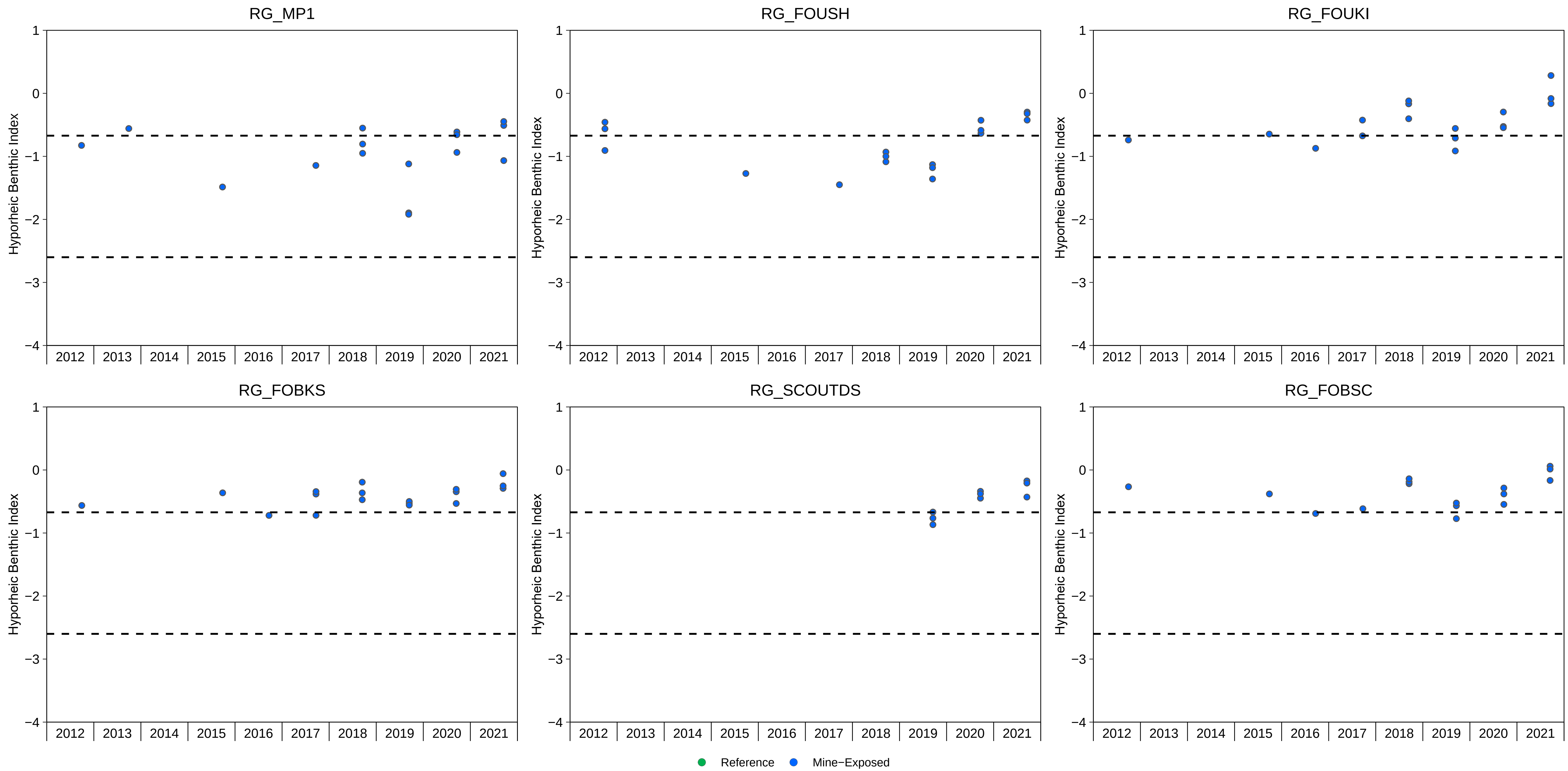


Figure E.25: Benthic Invertebrate Hyporheic Benthic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

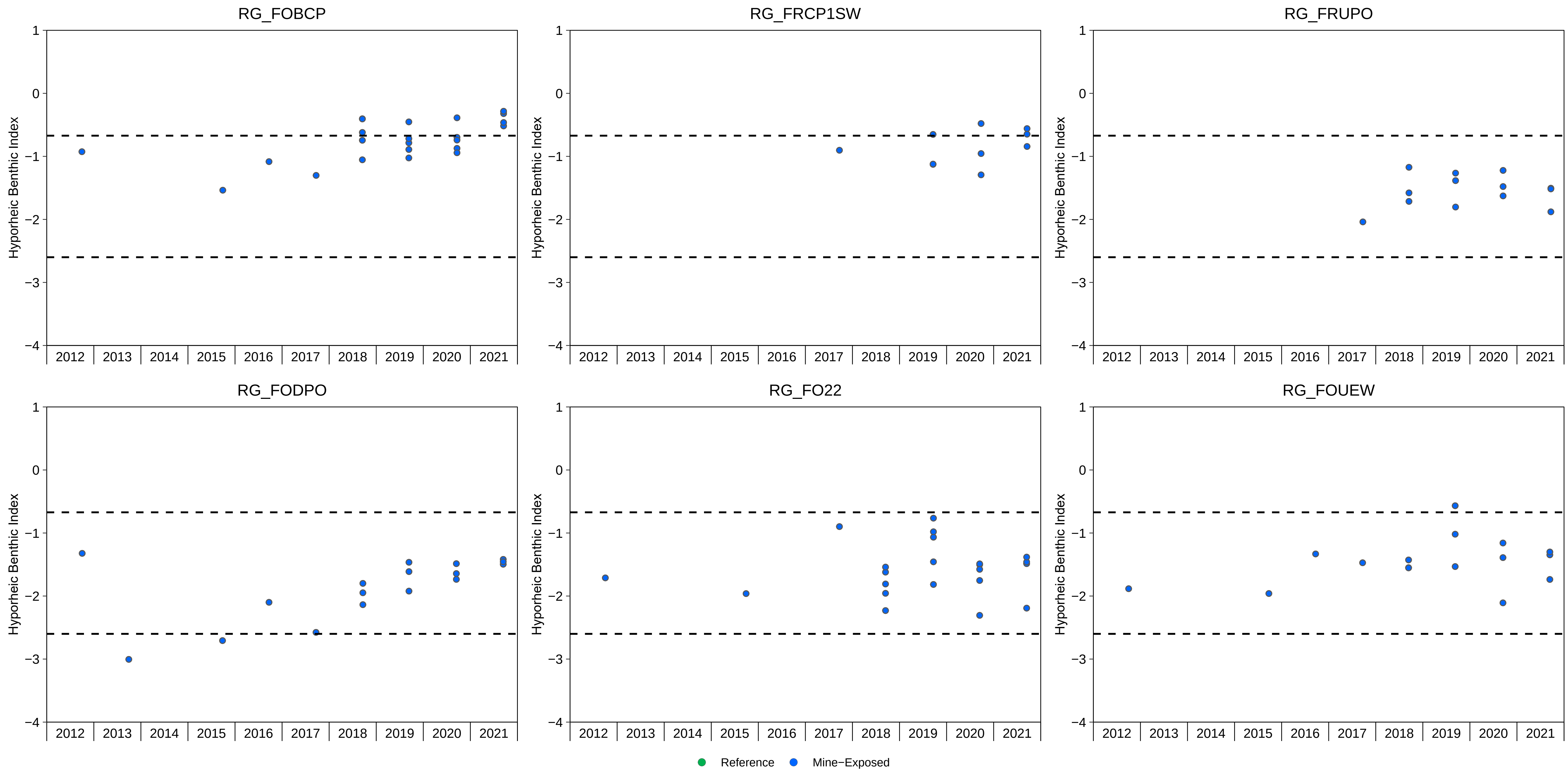


Figure E.25: Benthic Invertebrate Hyporheic Benthic Index in September, FRO LAEMP, 2012 to 2021

Notes: Regional normal ranges using percentiles of reference areas from 2012 to 2019 are shown as dashed horizontal lines.

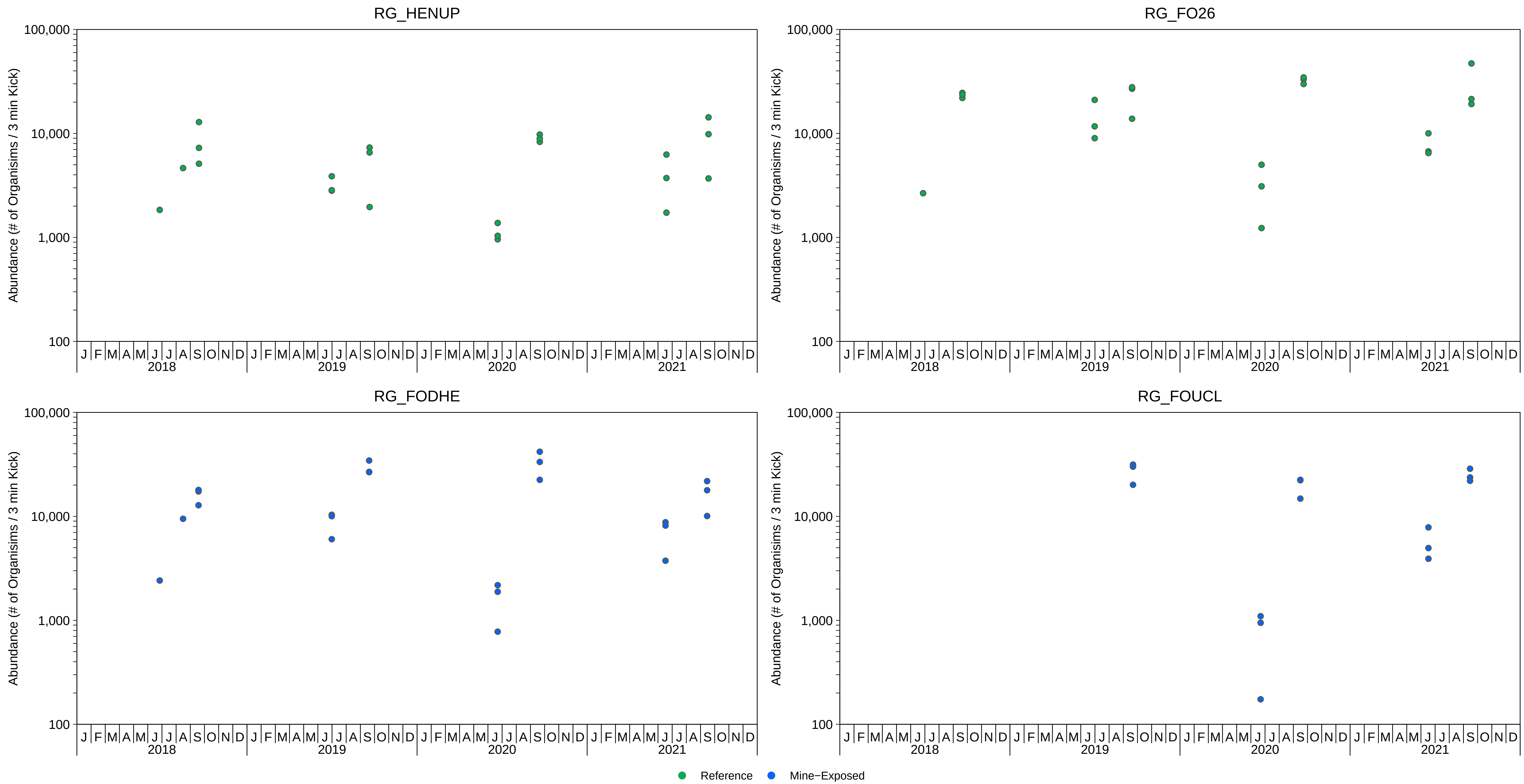


Figure E.26: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

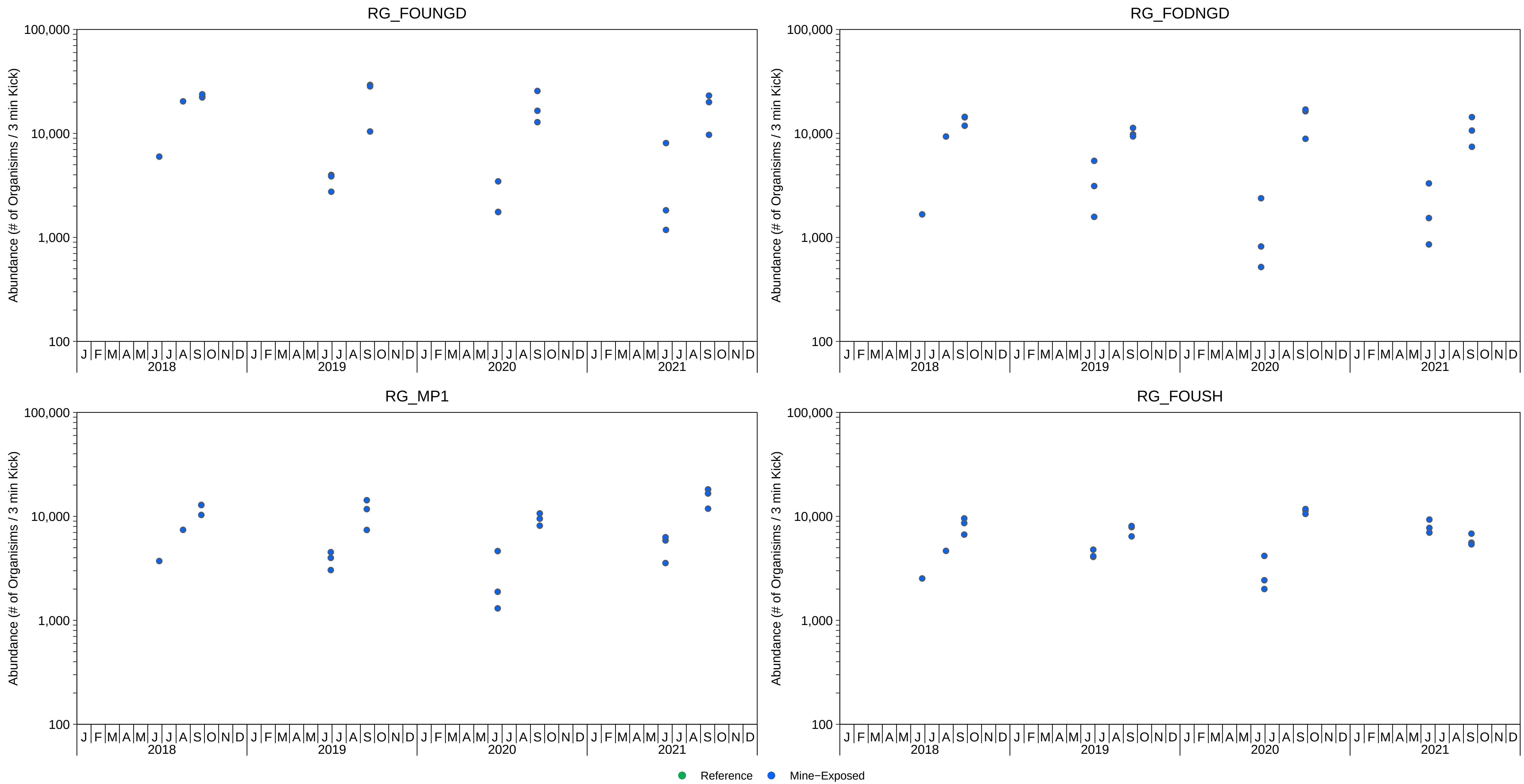


Figure E.26: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

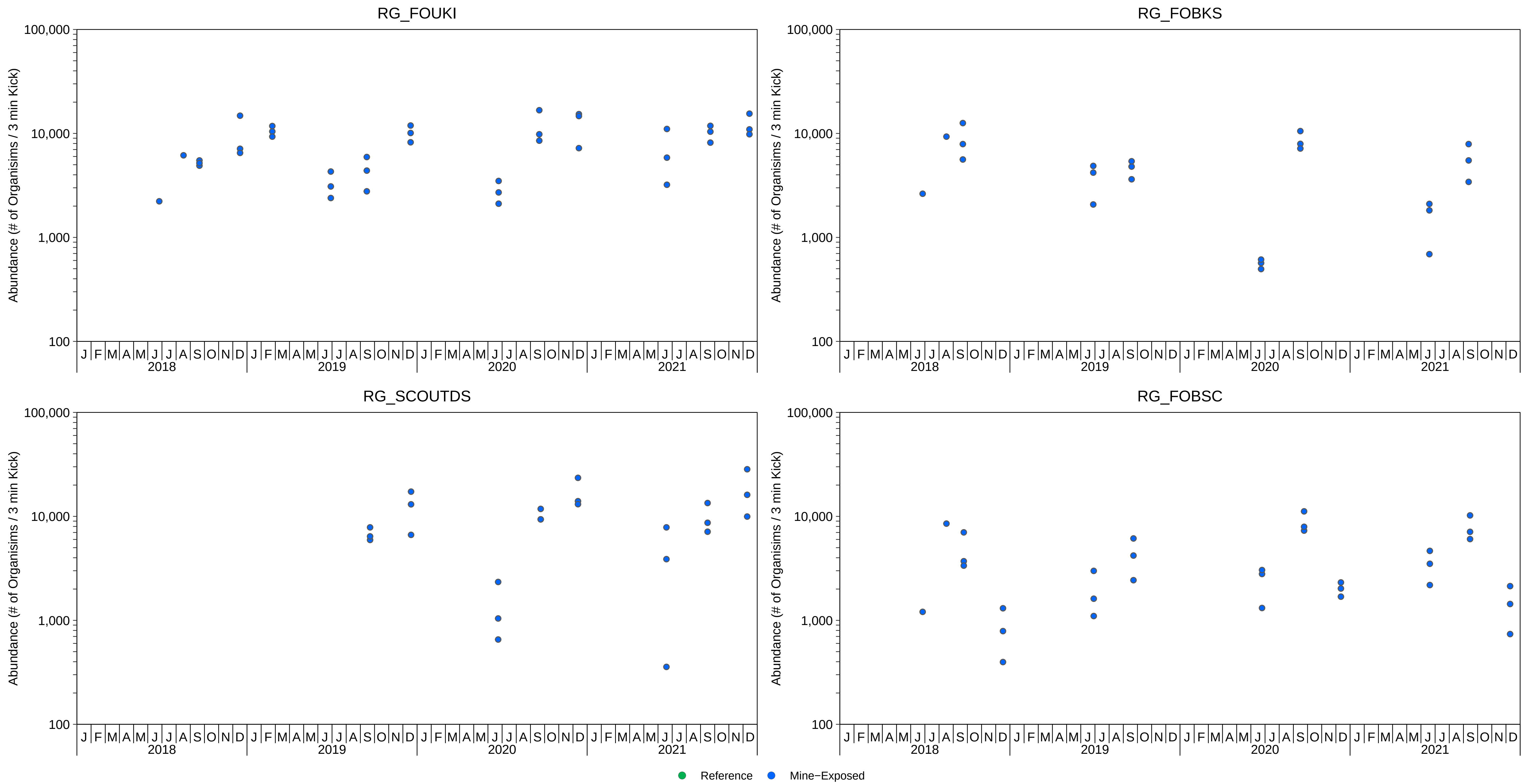


Figure E.26: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

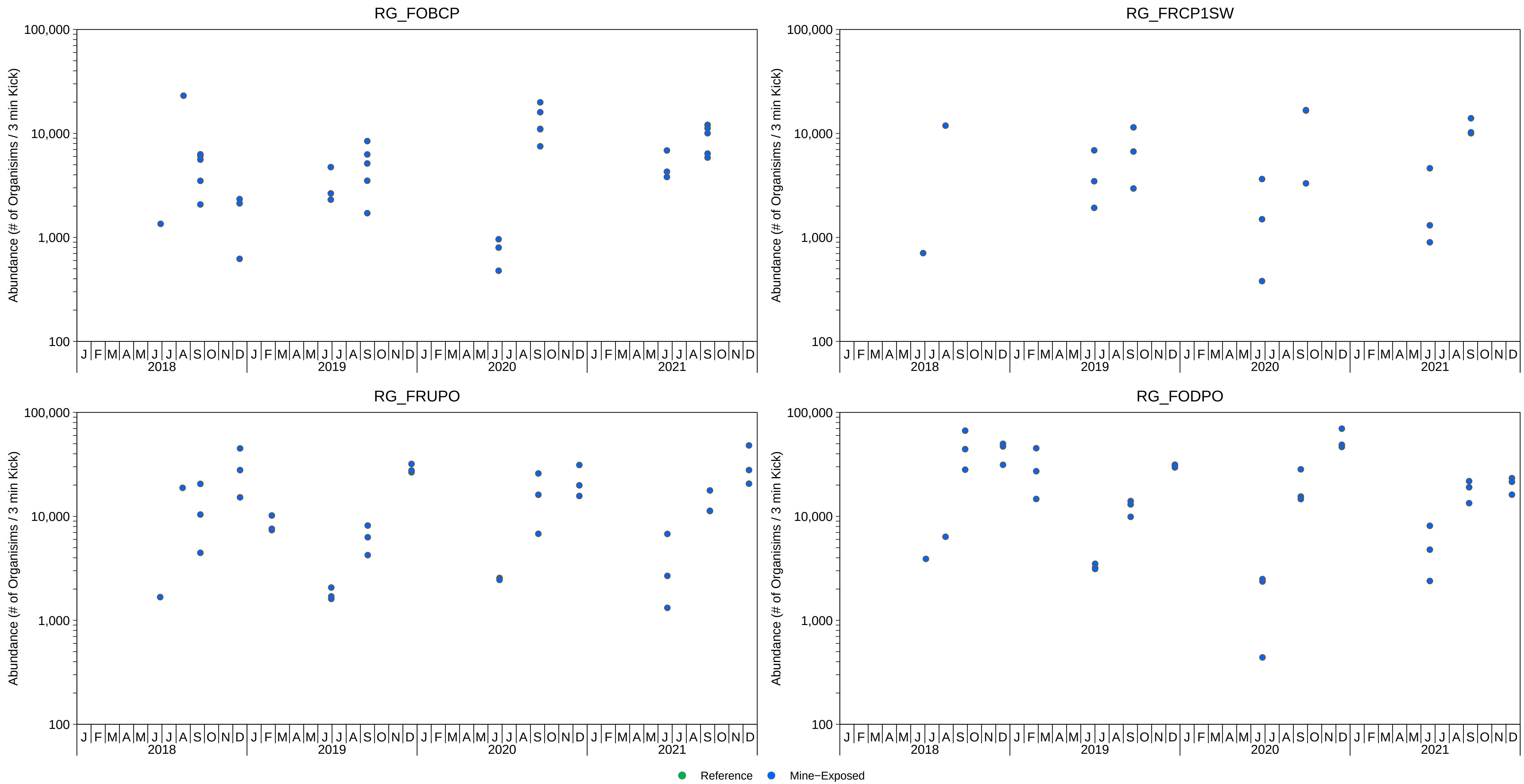


Figure E.26: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

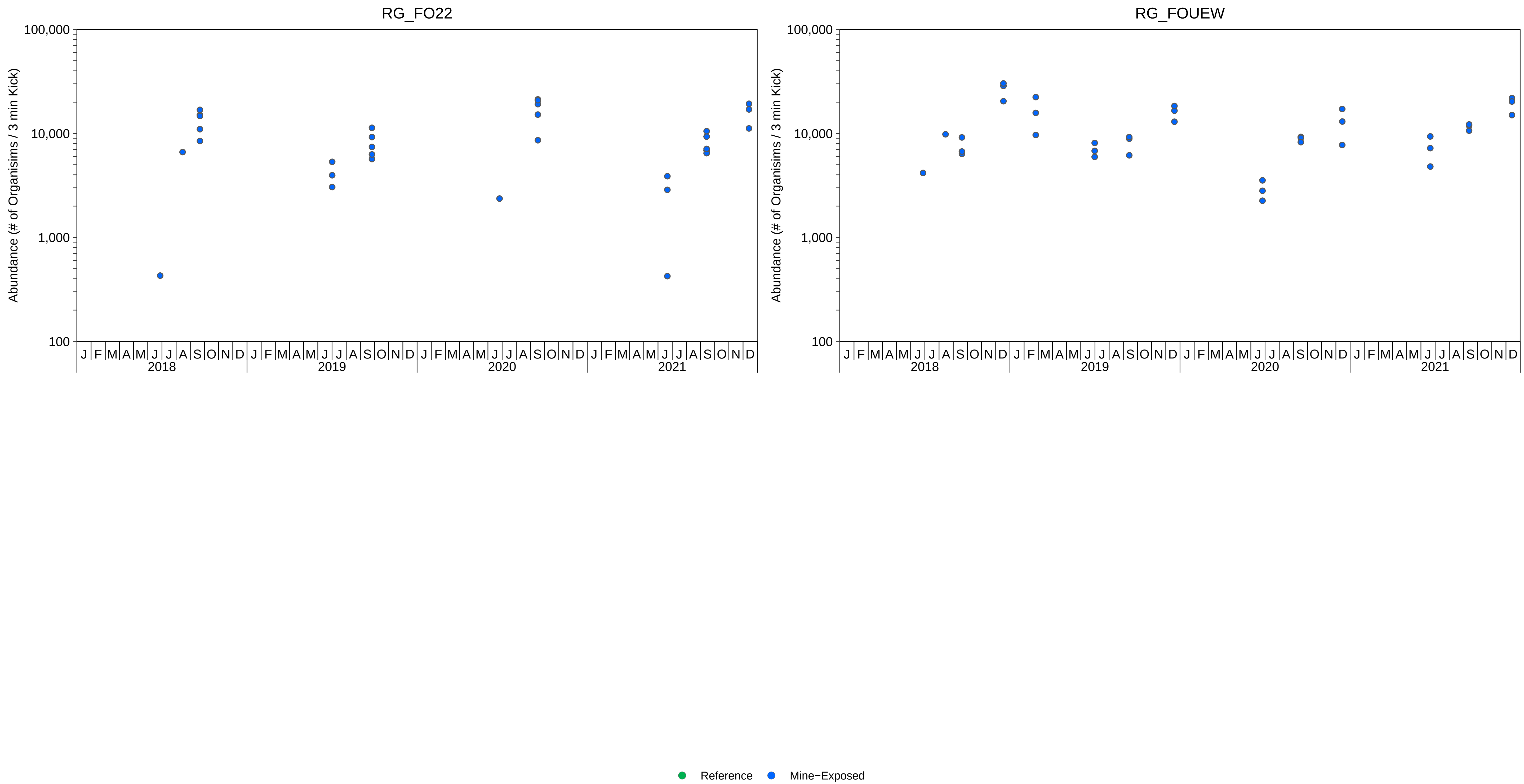


Figure E.26: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

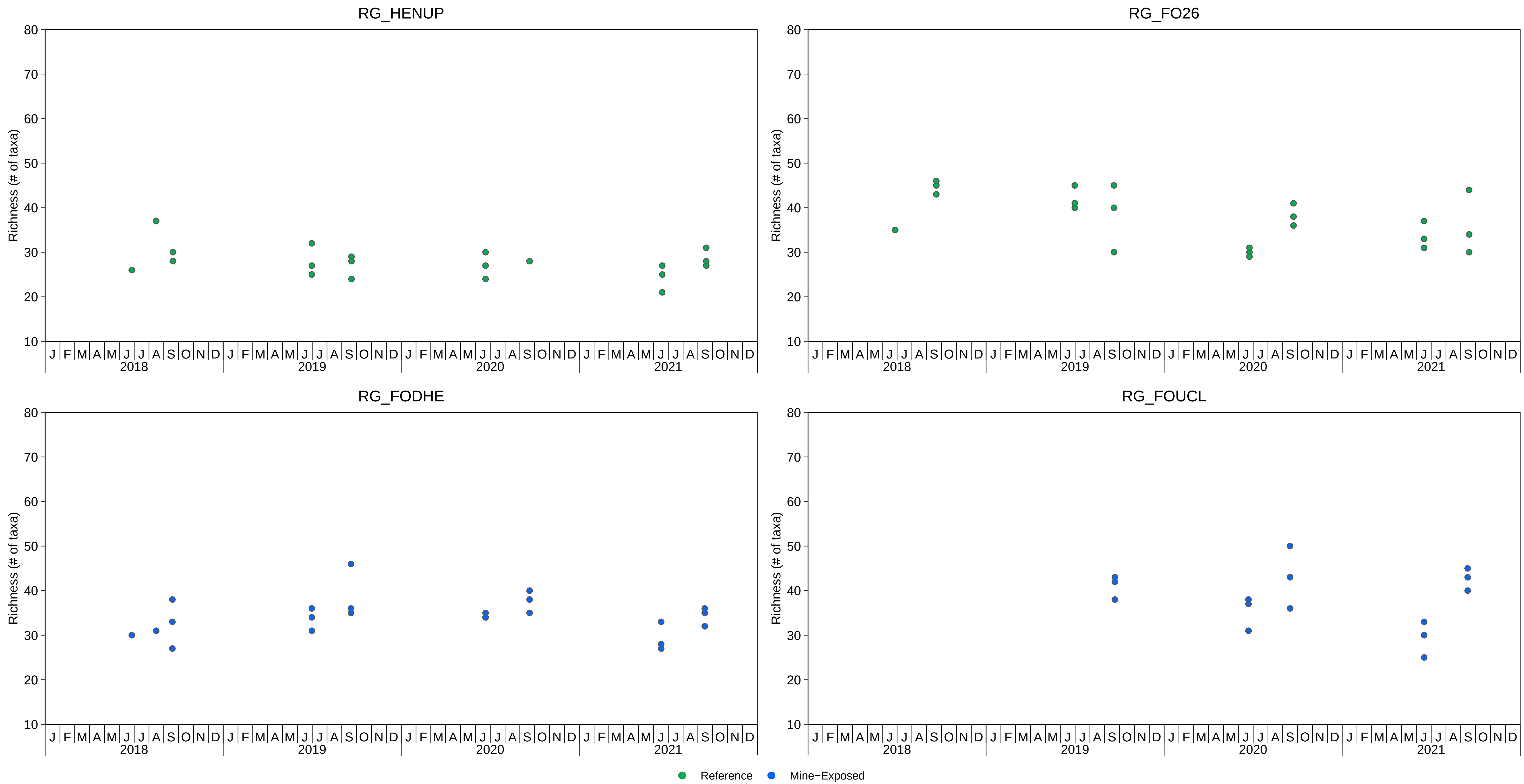


Figure E.27: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

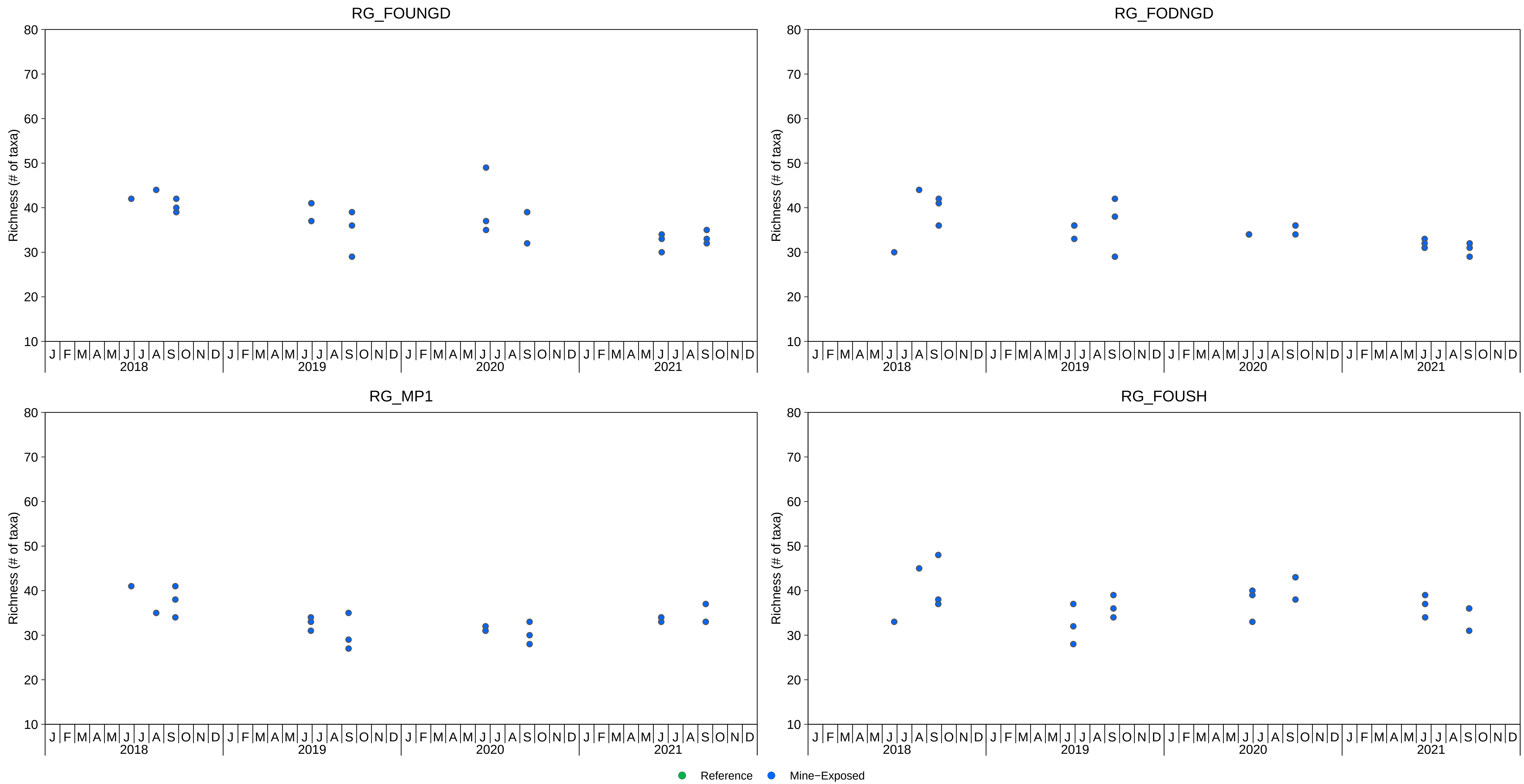


Figure E.27: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

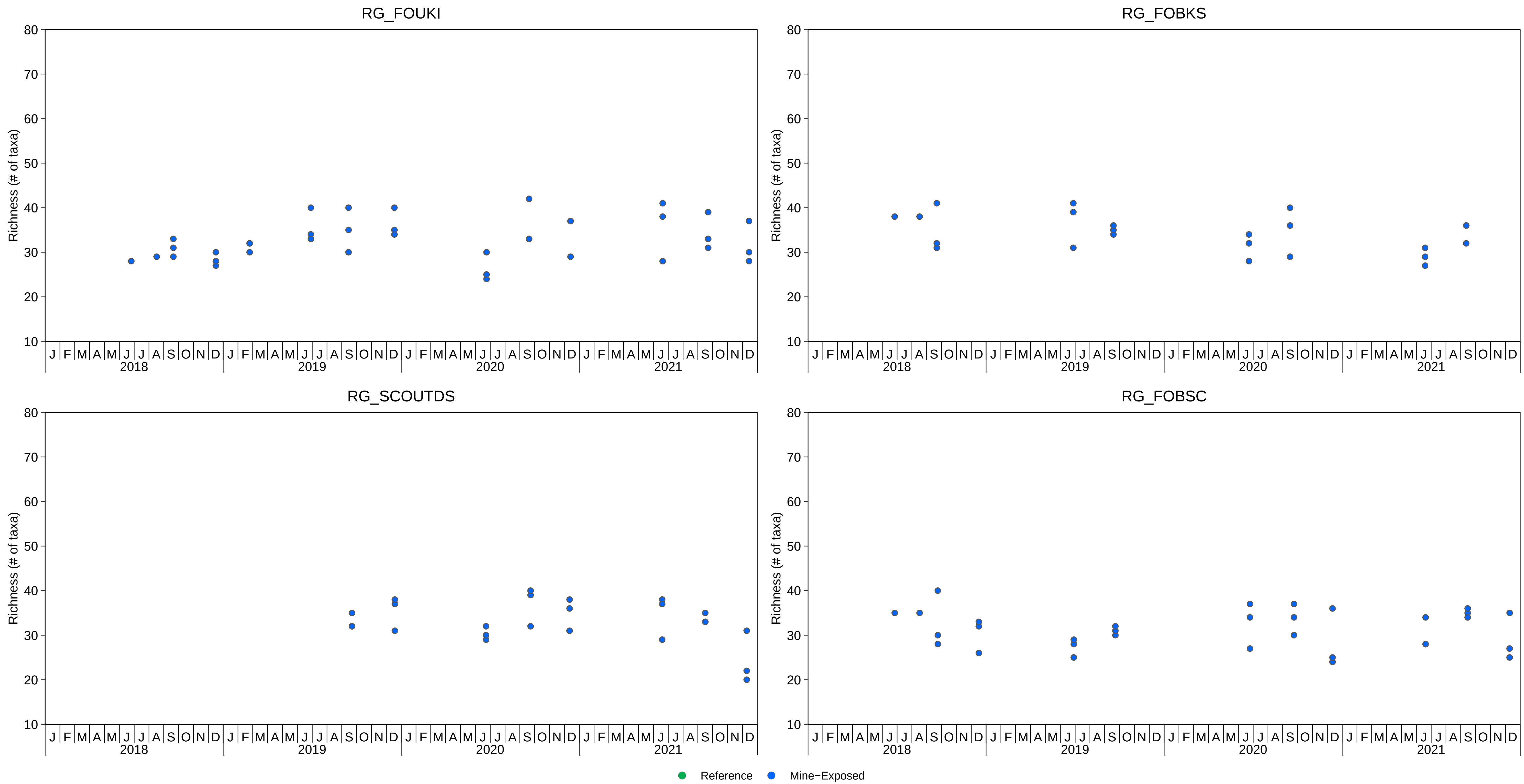


Figure E.27: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

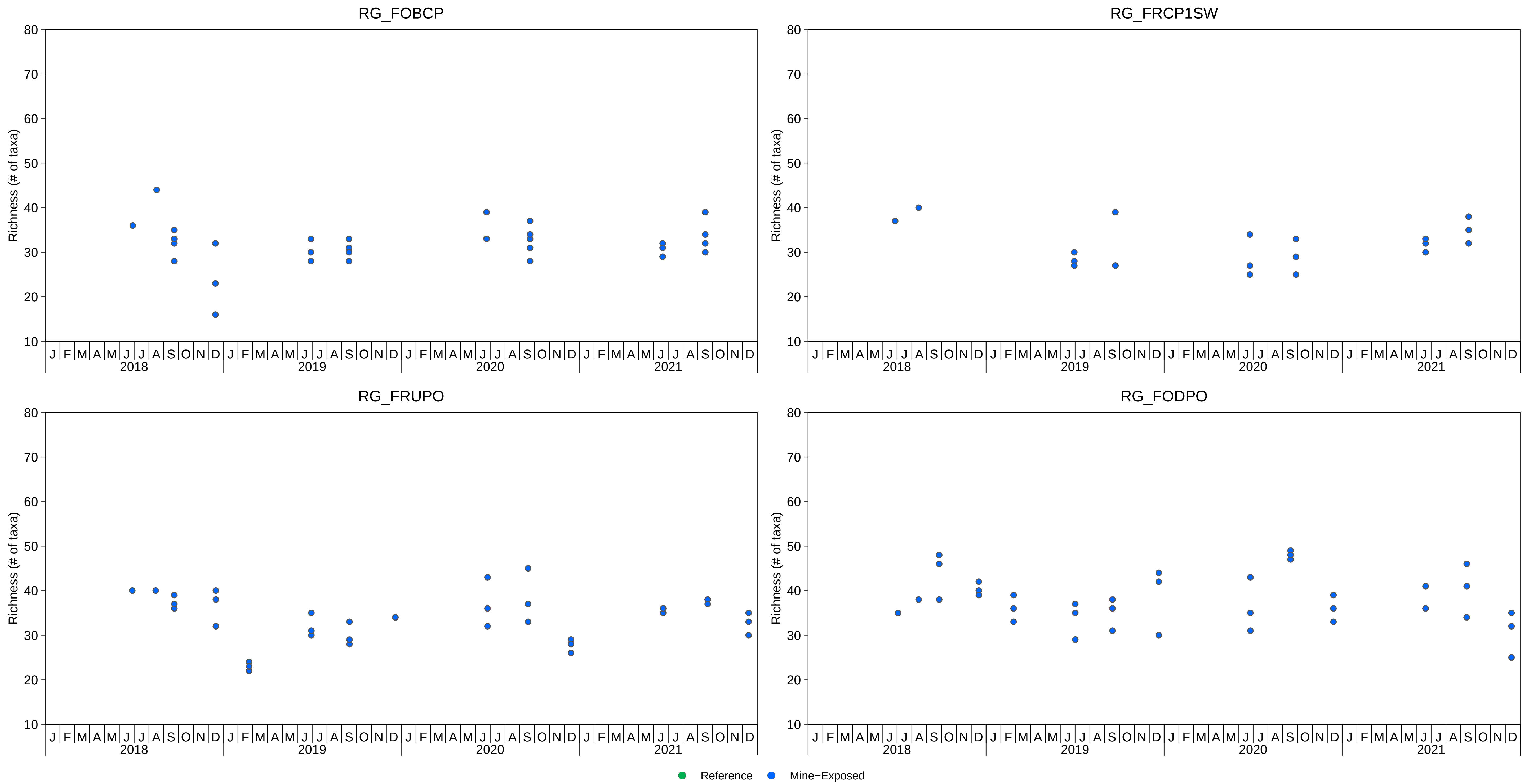


Figure E.27: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

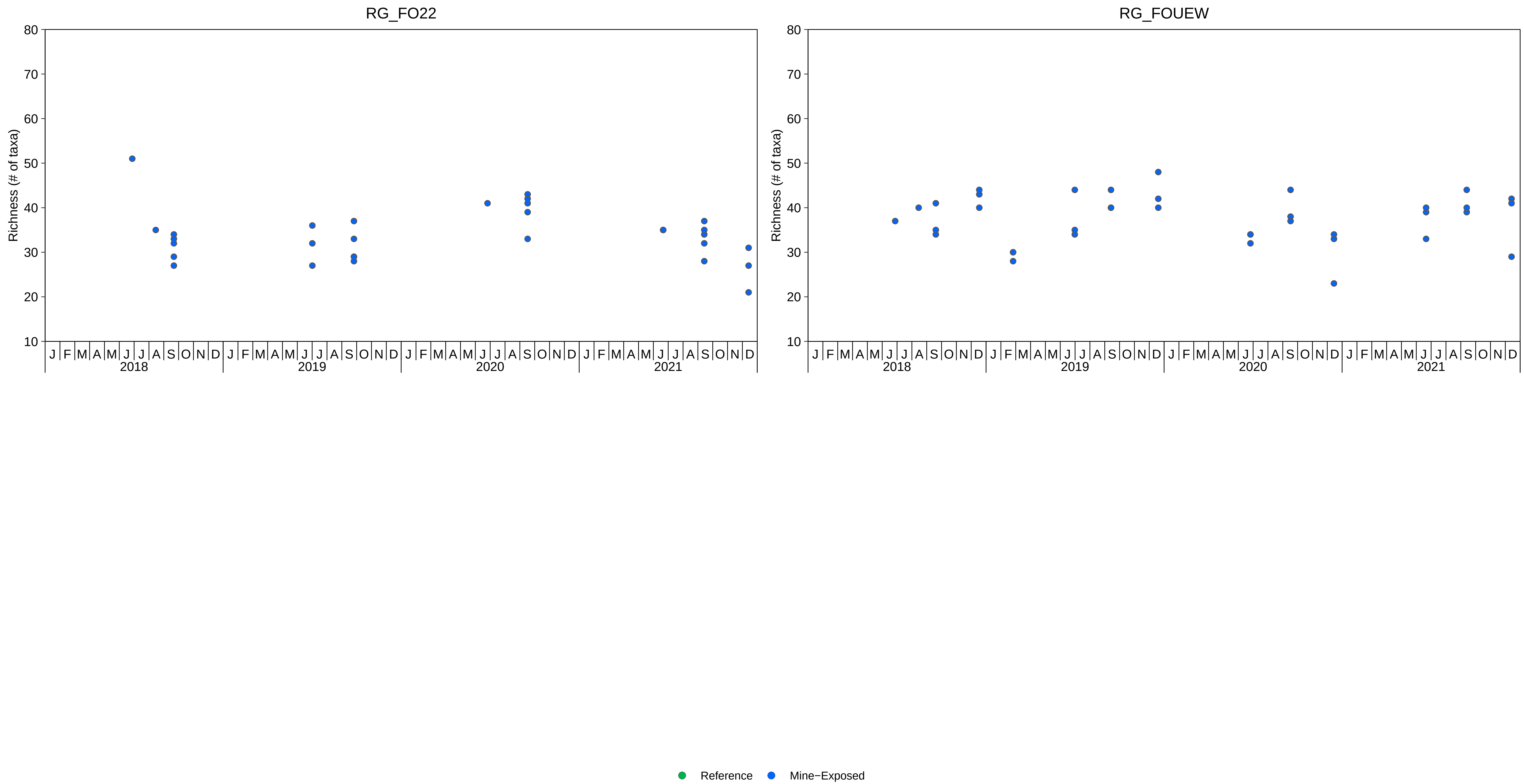


Figure E.27: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

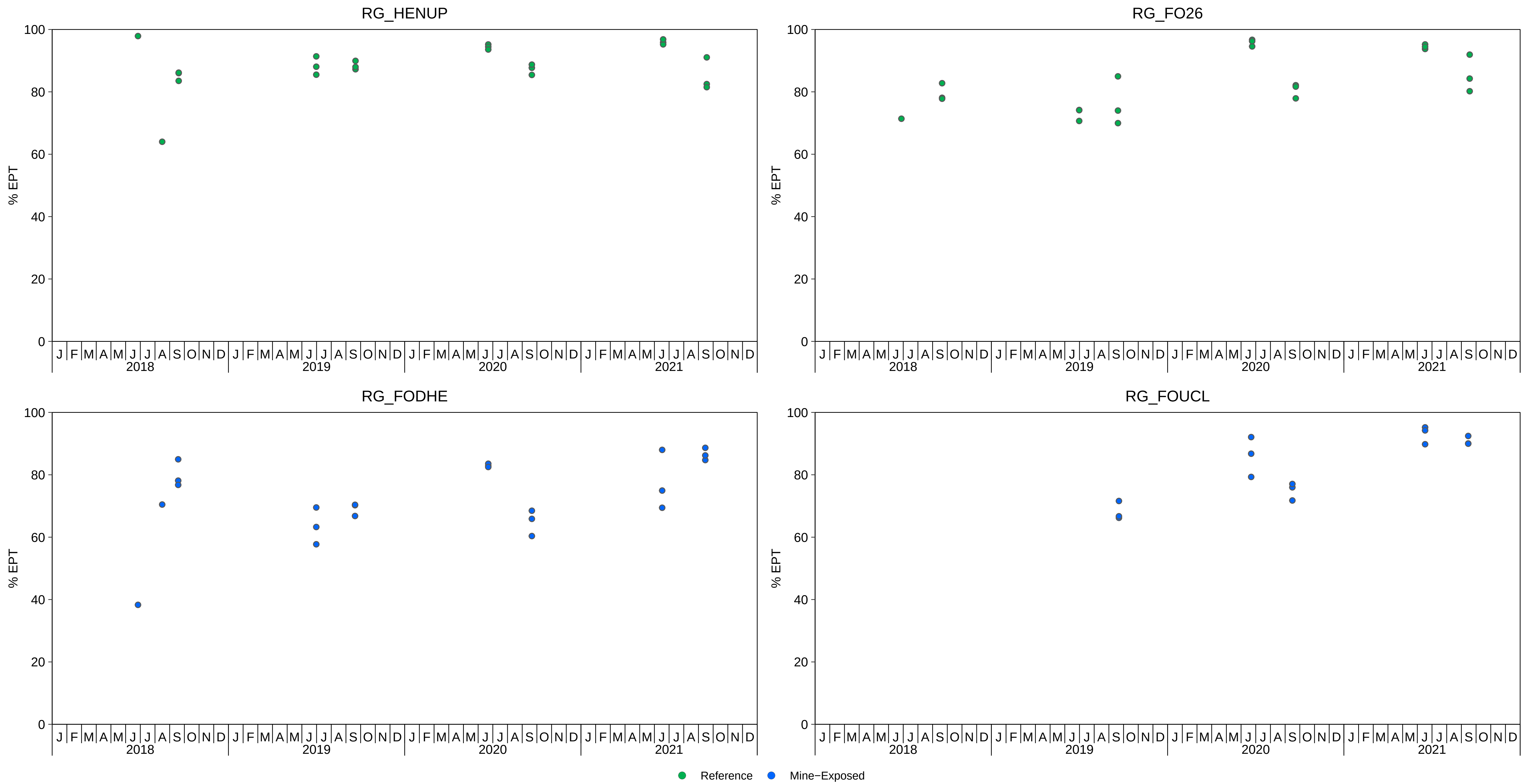


Figure E.28: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

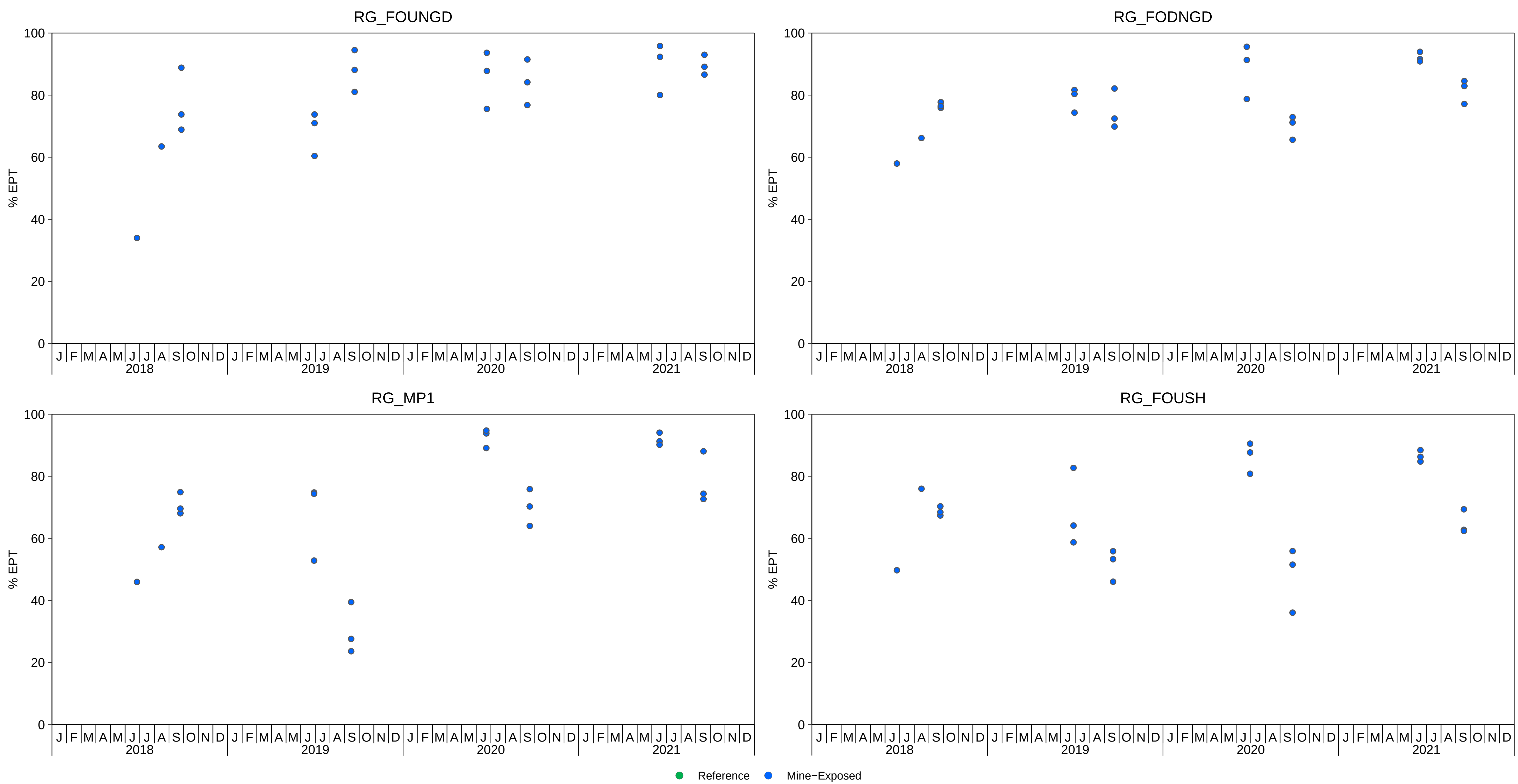


Figure E.28: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

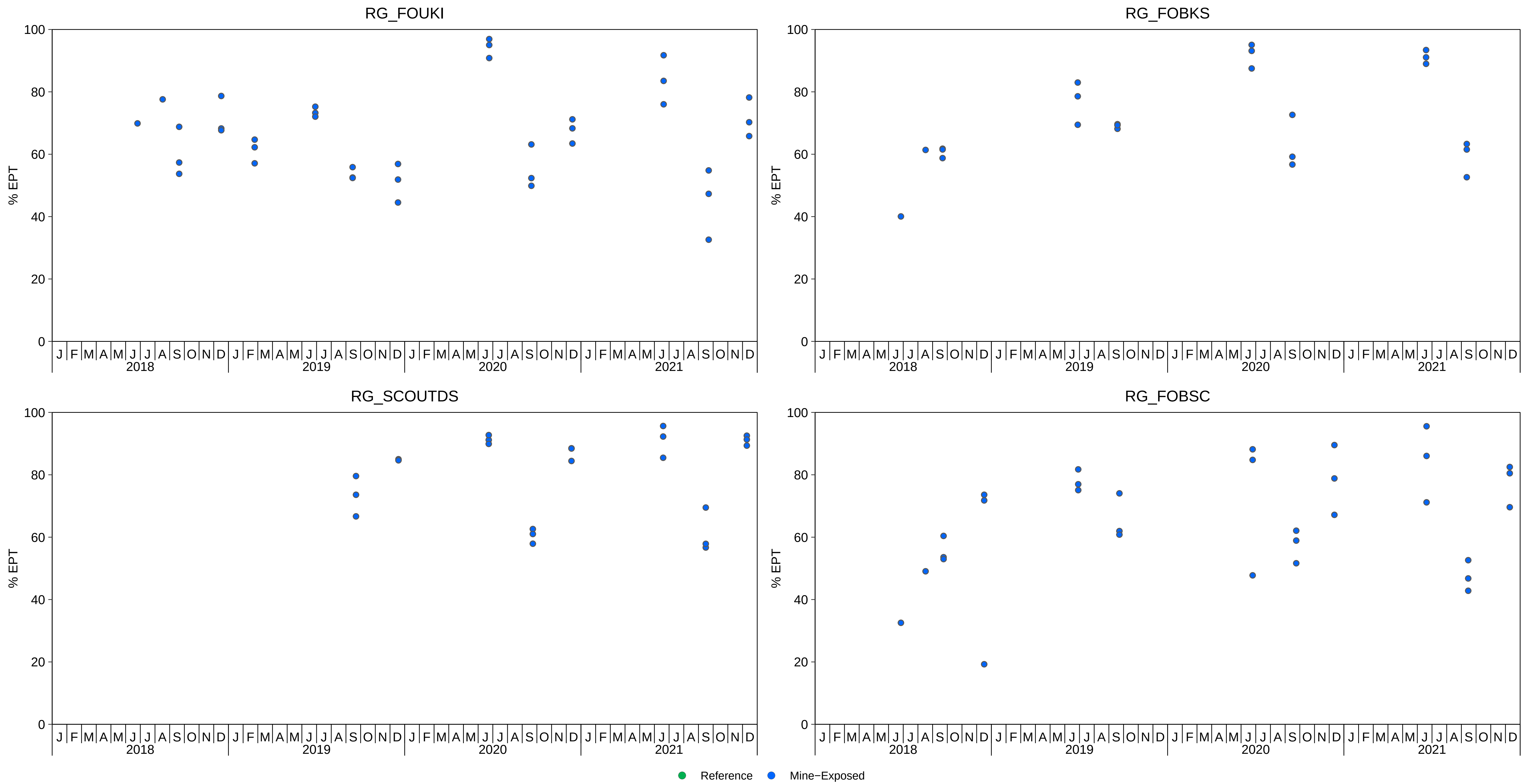


Figure E.28: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

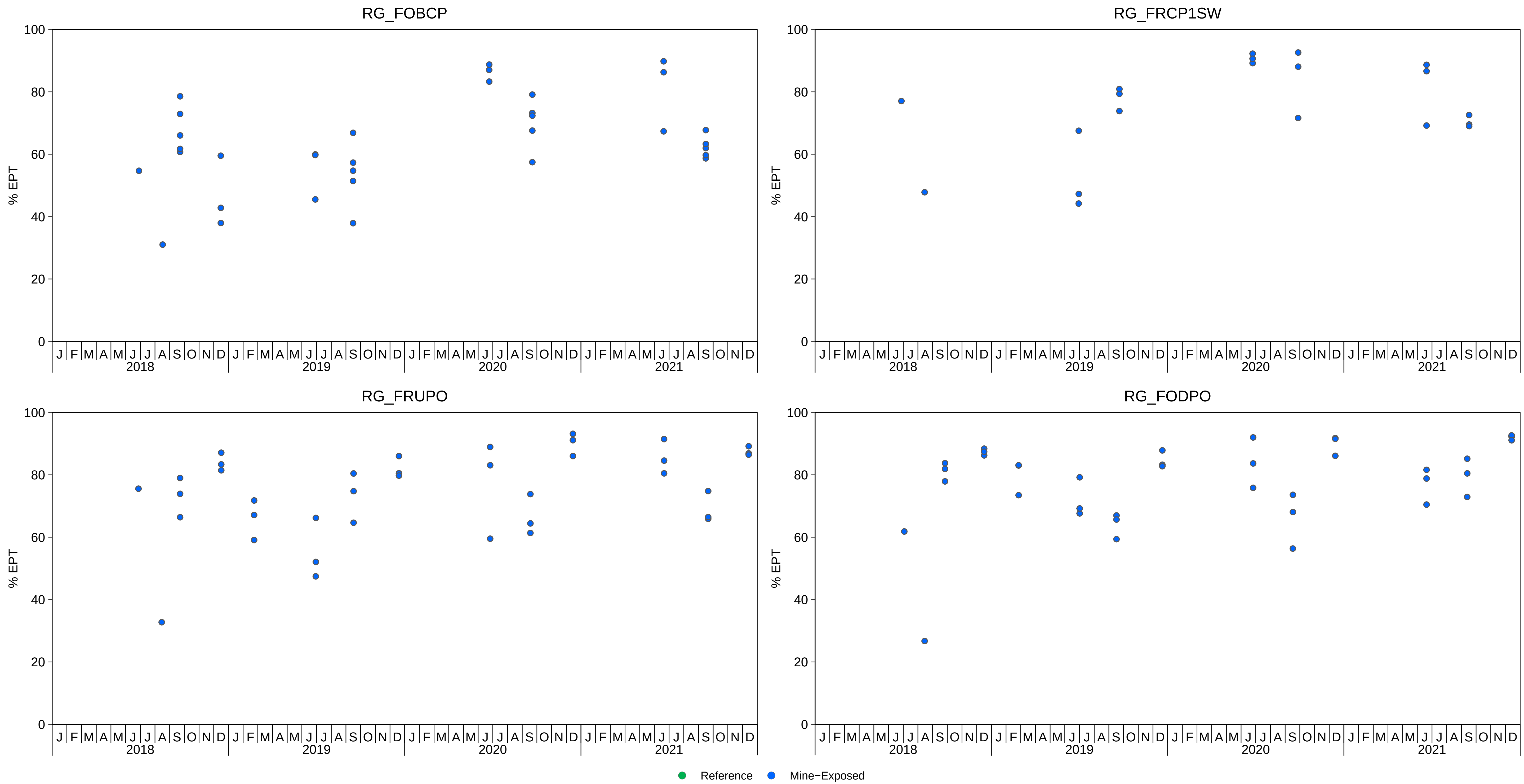


Figure E.28: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

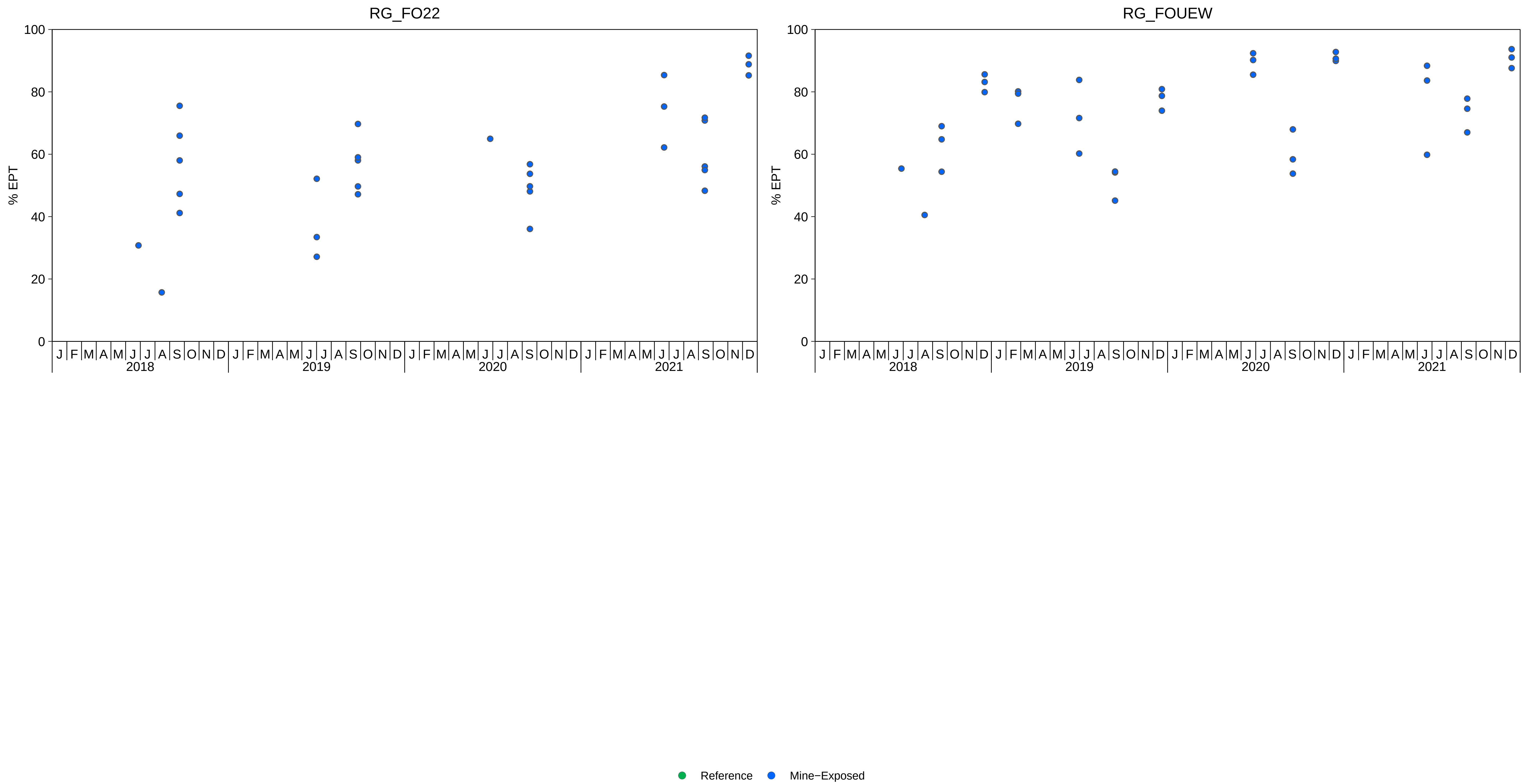


Figure E.28: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

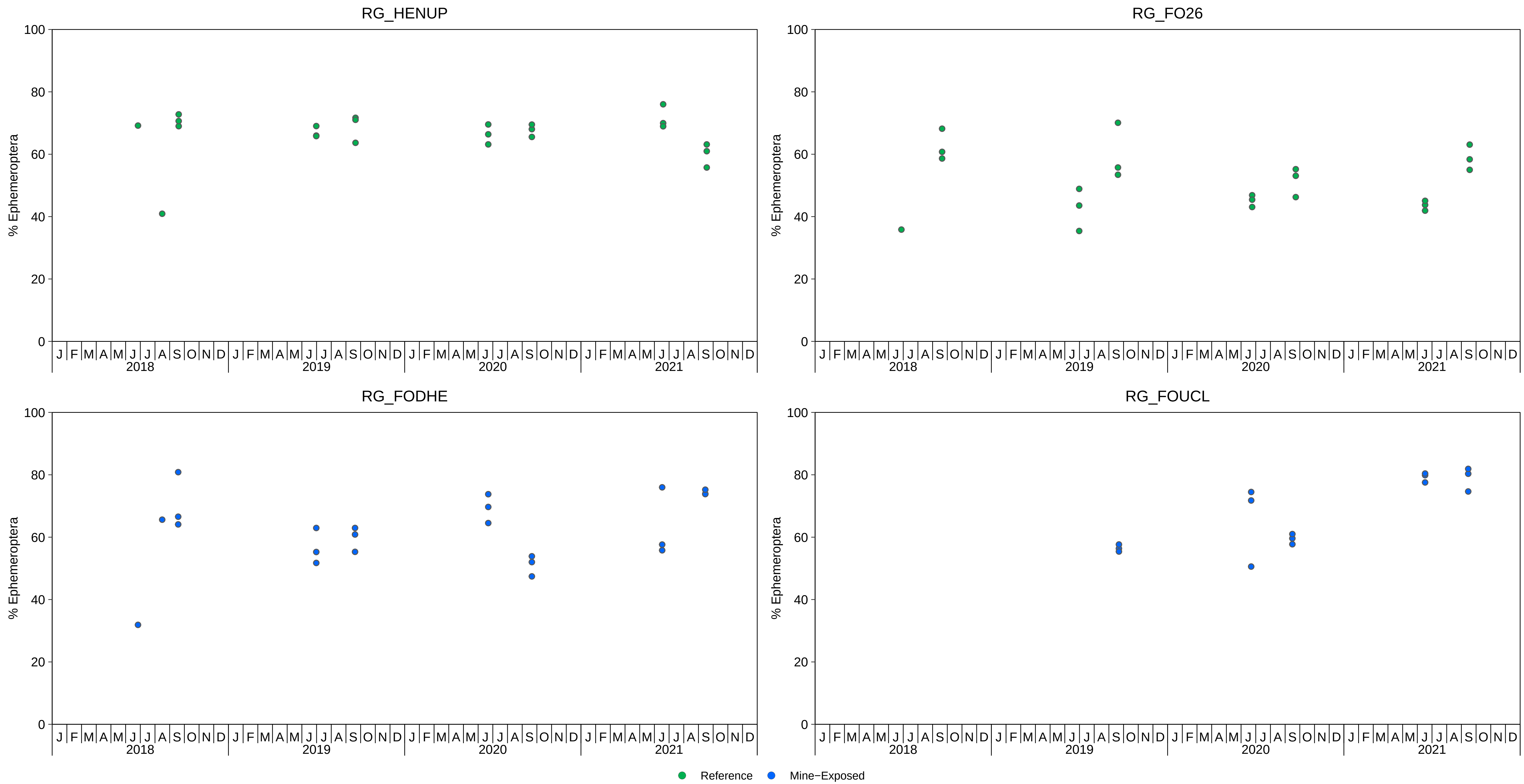
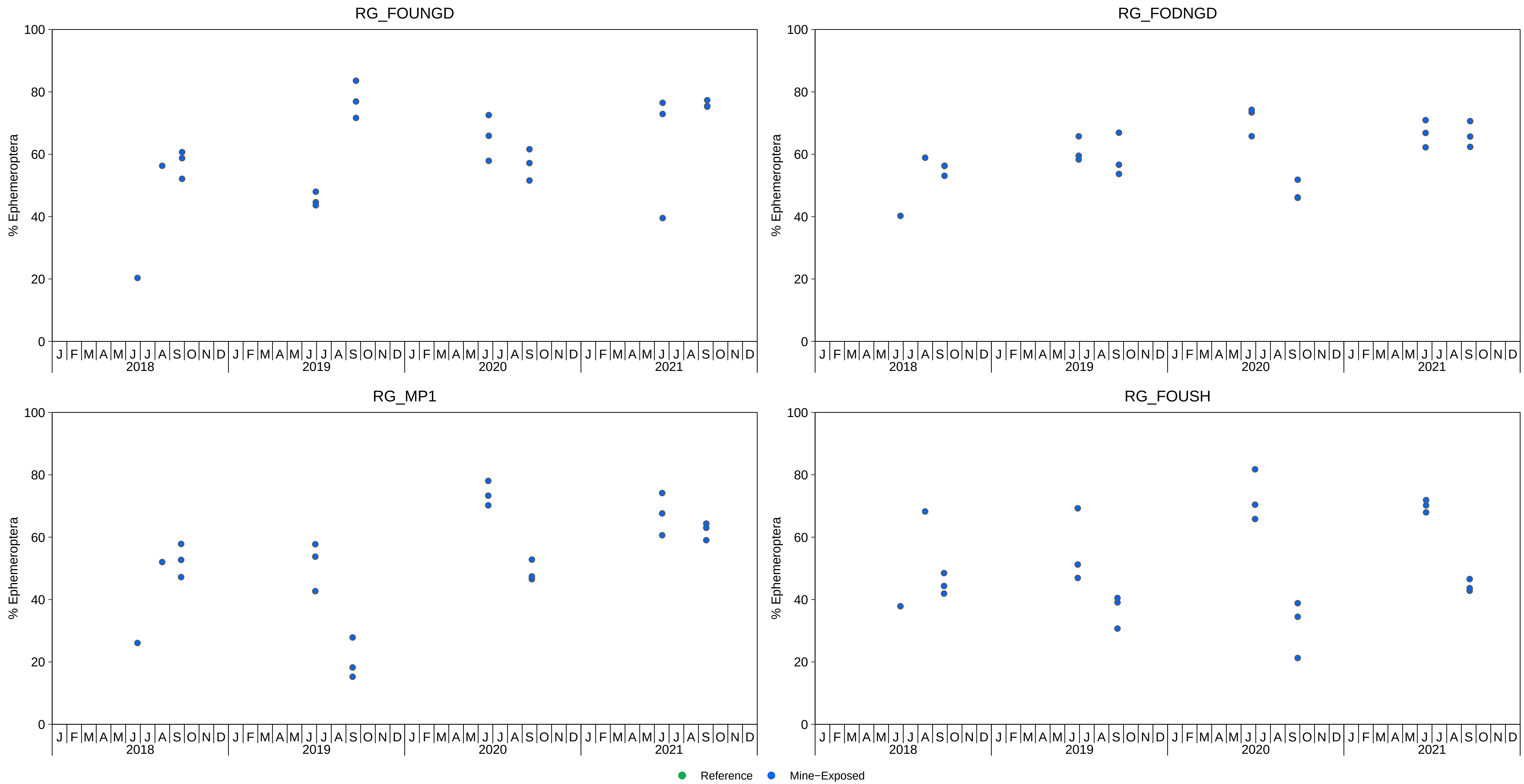


Figure E.29: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021



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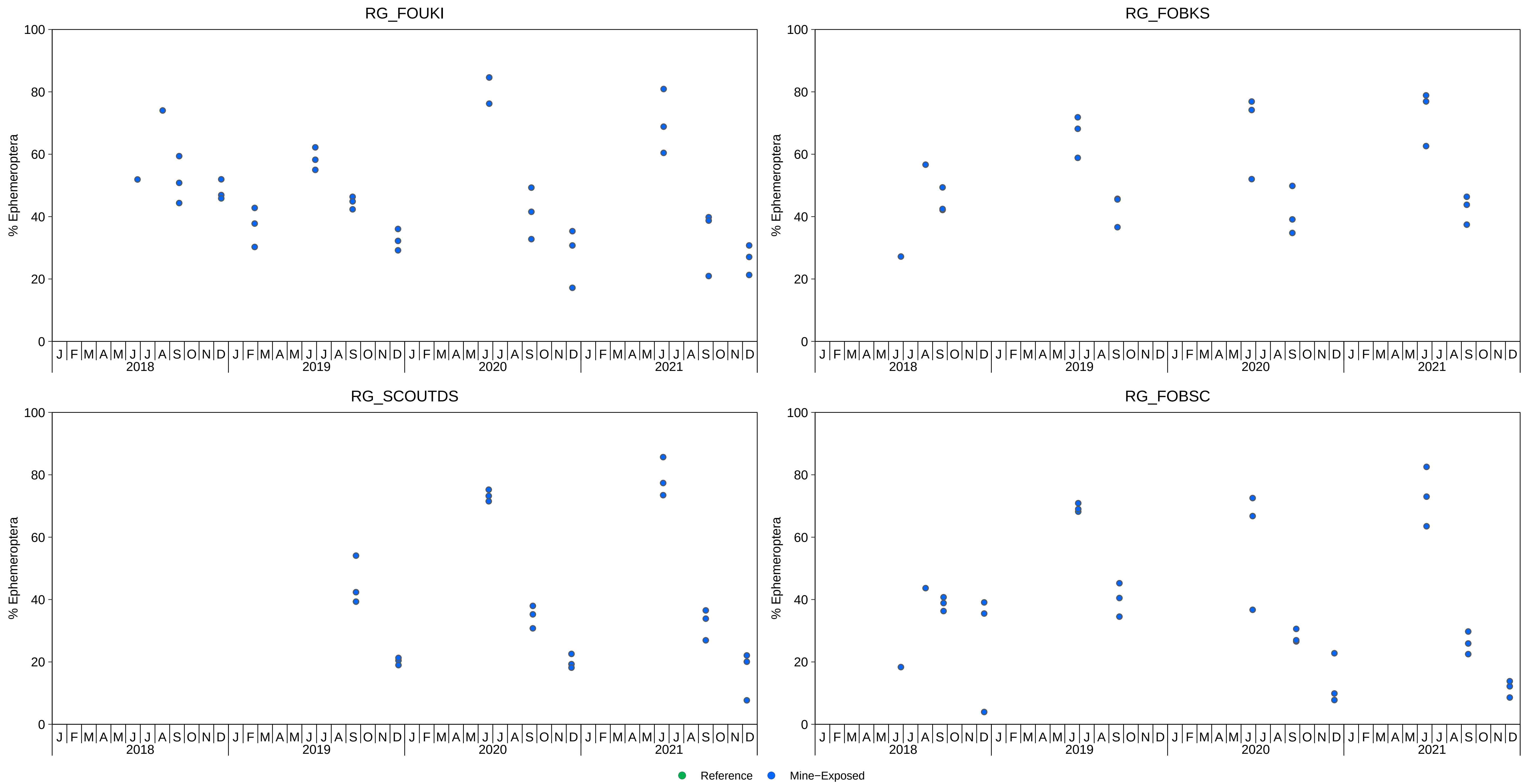

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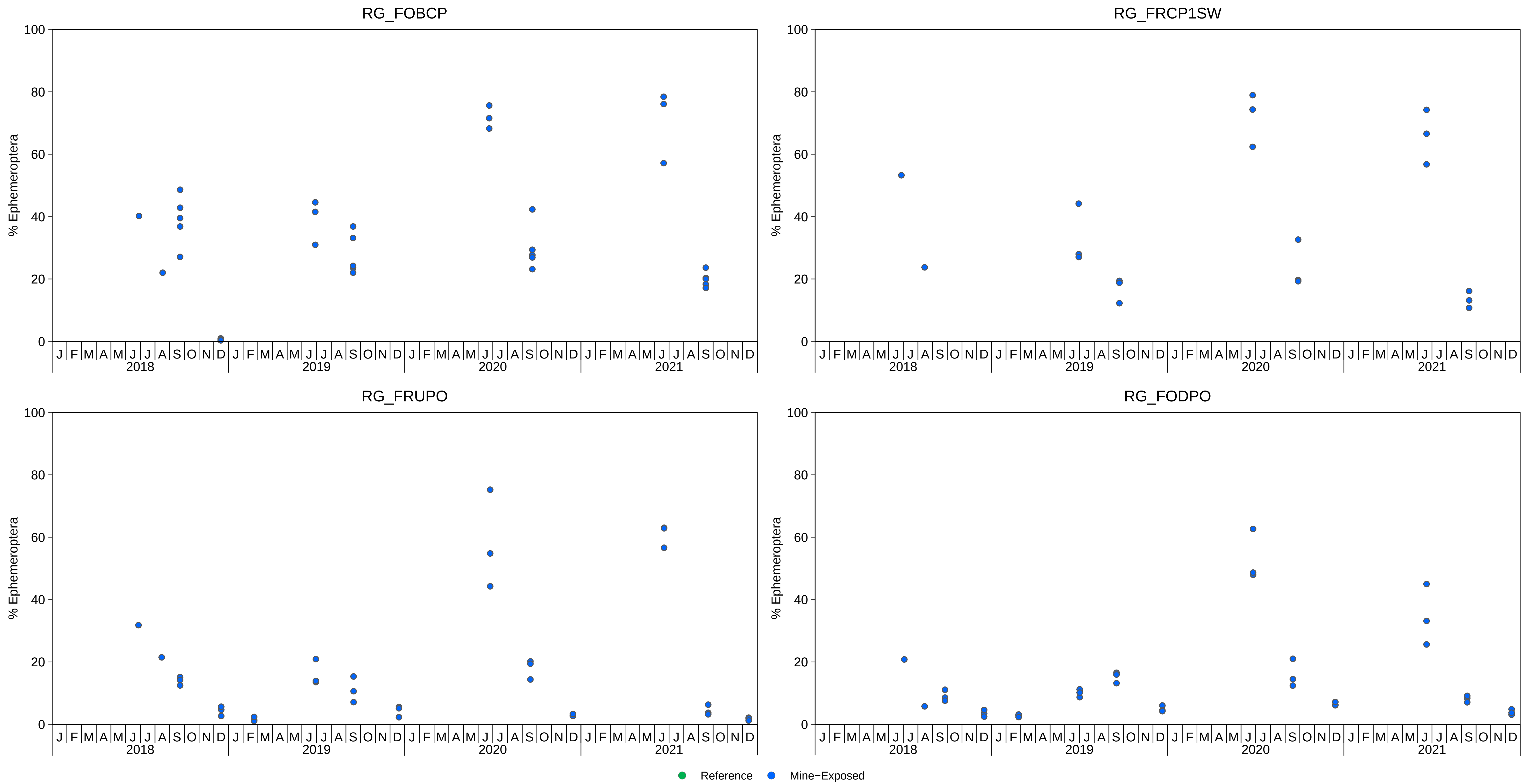

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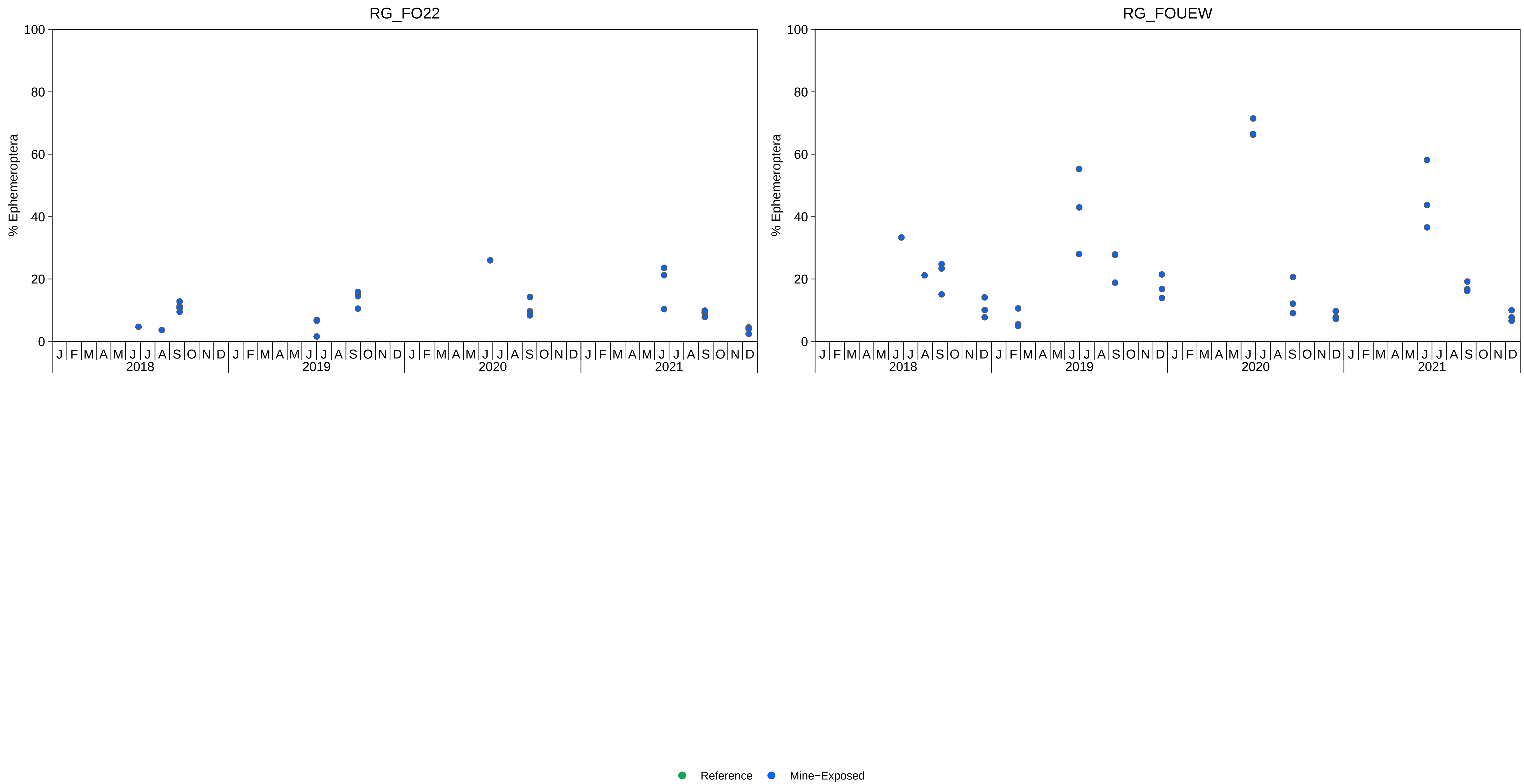

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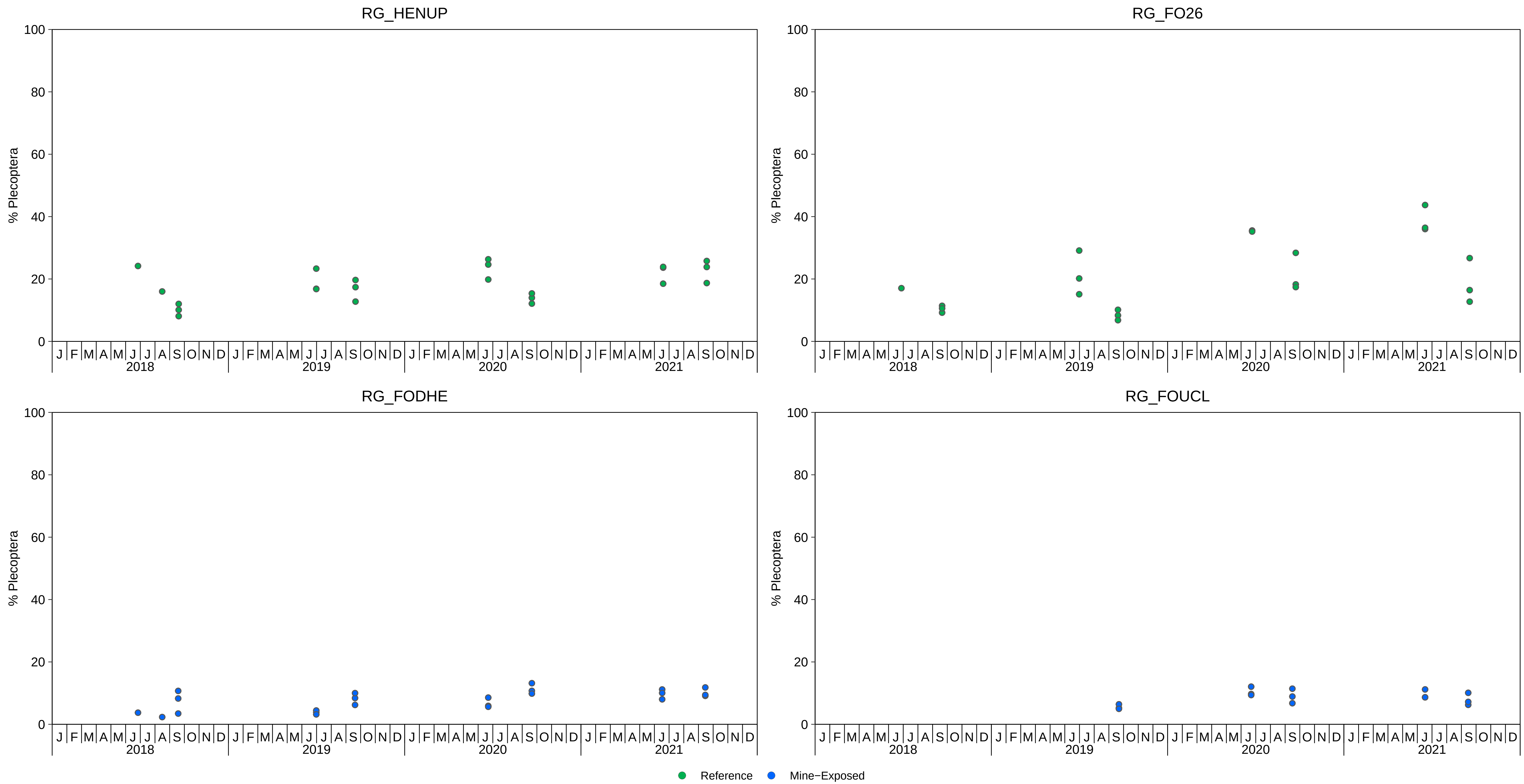
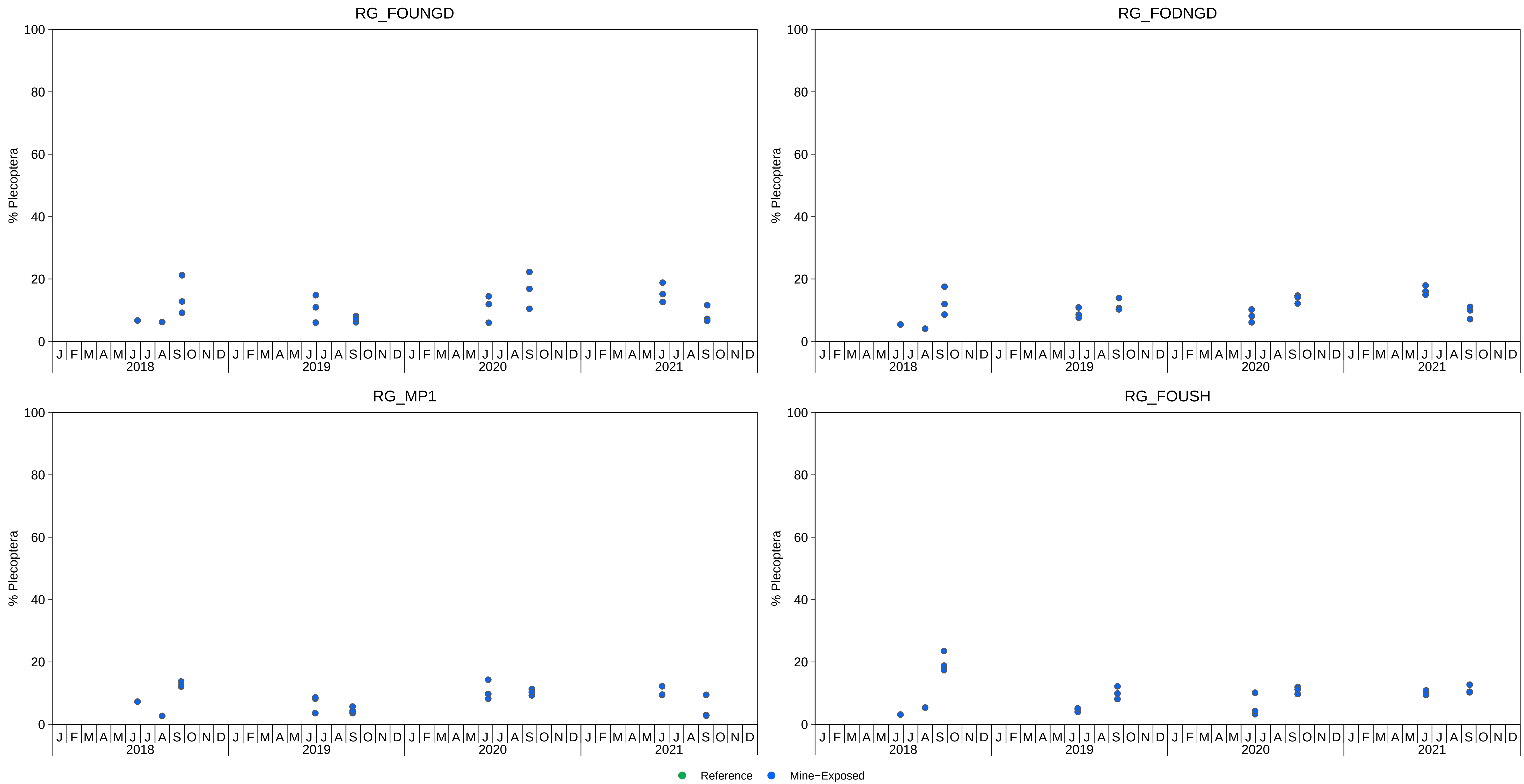


Figure E.30: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**



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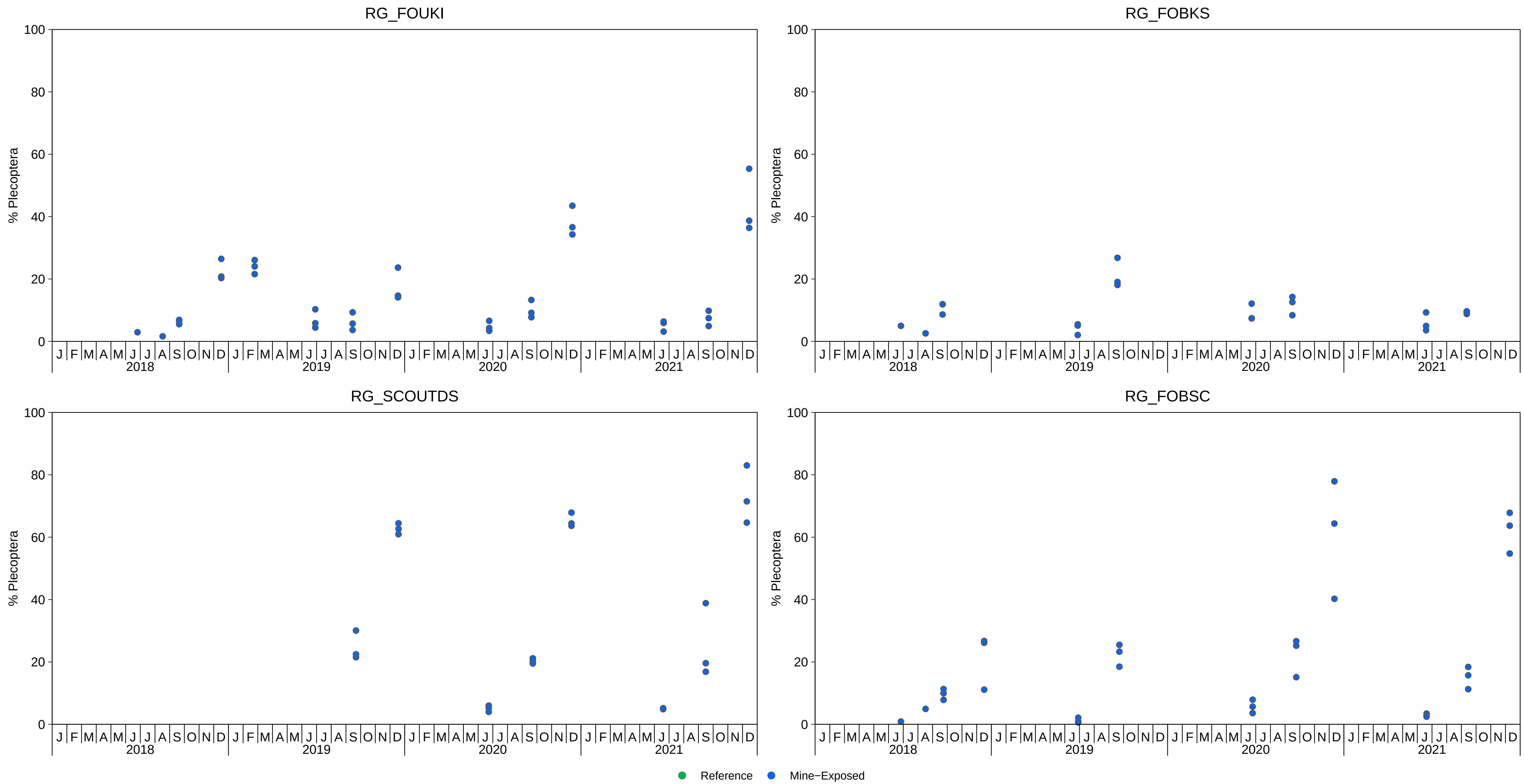

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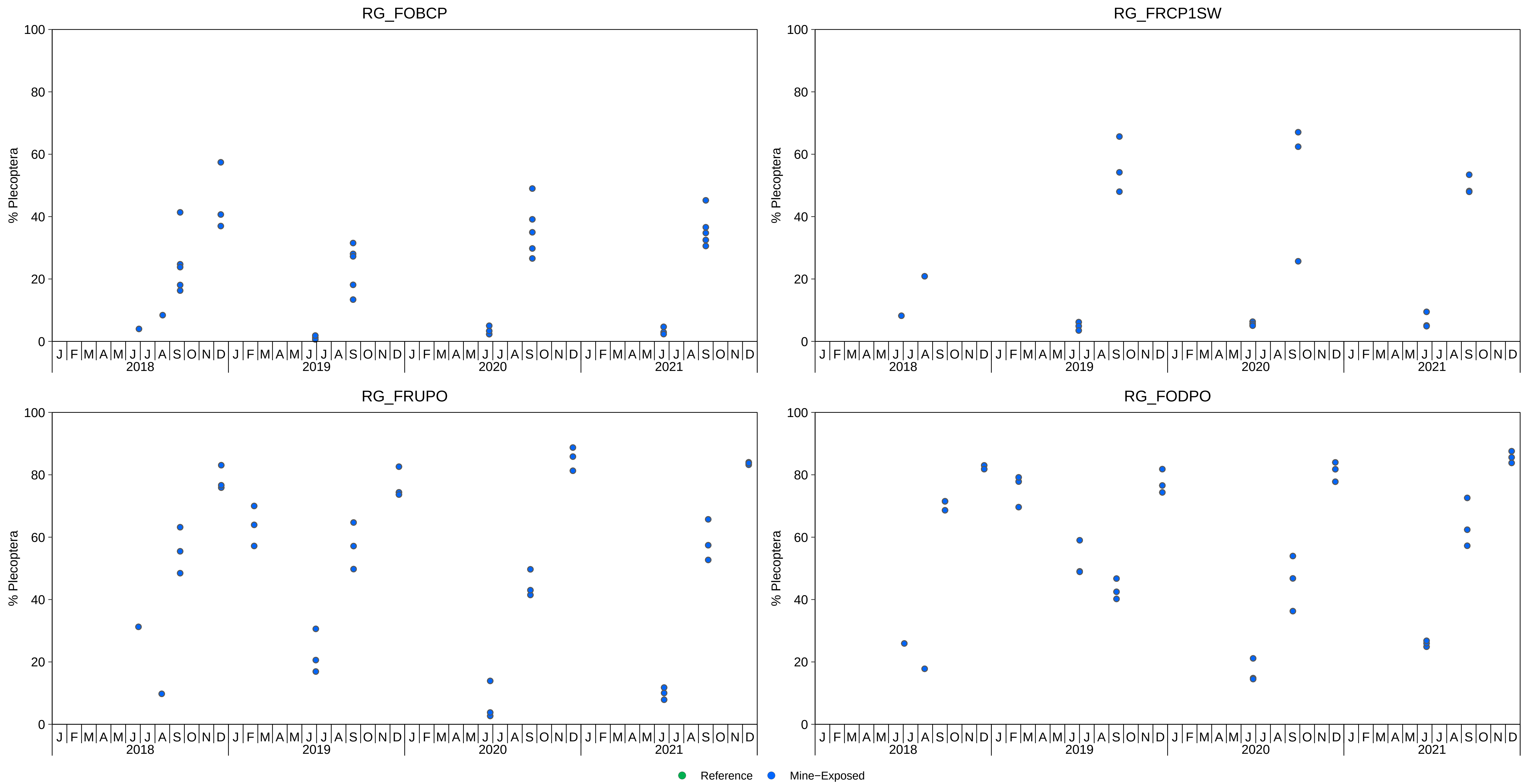

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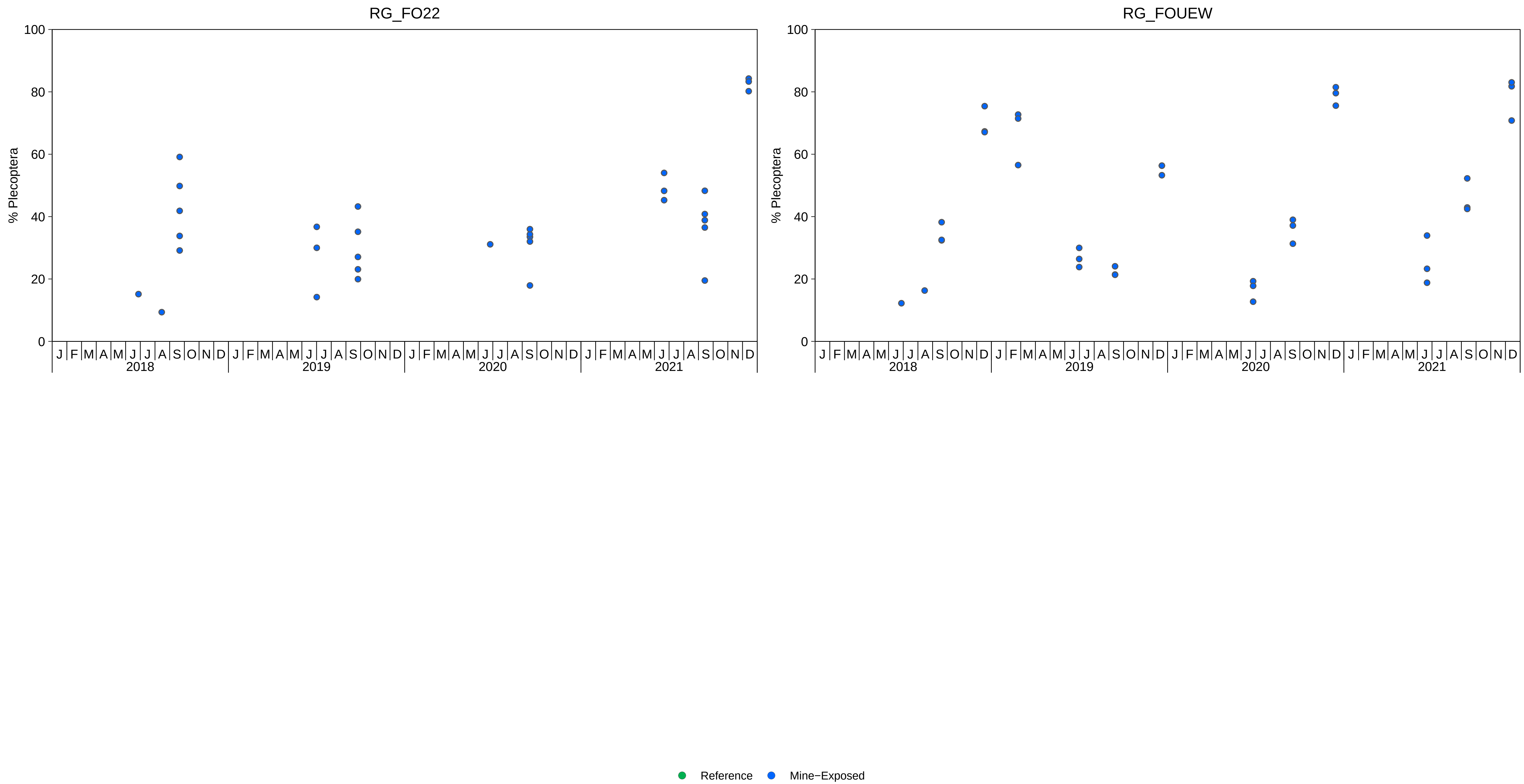


Figure E.30: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

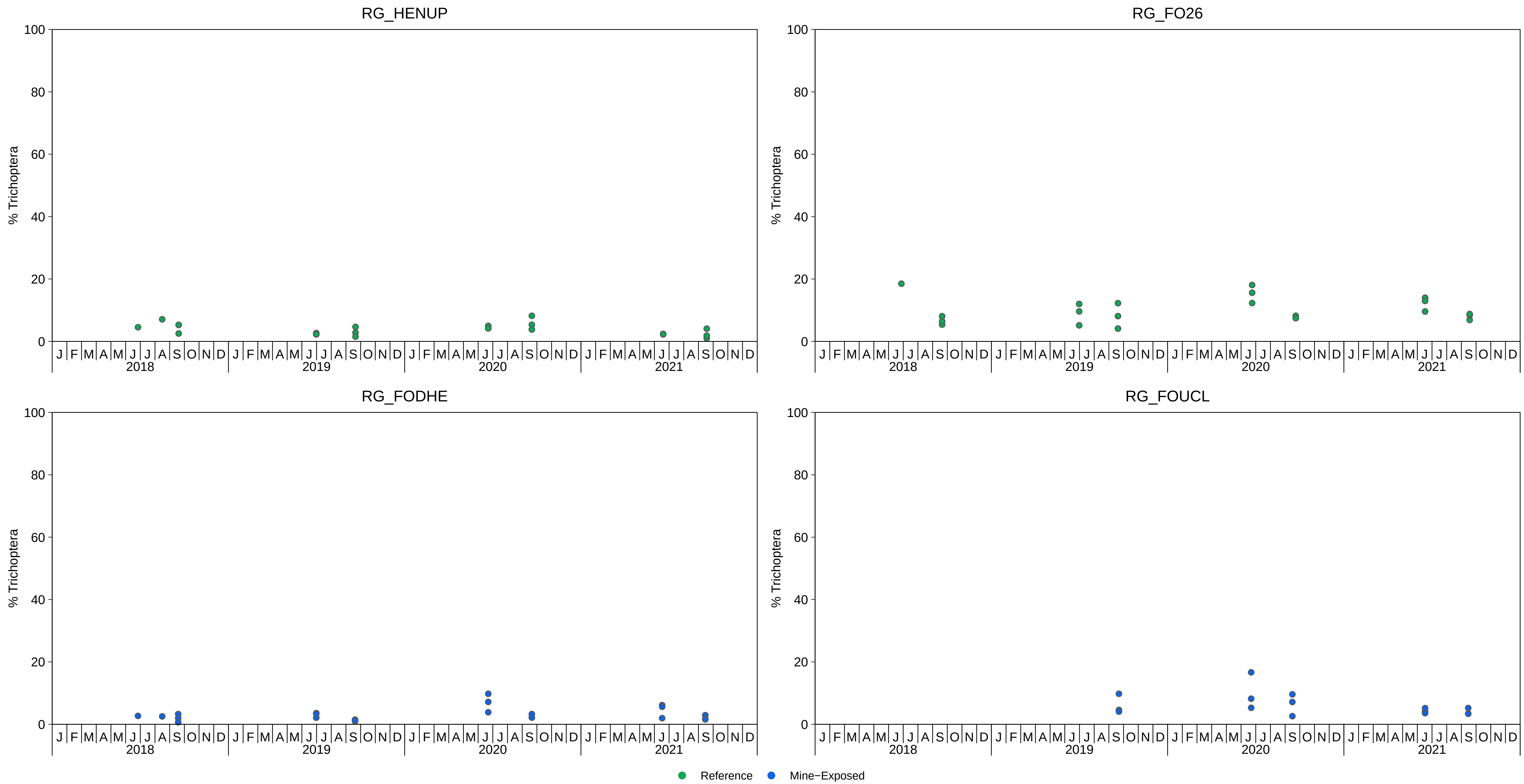
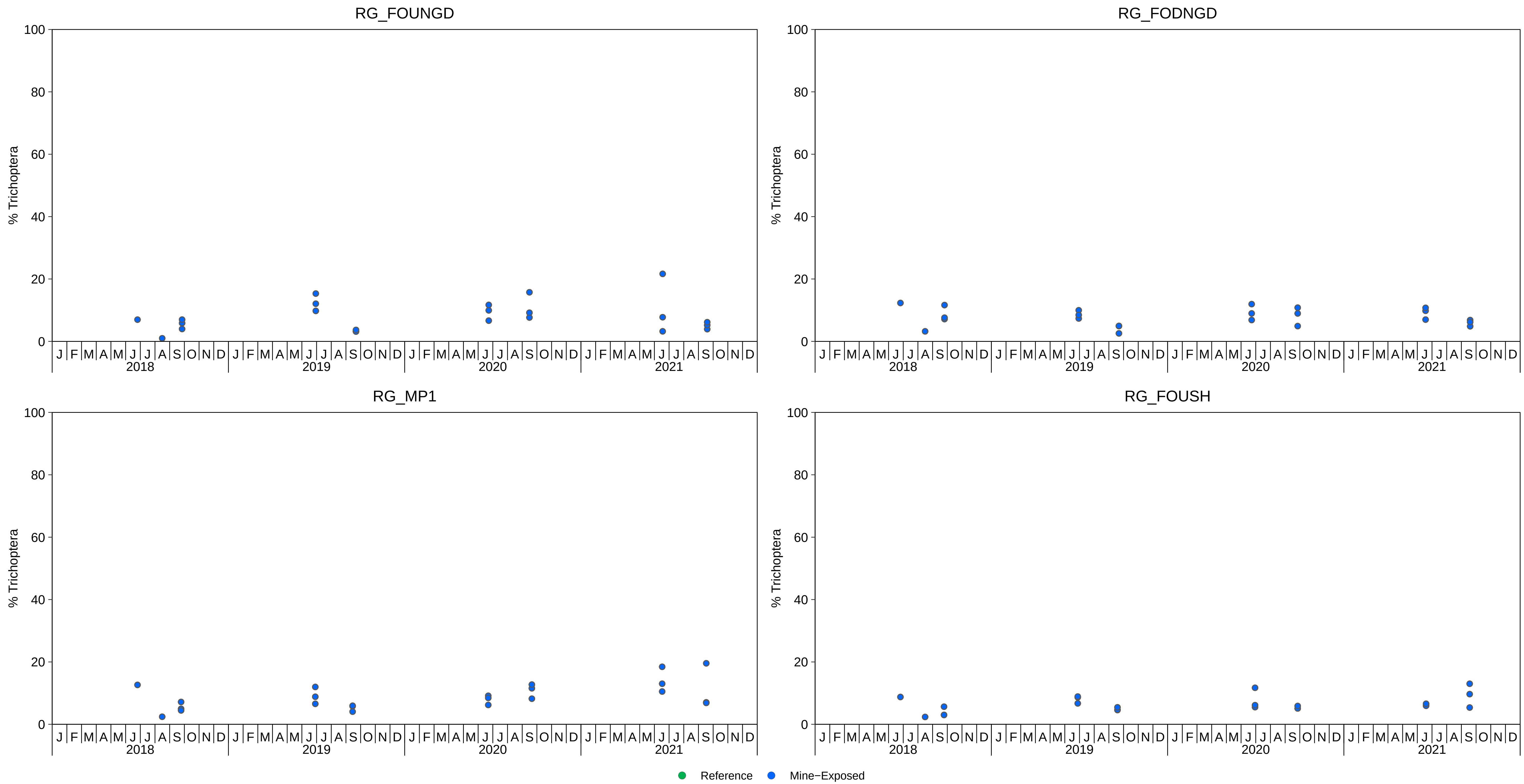


Figure E.31: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021



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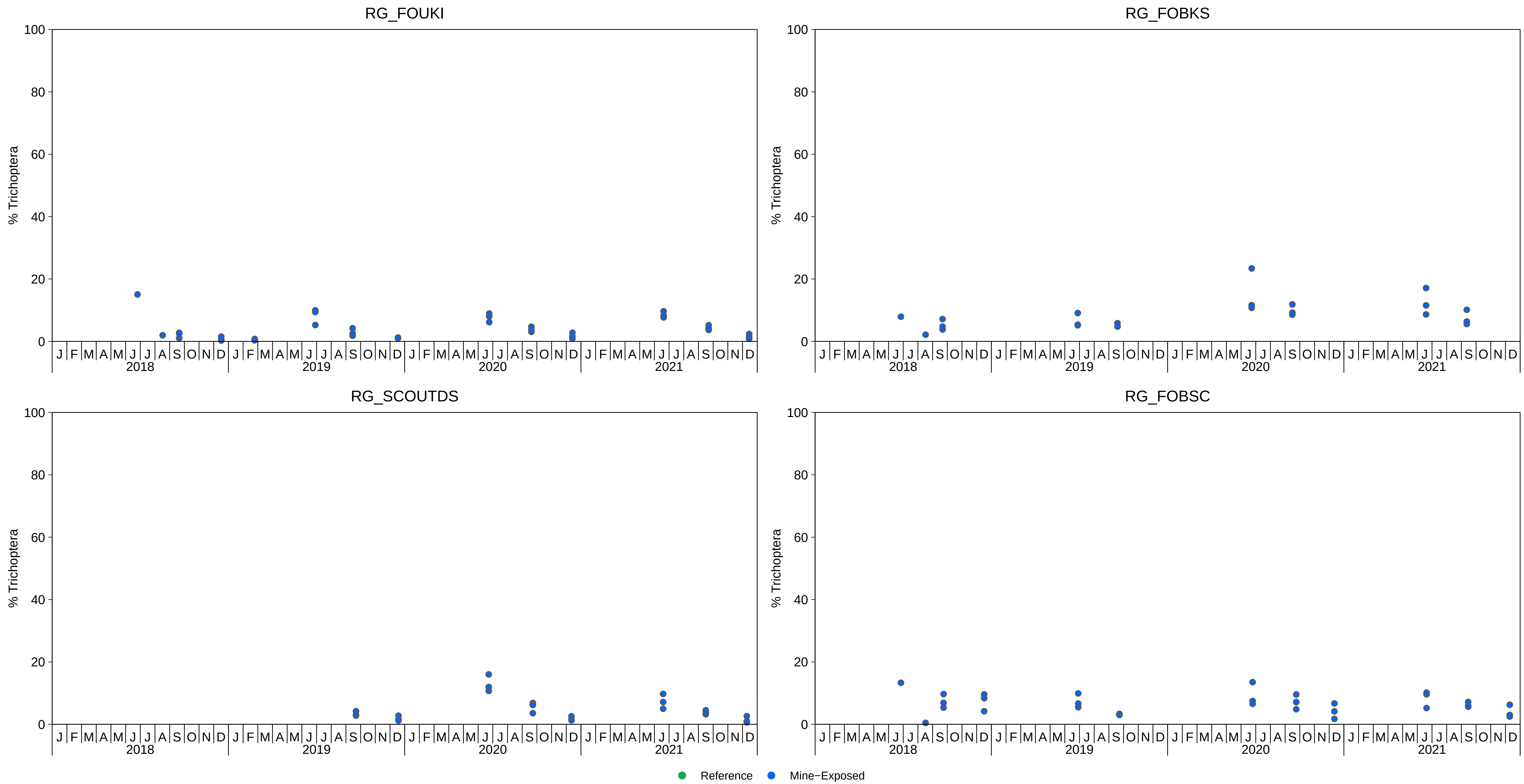

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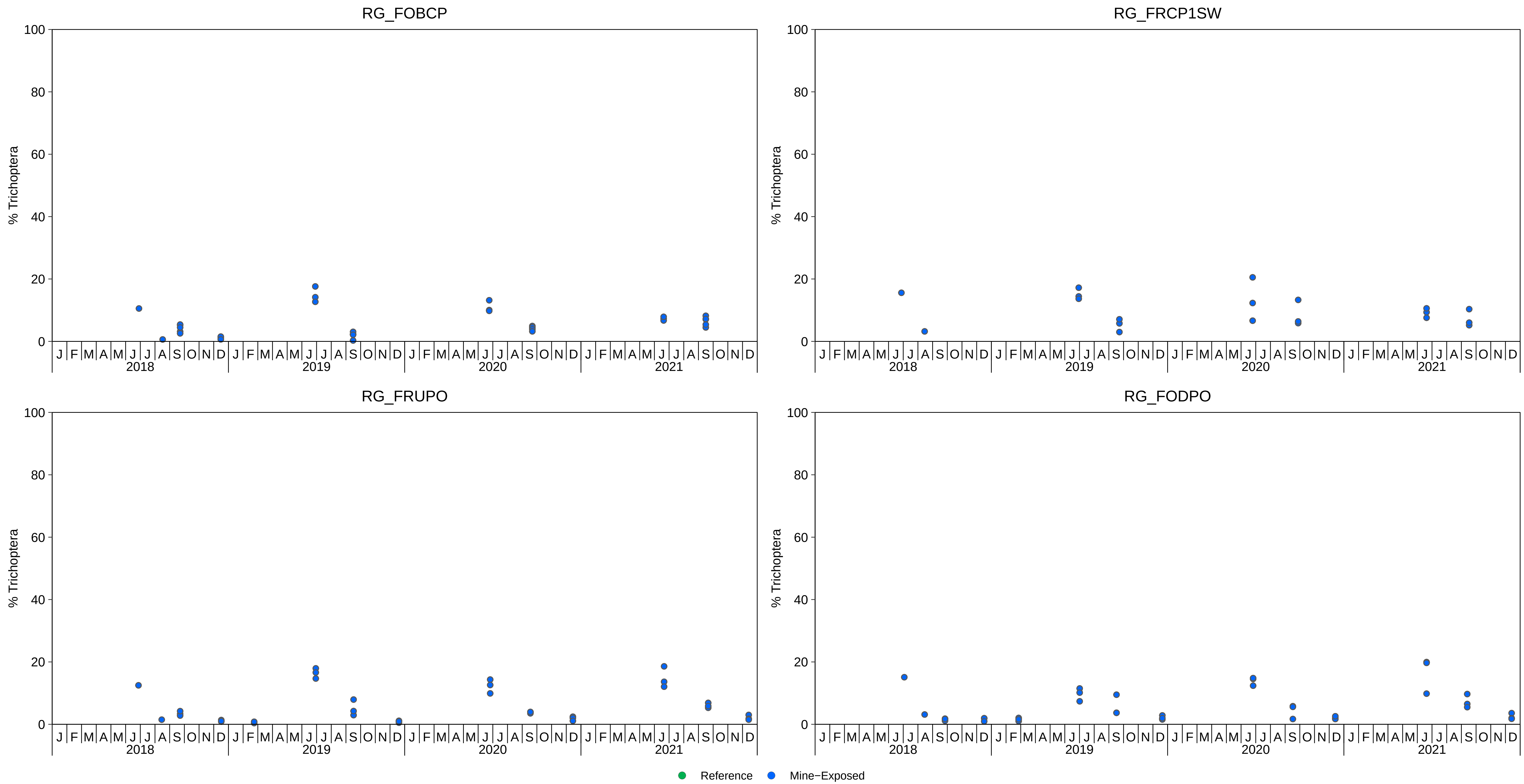

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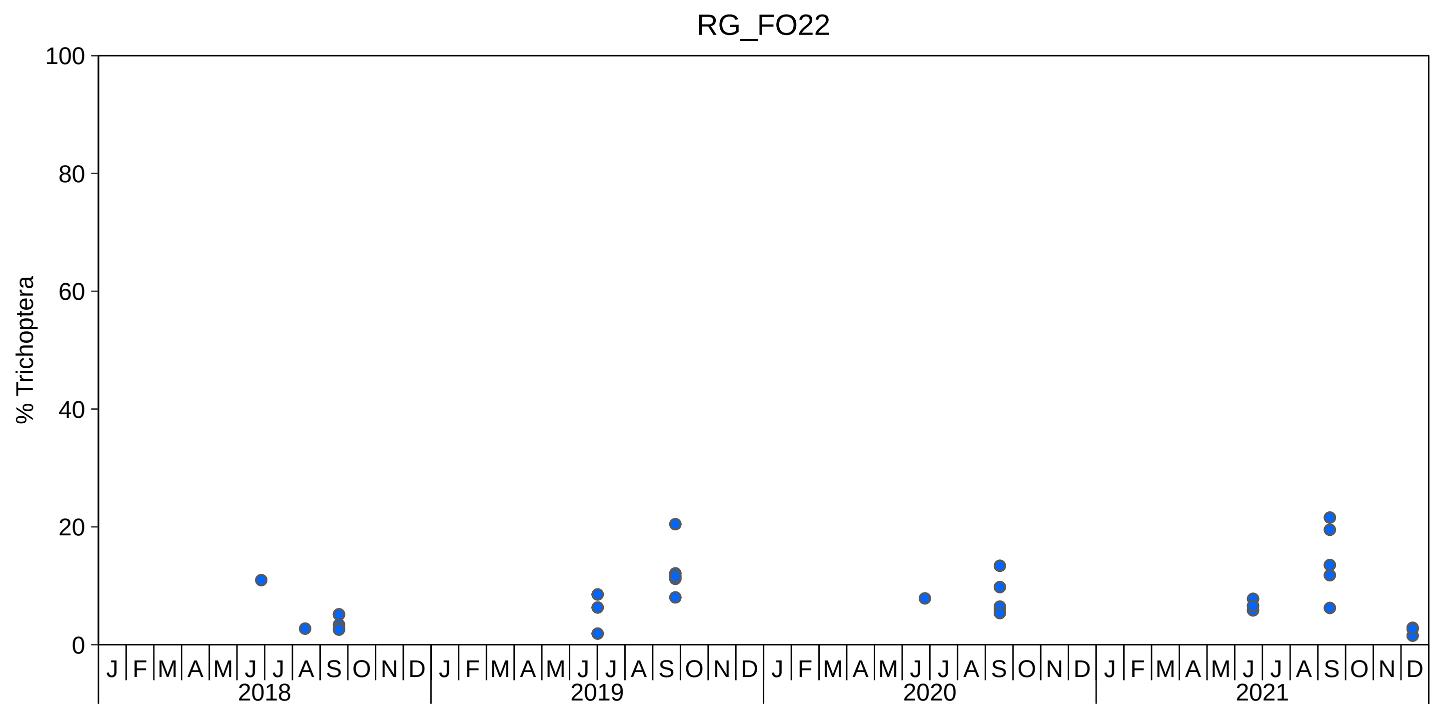

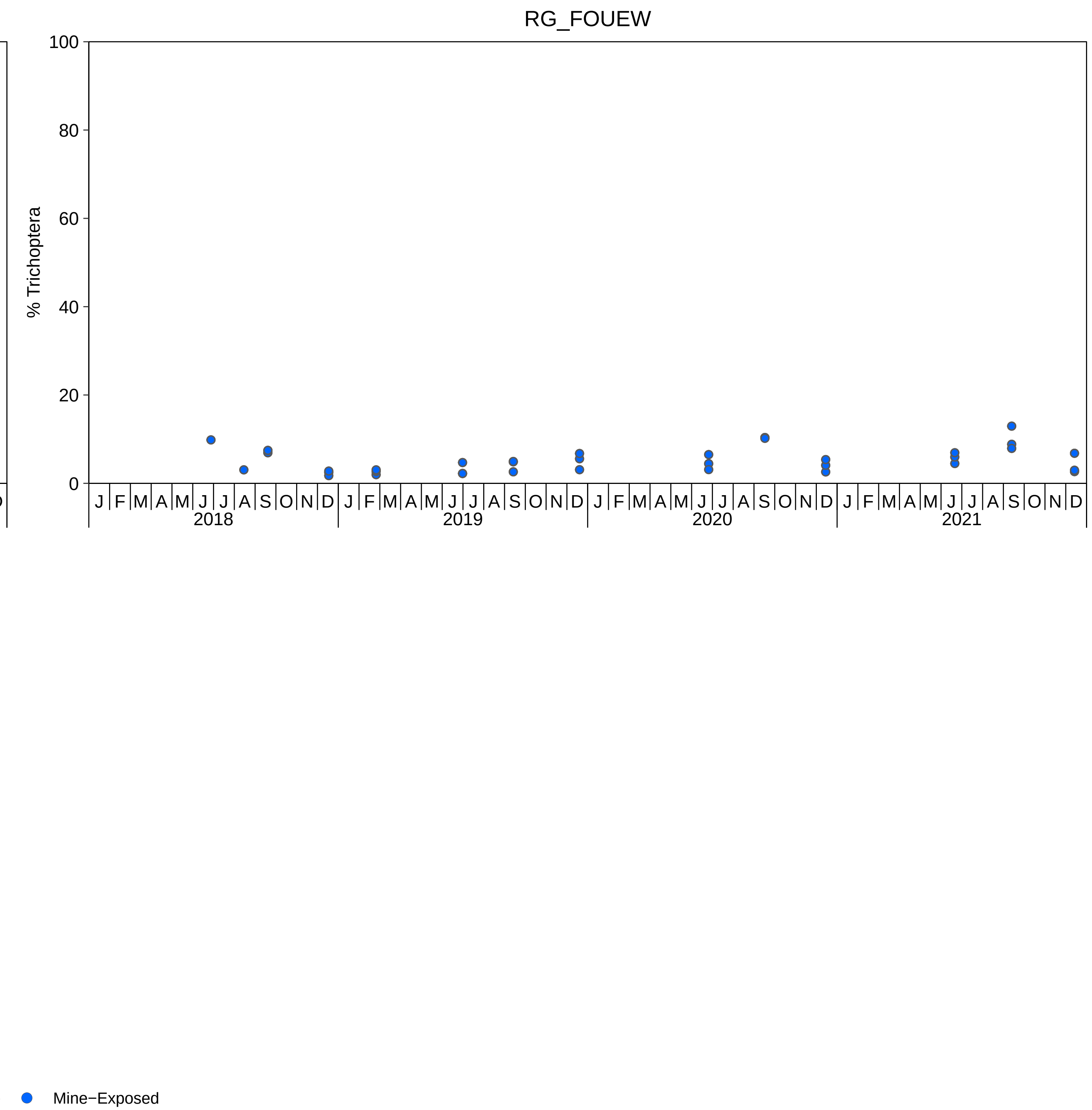

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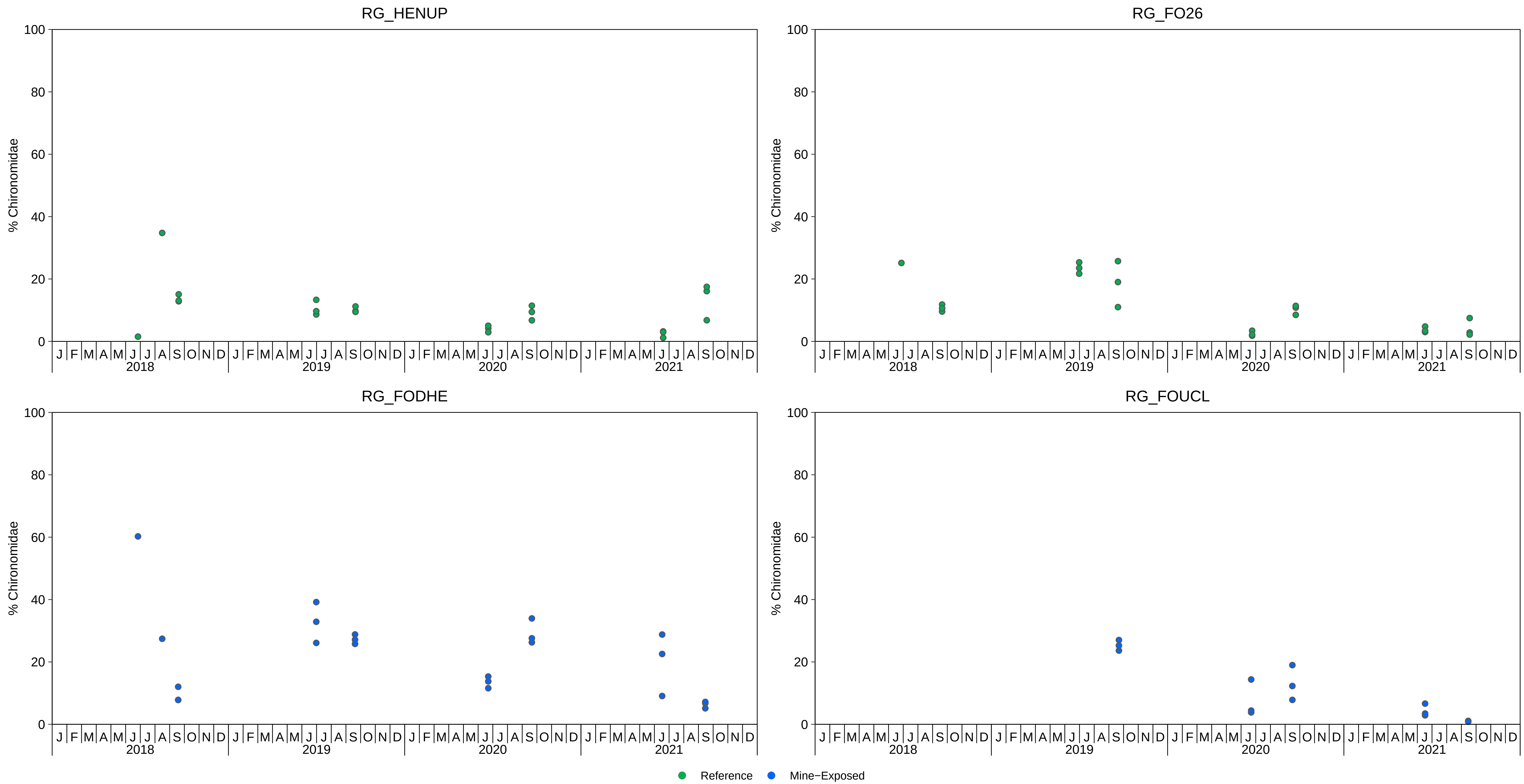
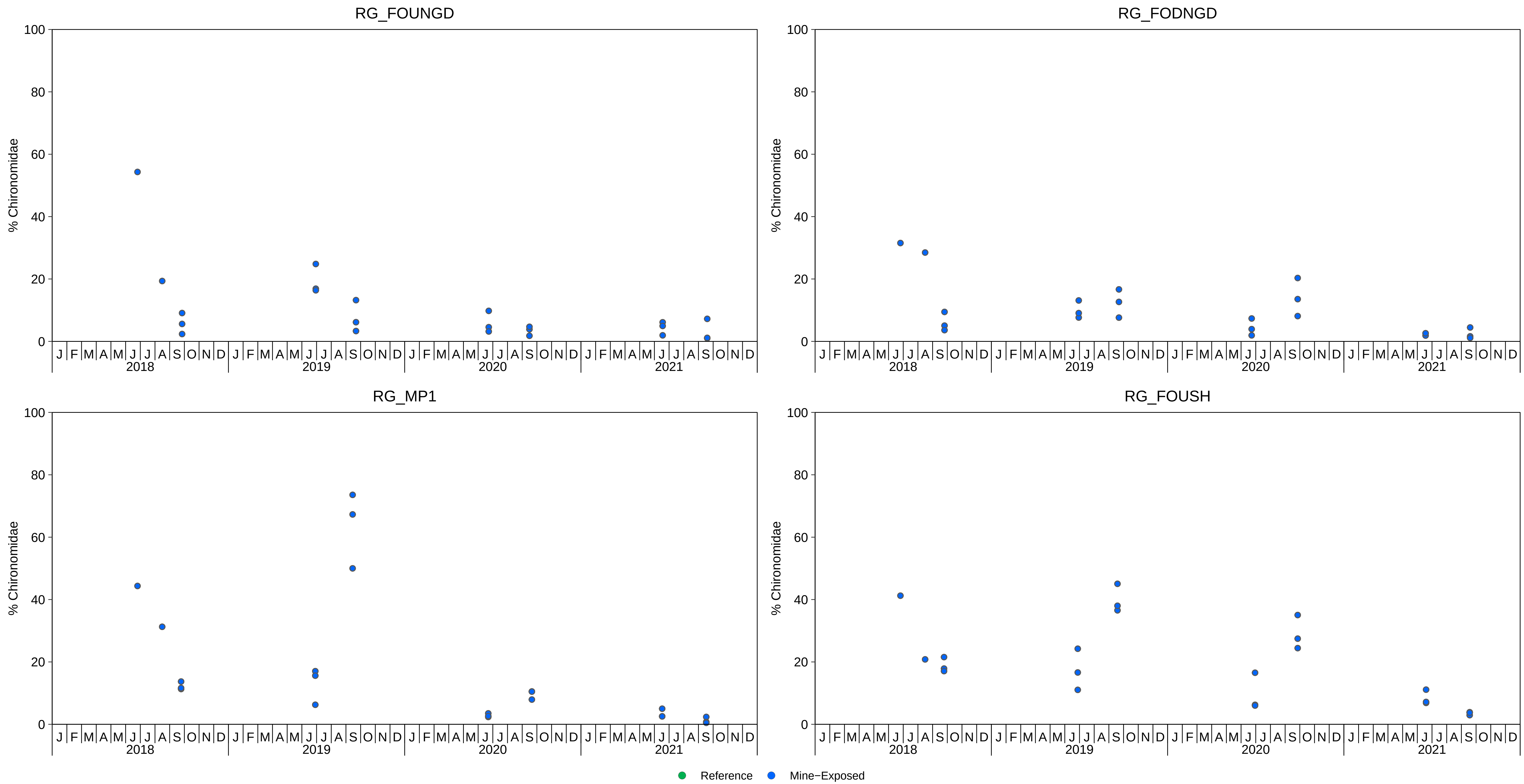


Figure E.32: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021



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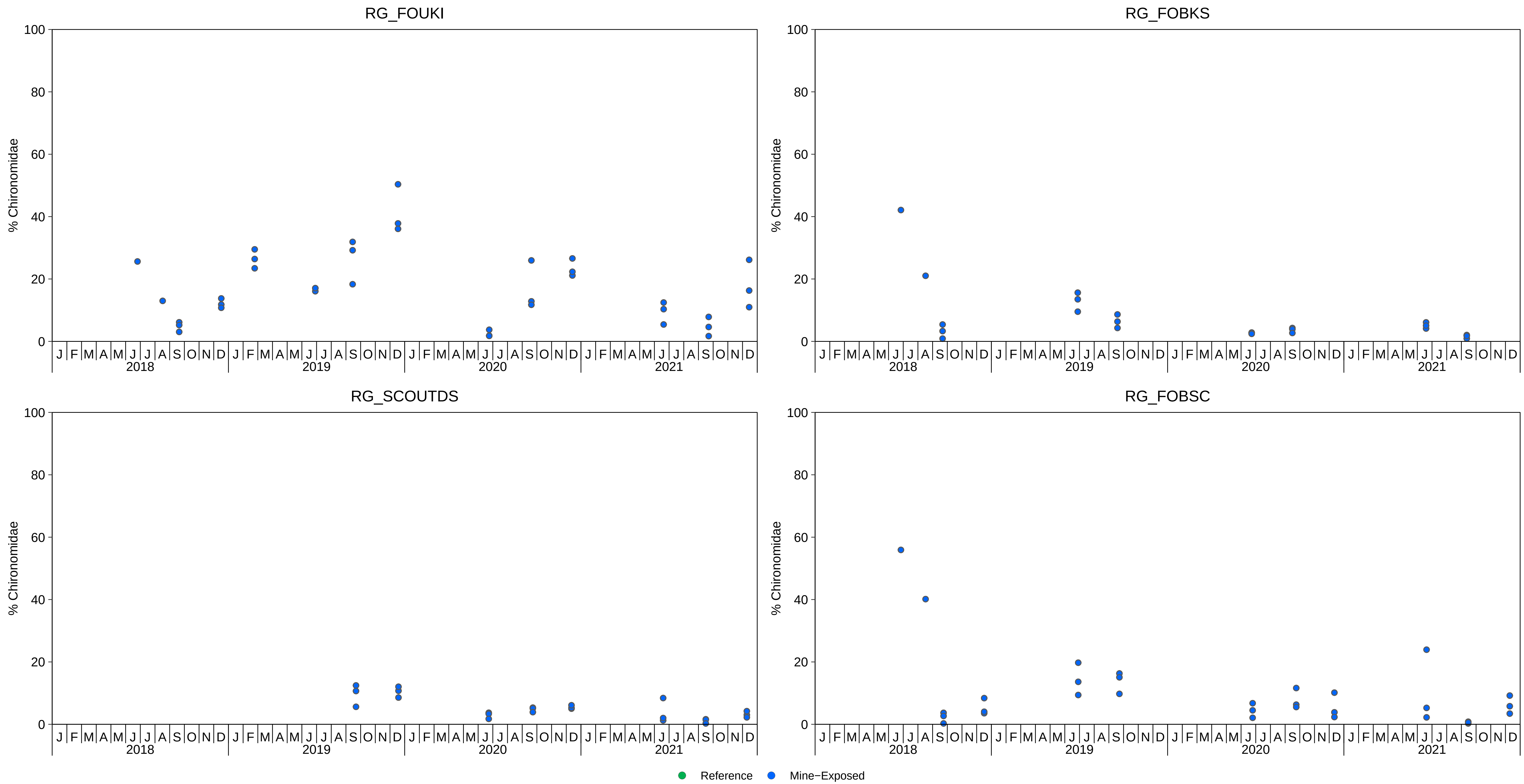

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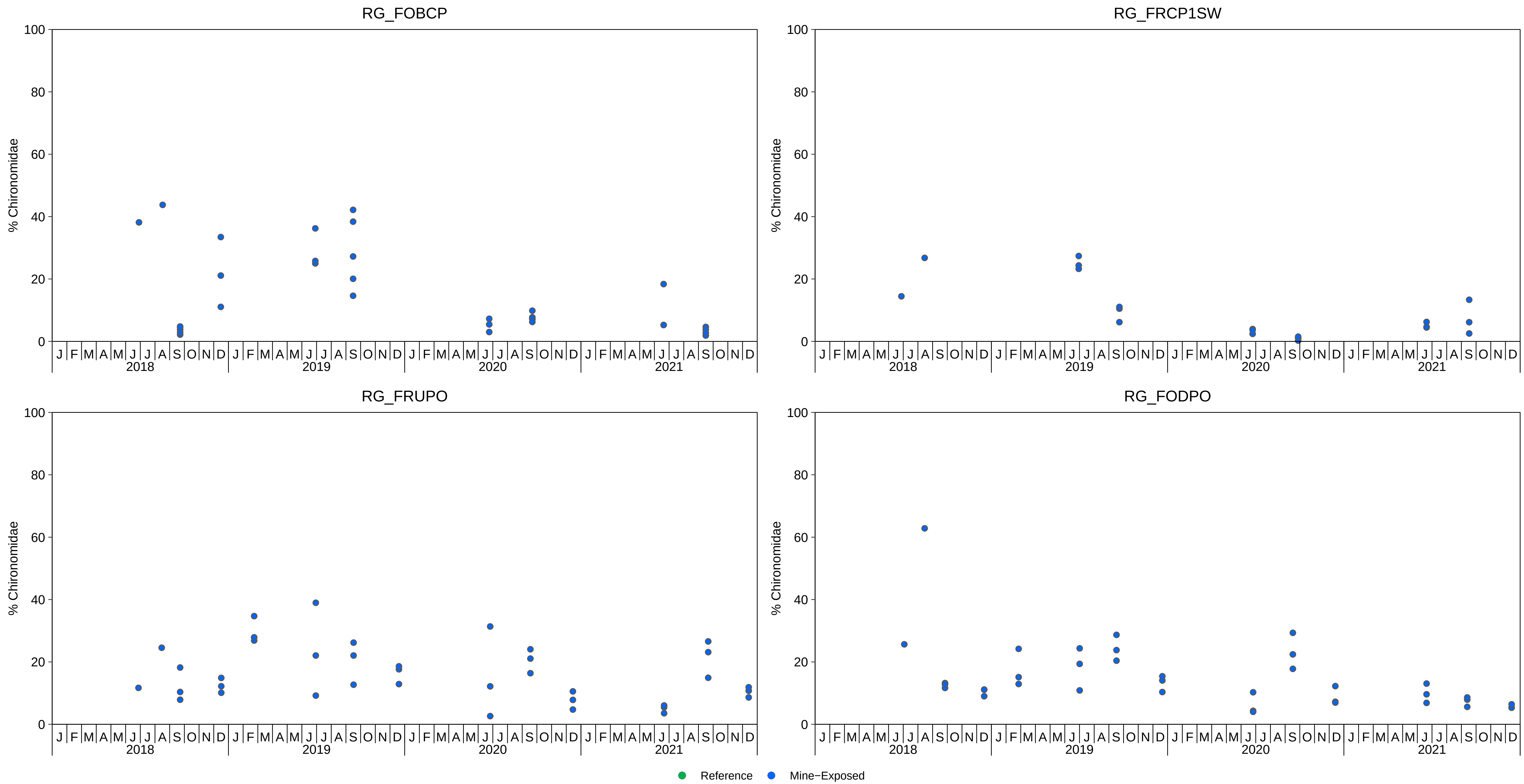


Figure E.32: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

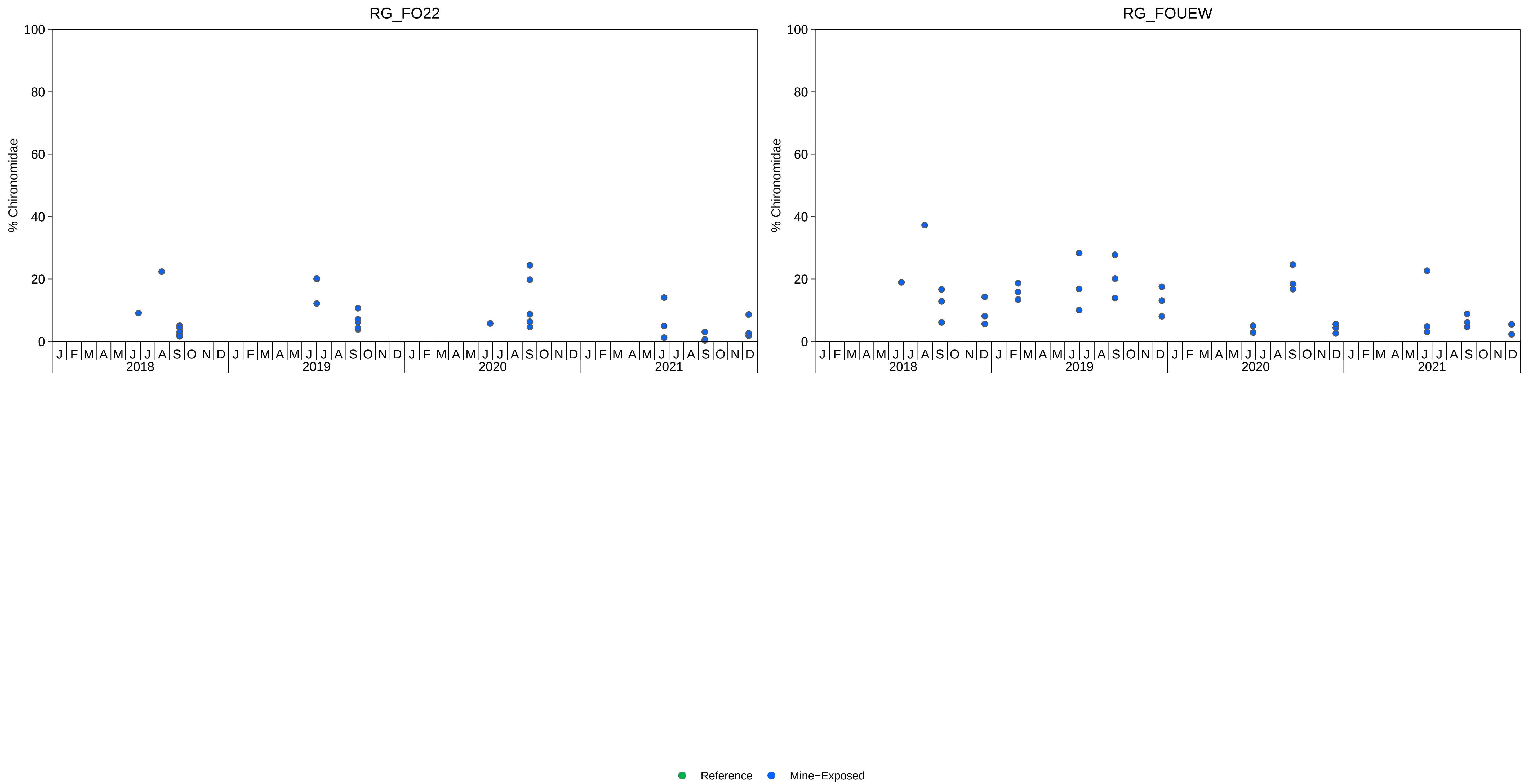


Figure E.32: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

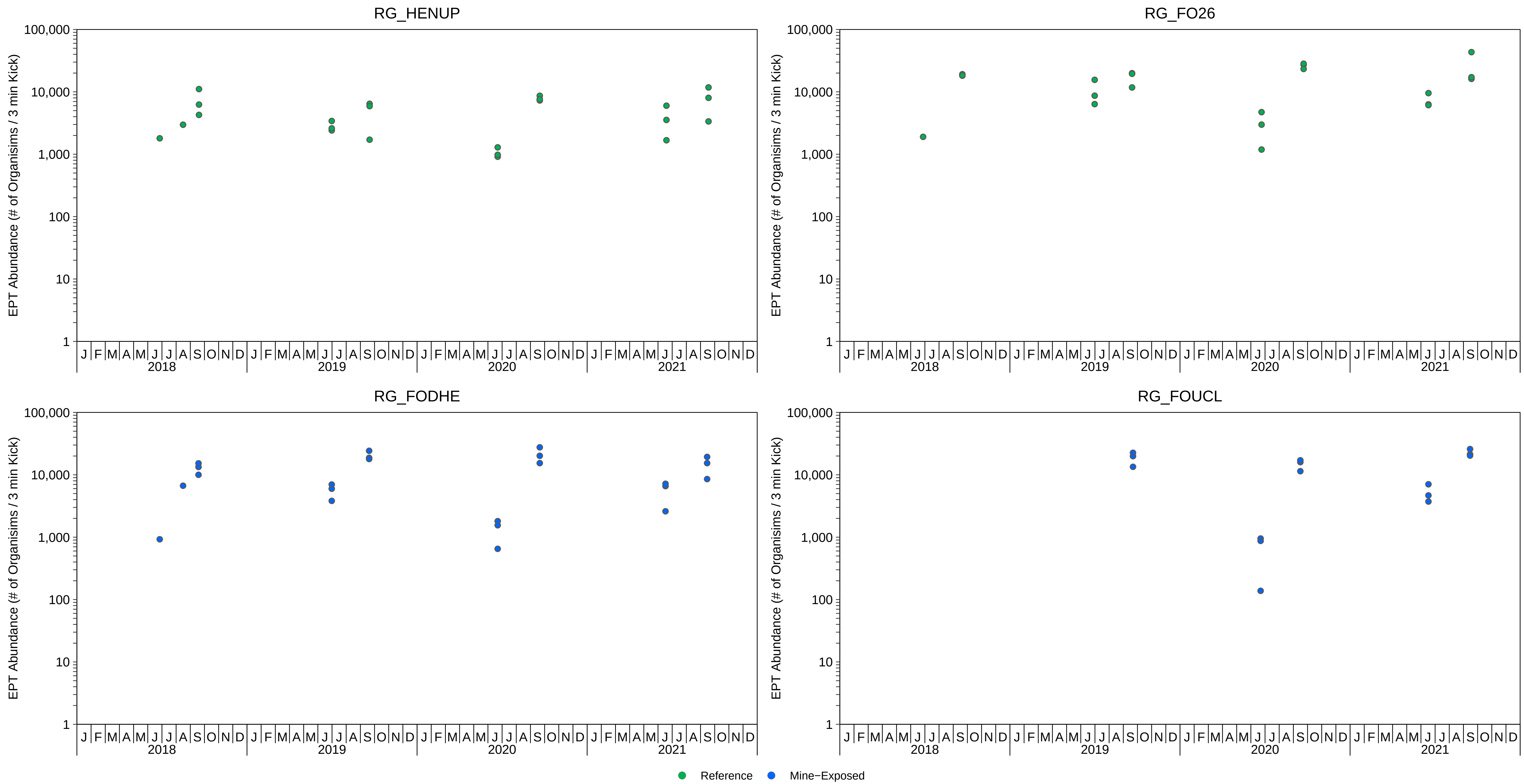


Figure E.33: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

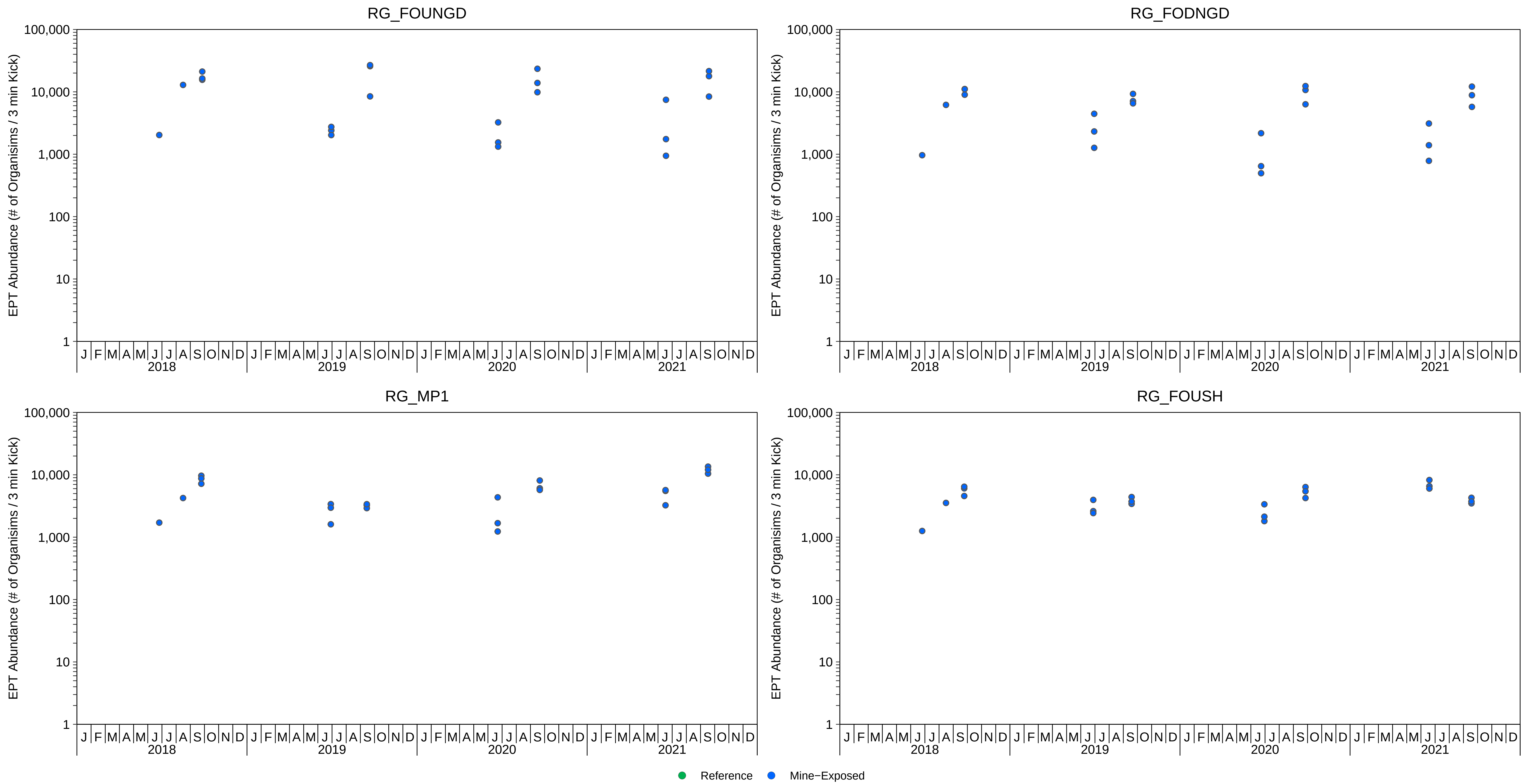


Figure E.33: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

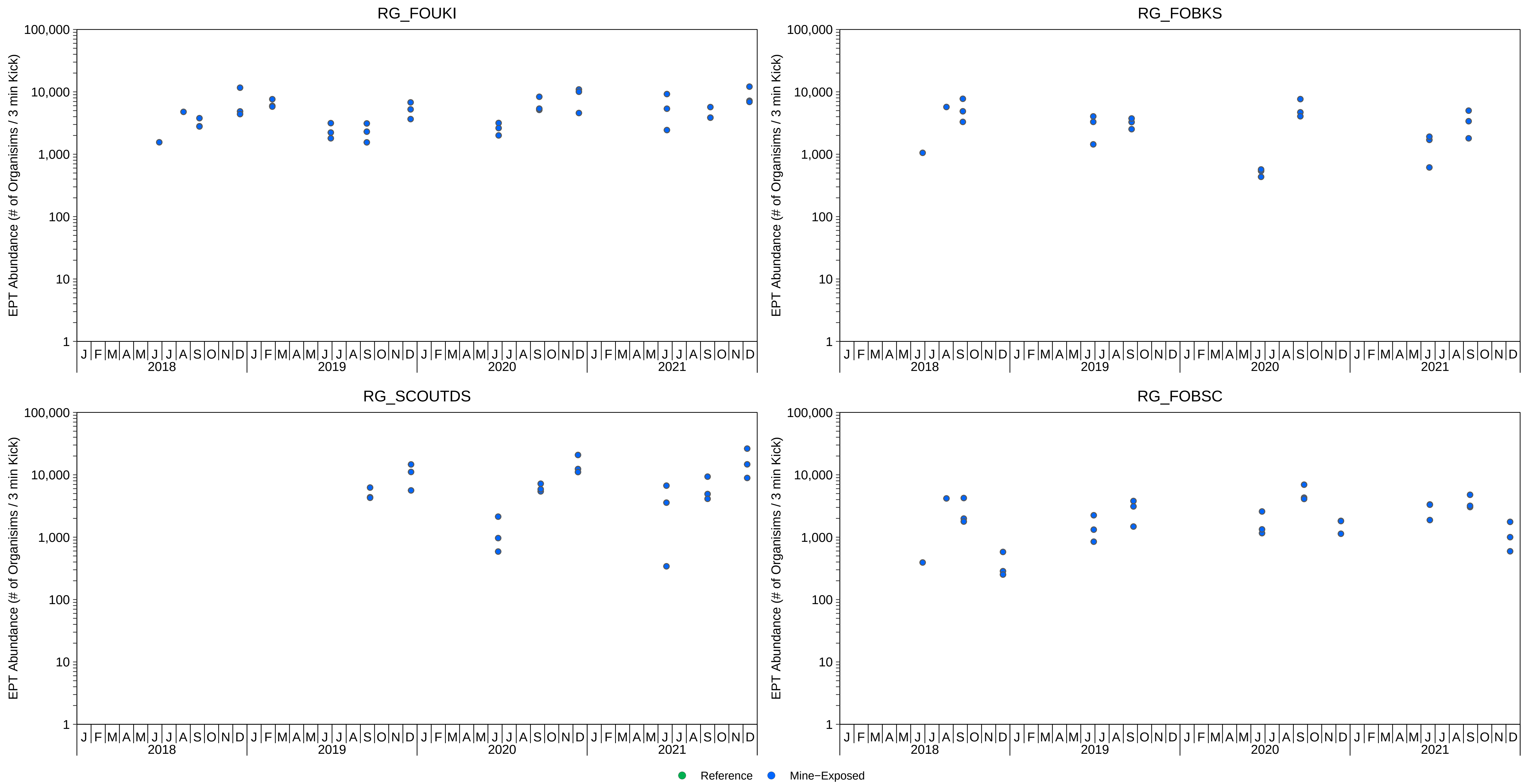


Figure E.33: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

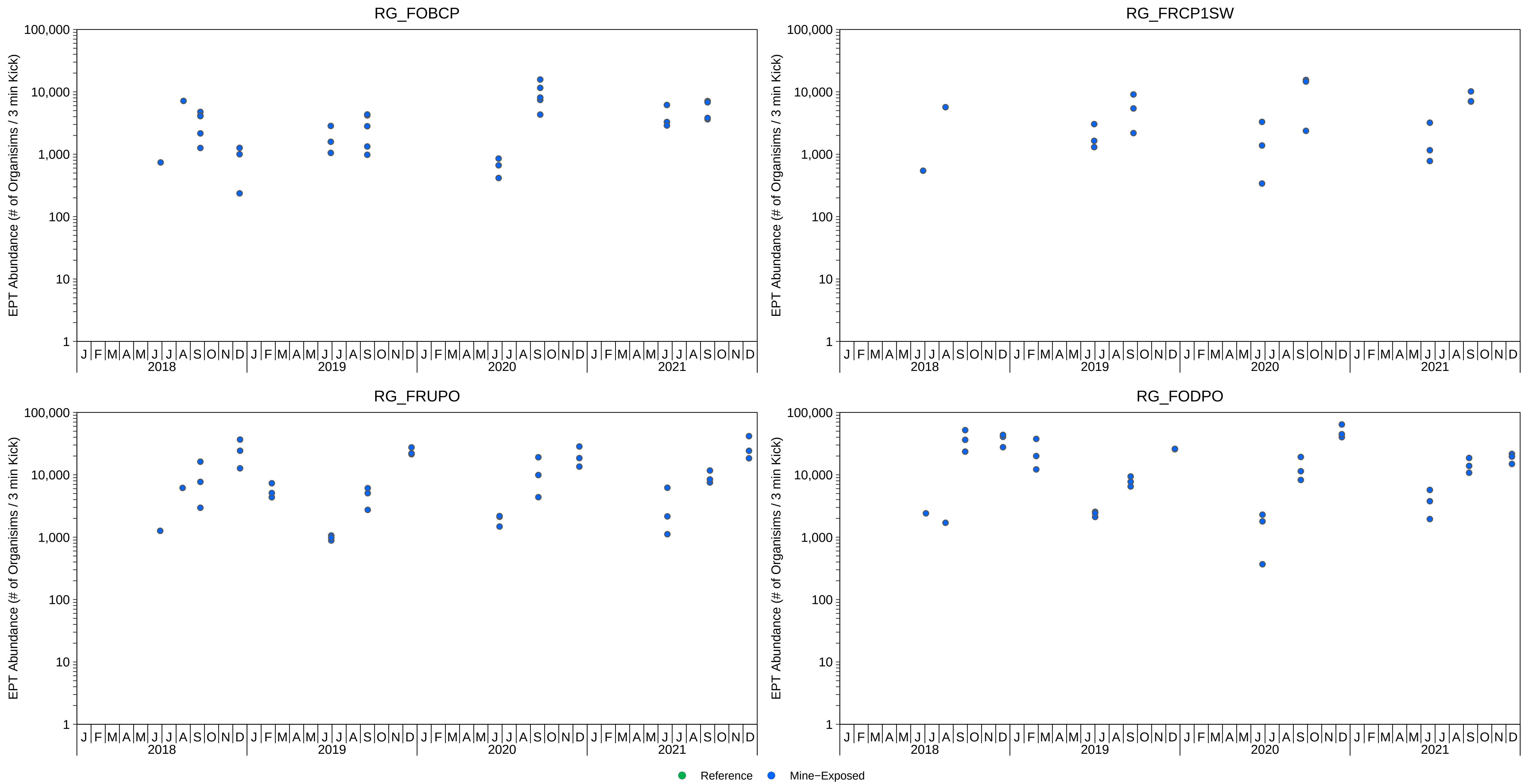


Figure E.33: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

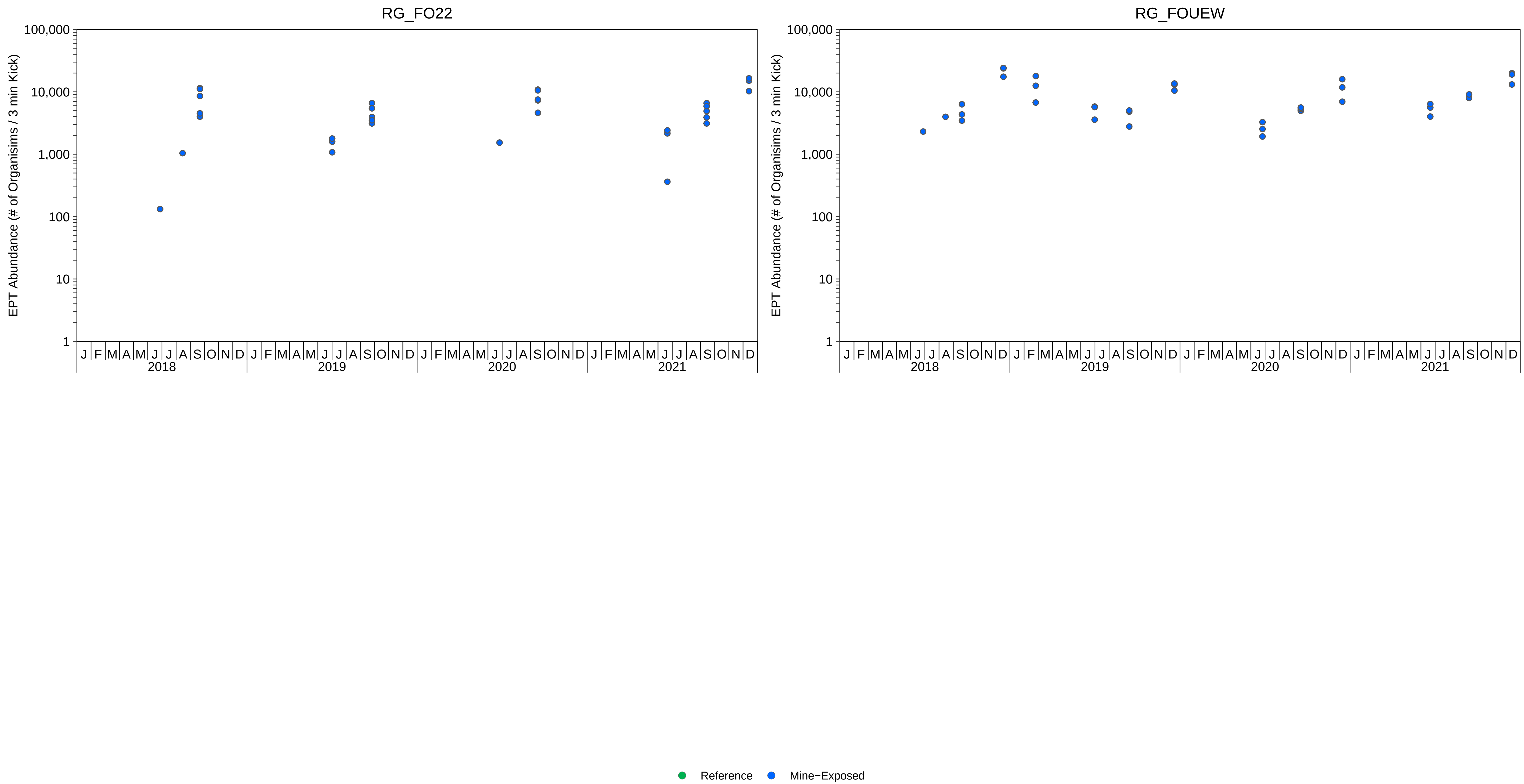


Figure E.33: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

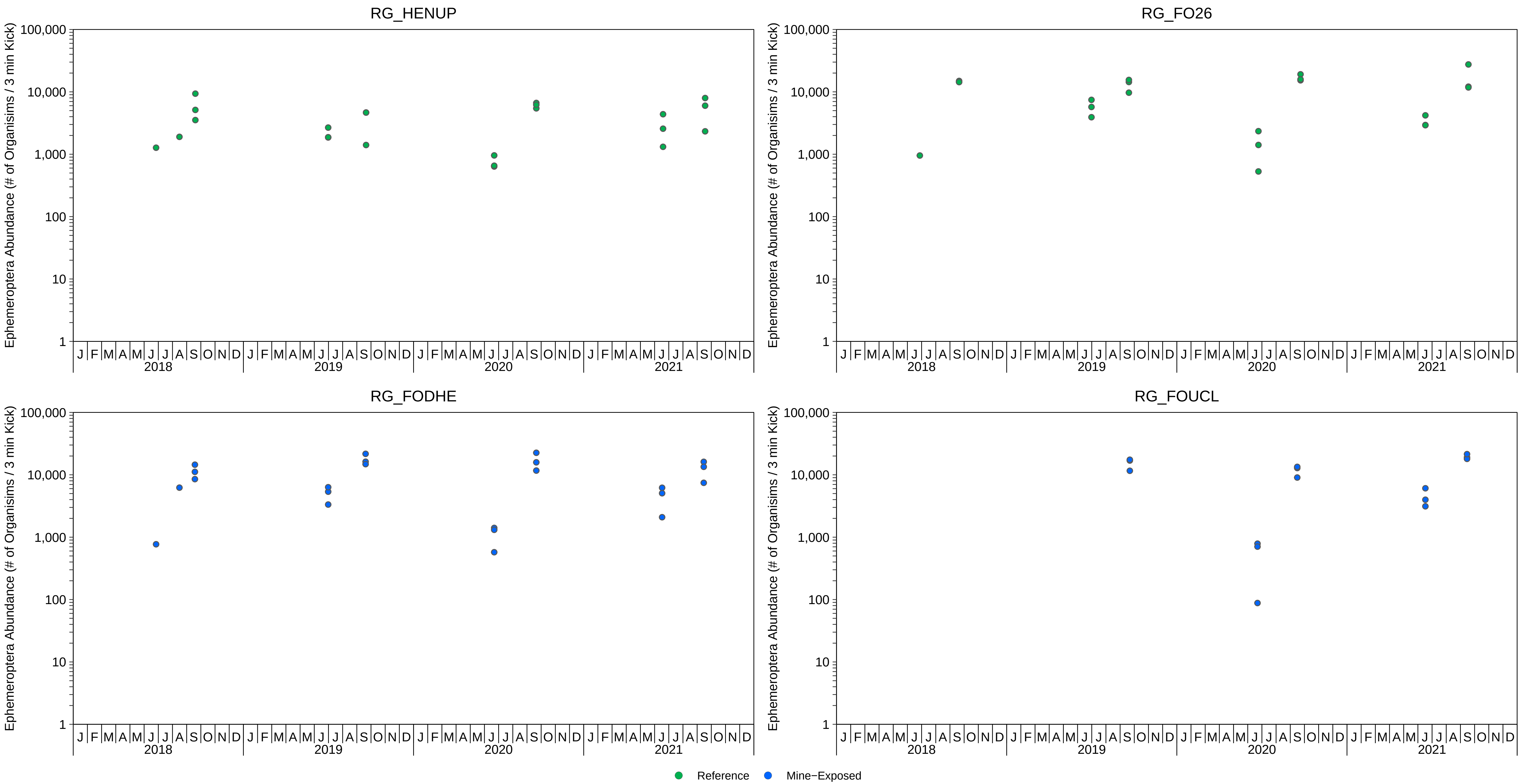


Figure E.34: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

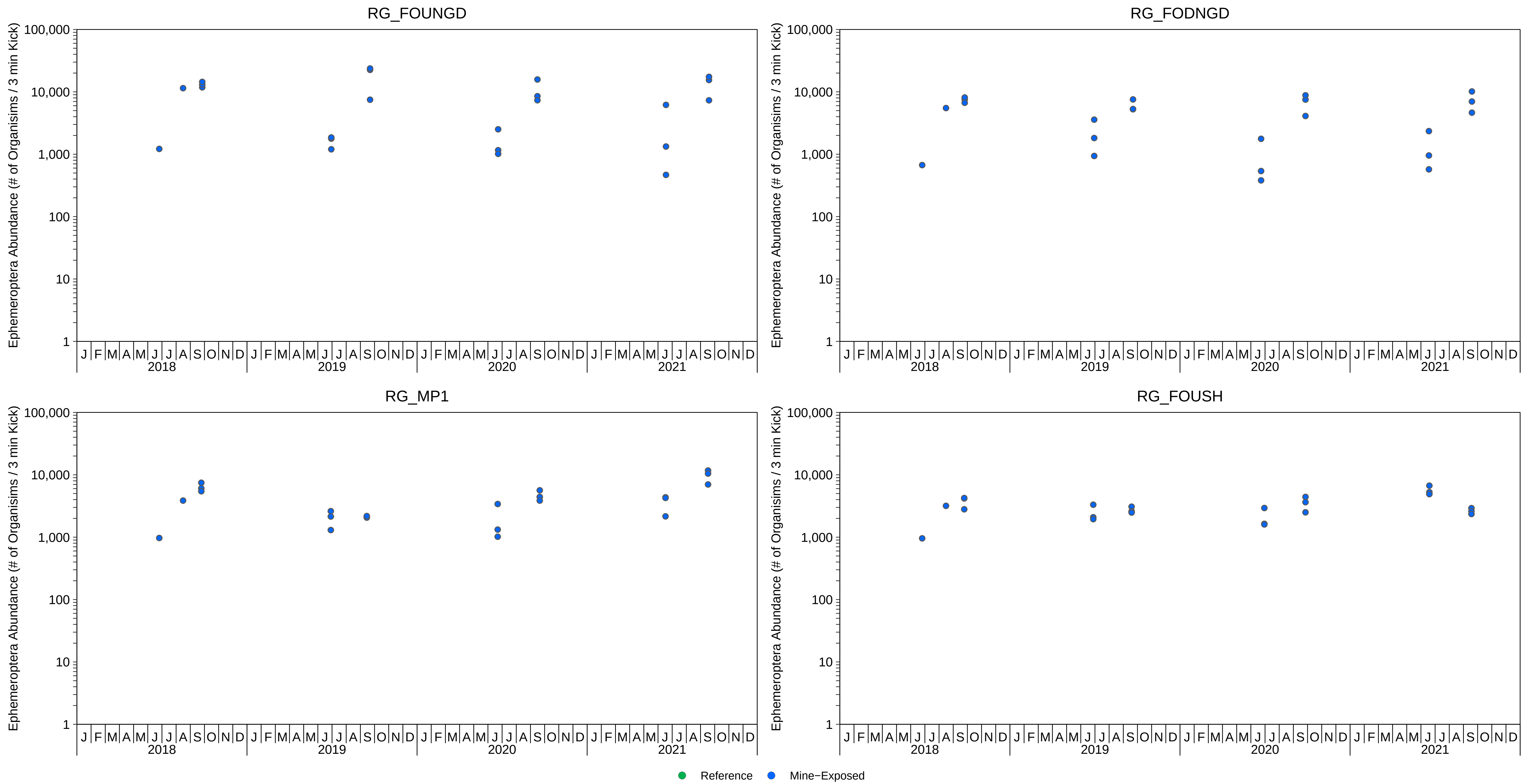


Figure E.34: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

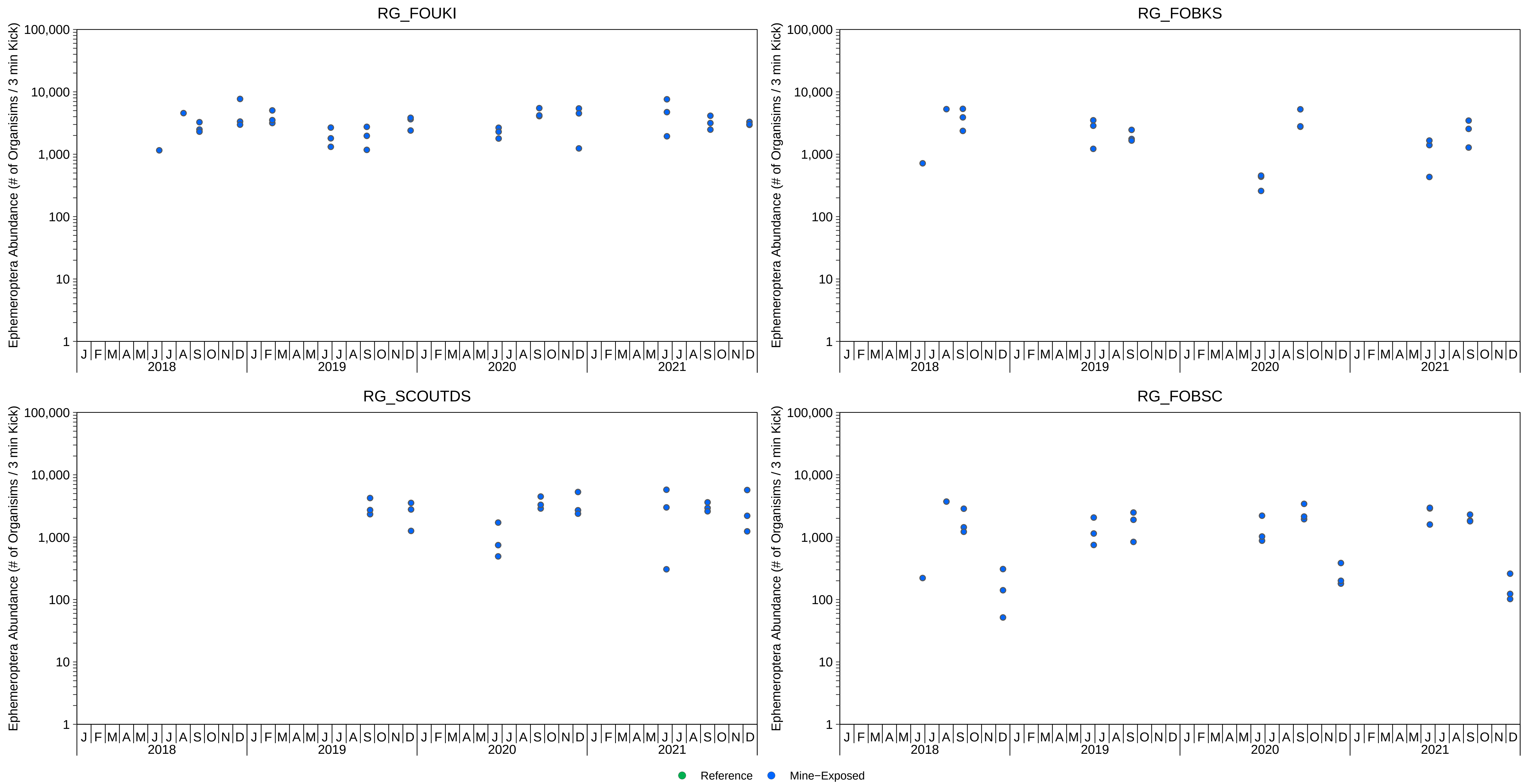


Figure E.34: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

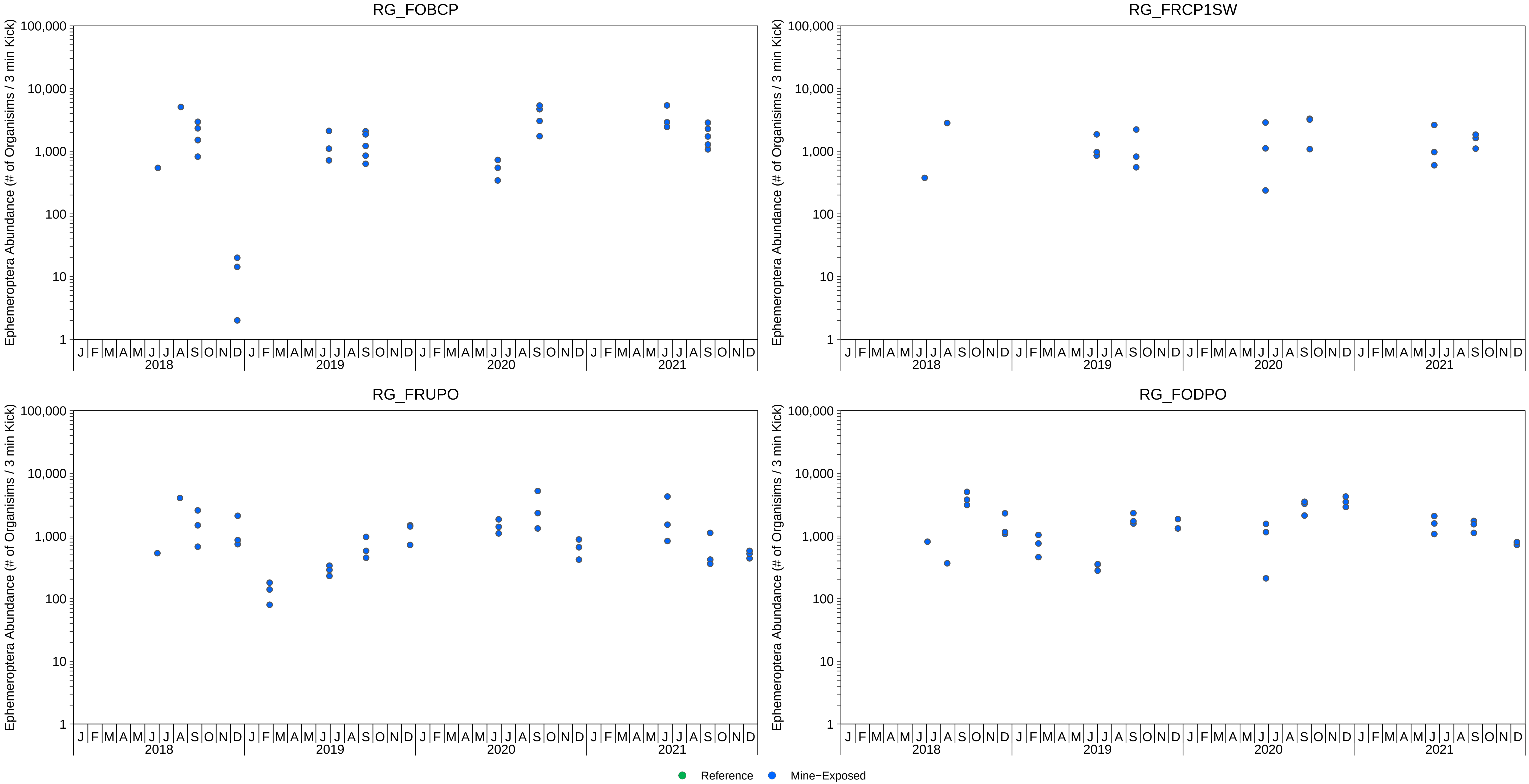
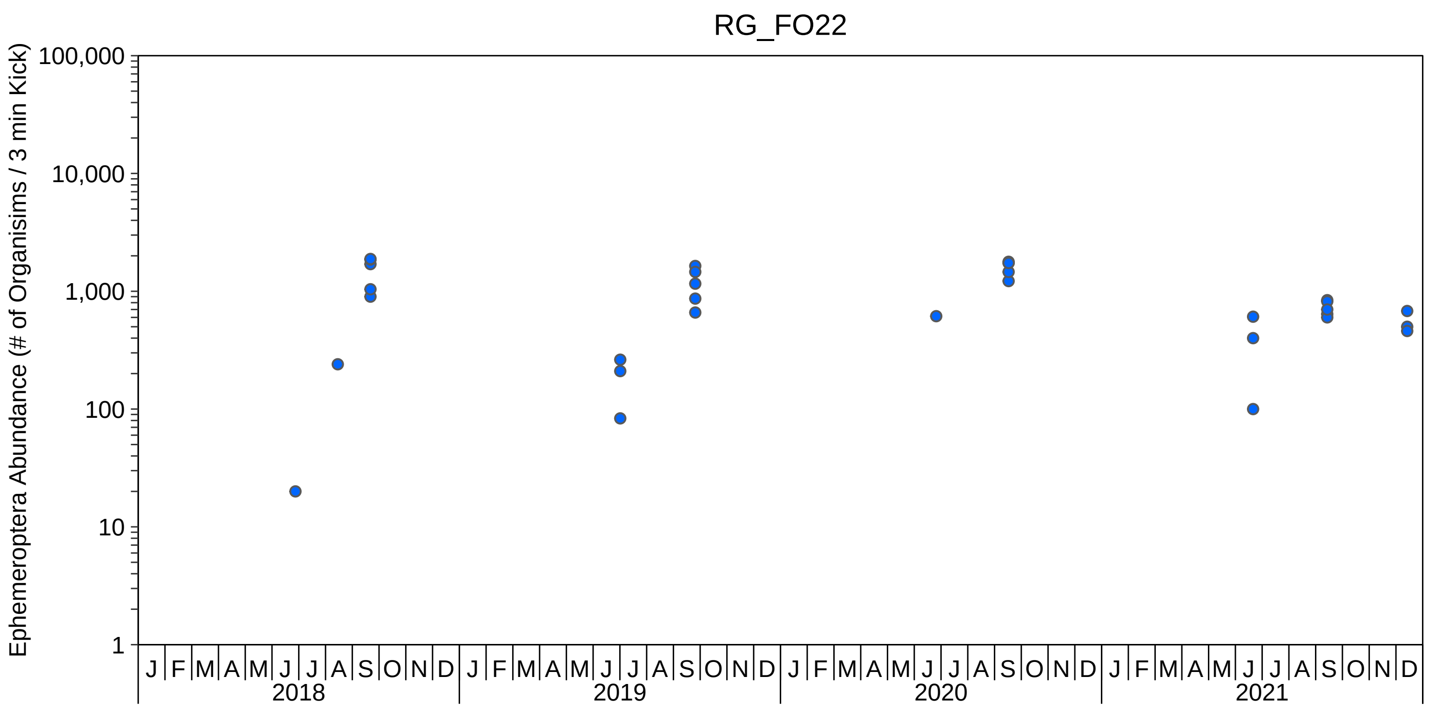
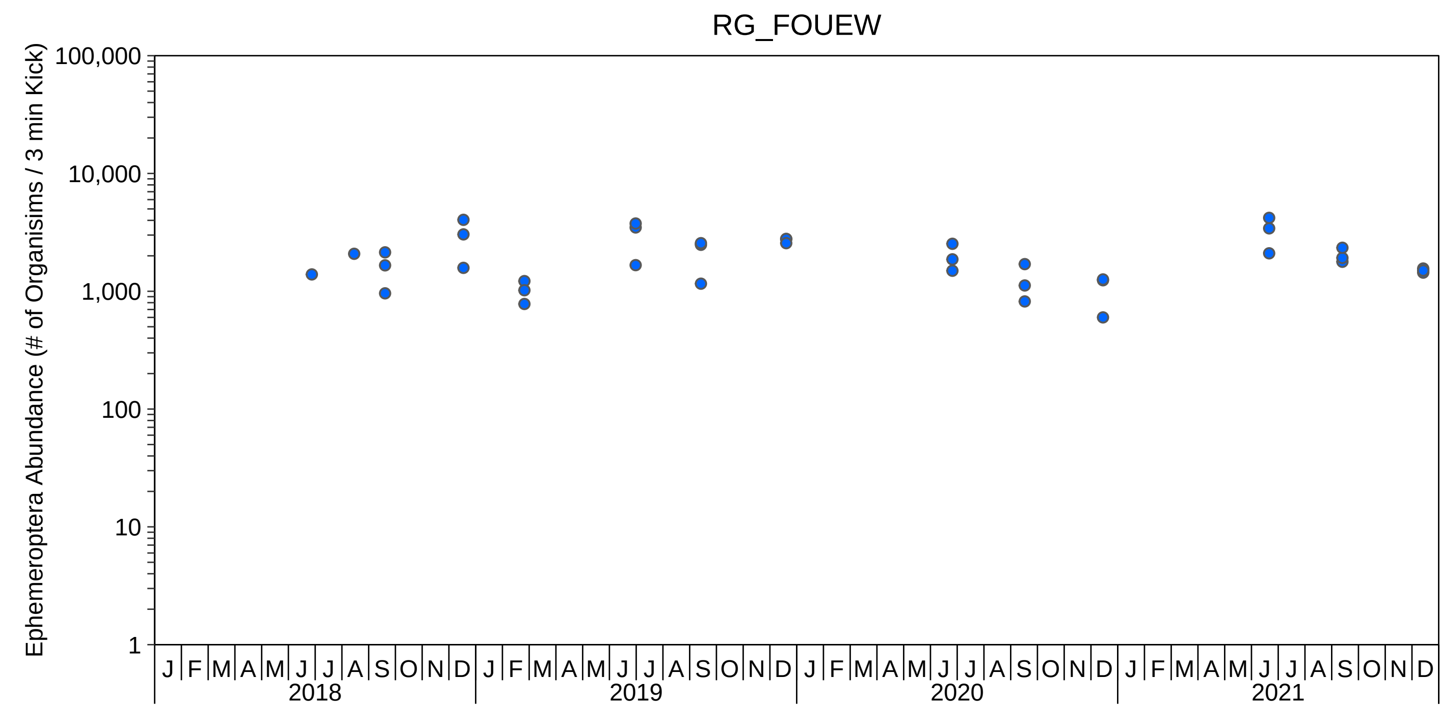


Figure E.34: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**





Reference Mine−Exposed

Figure E.34: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

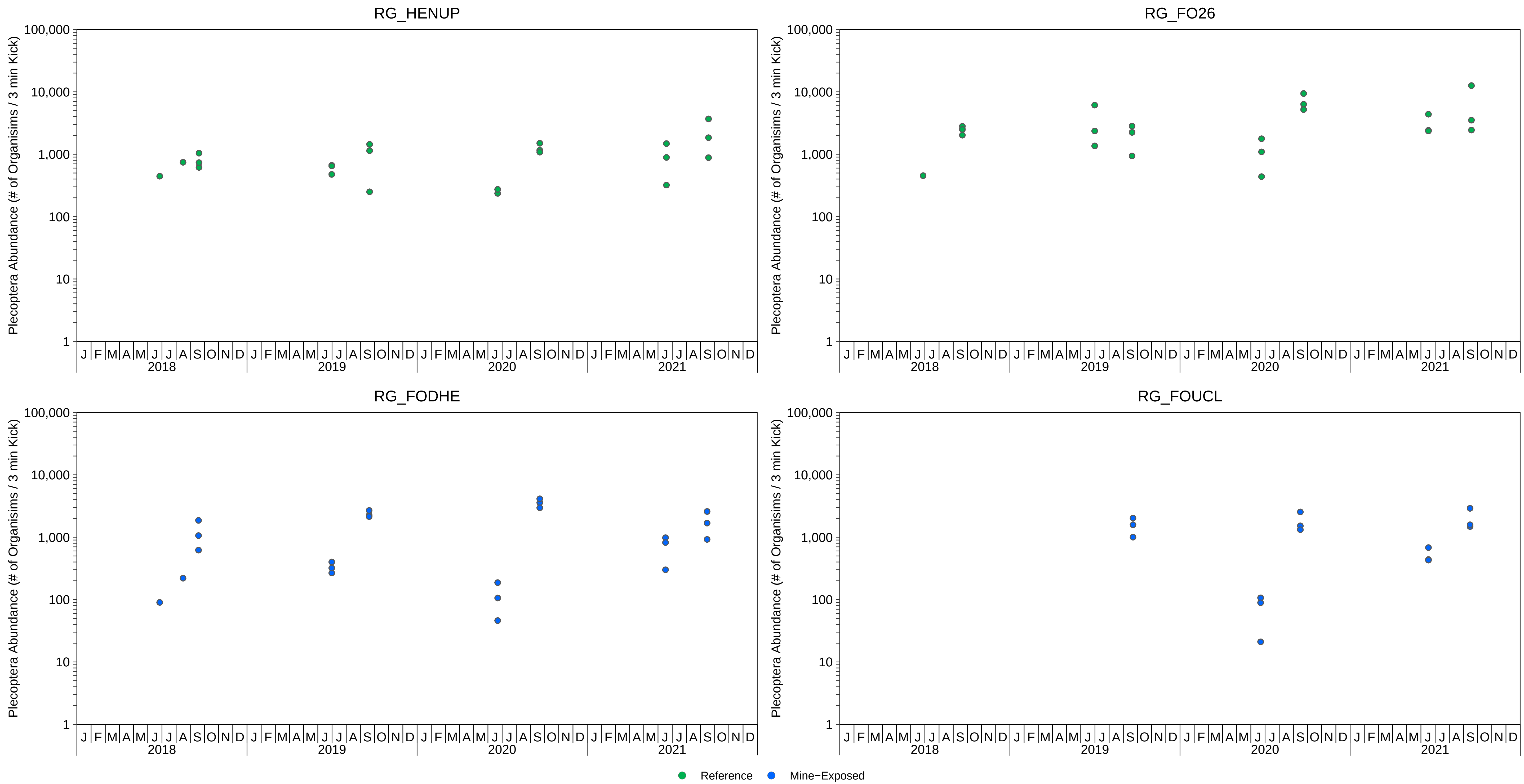


Figure E.35: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

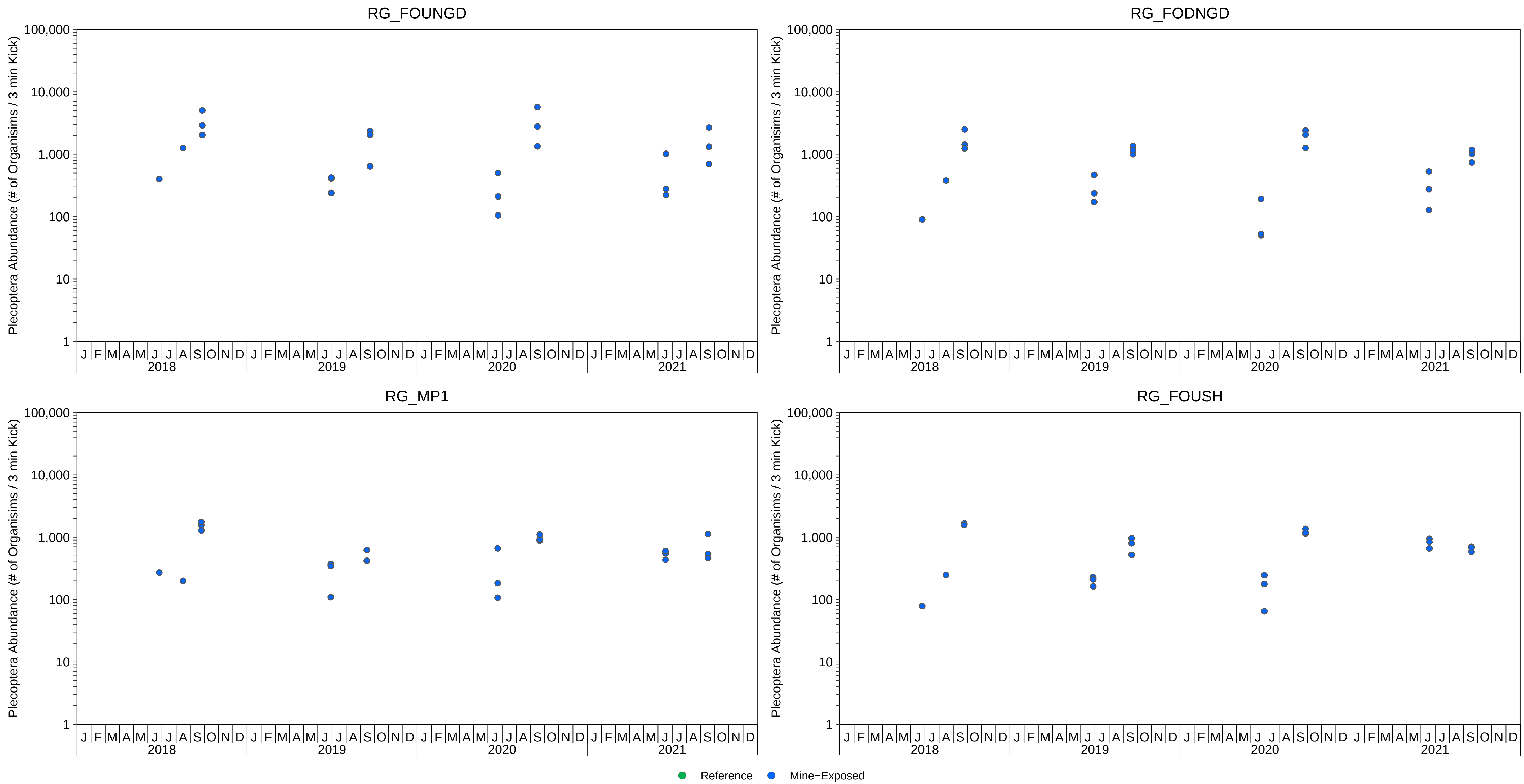


Figure E.35: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

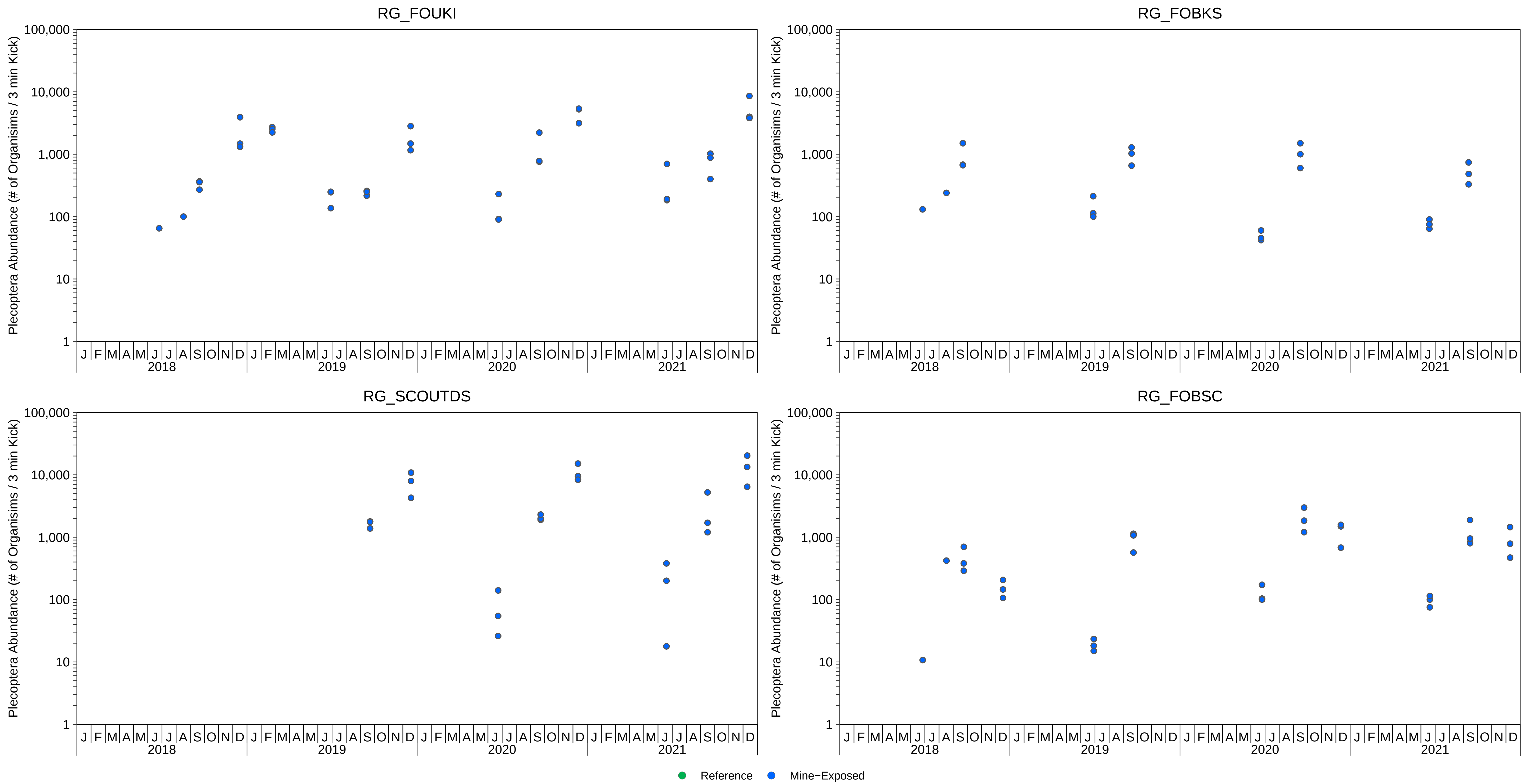


Figure E.35: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

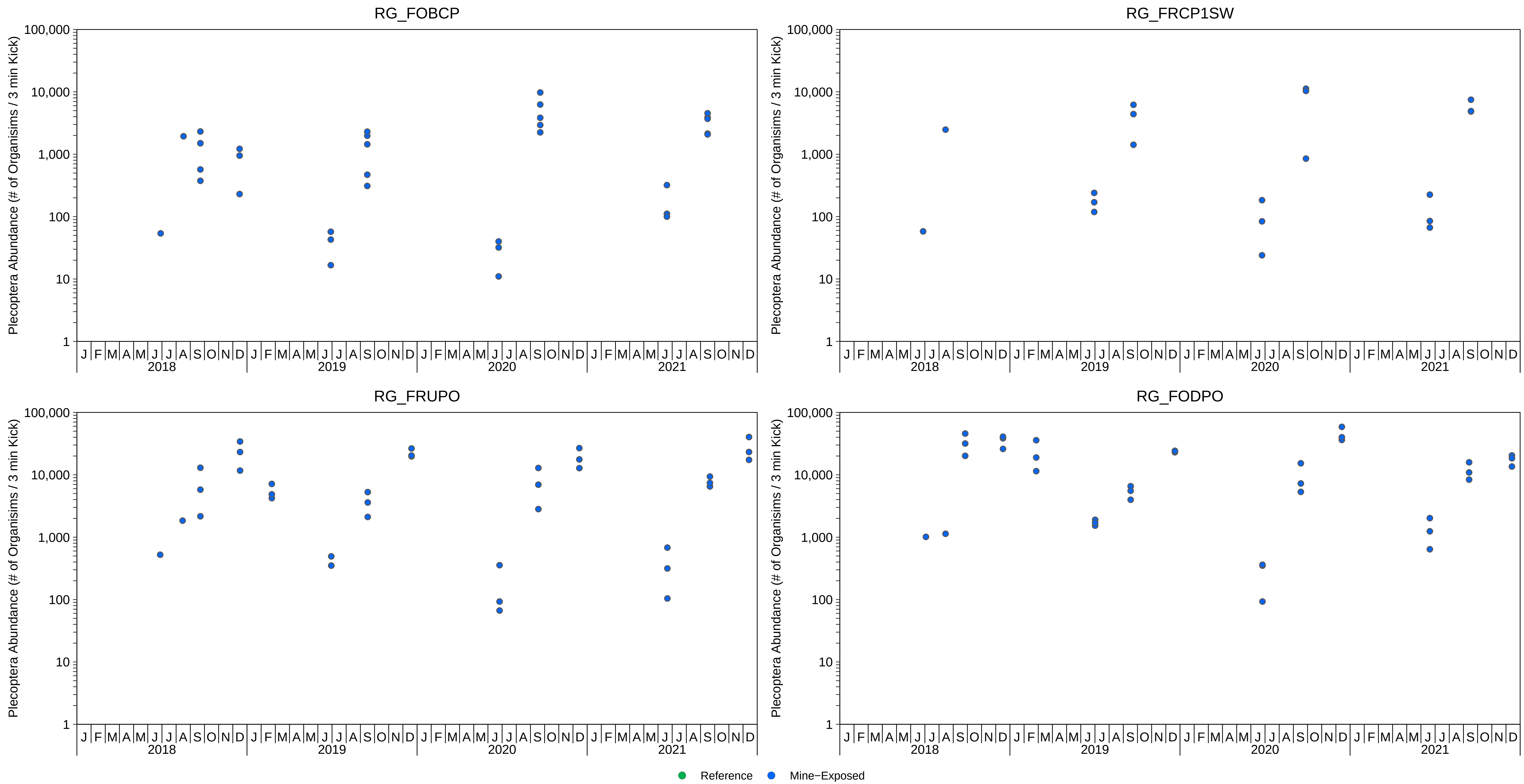


Figure E.35: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

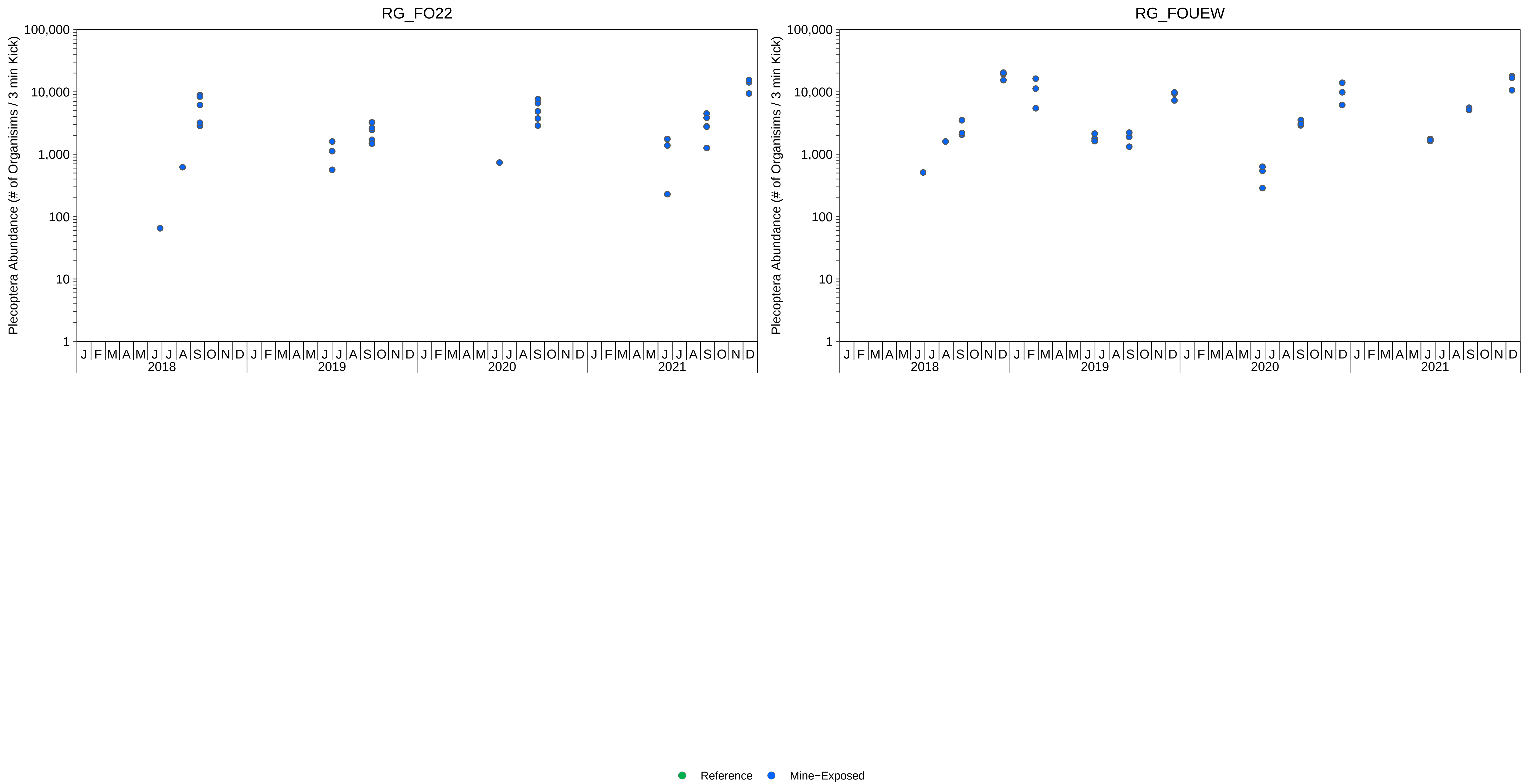


Figure E.35: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

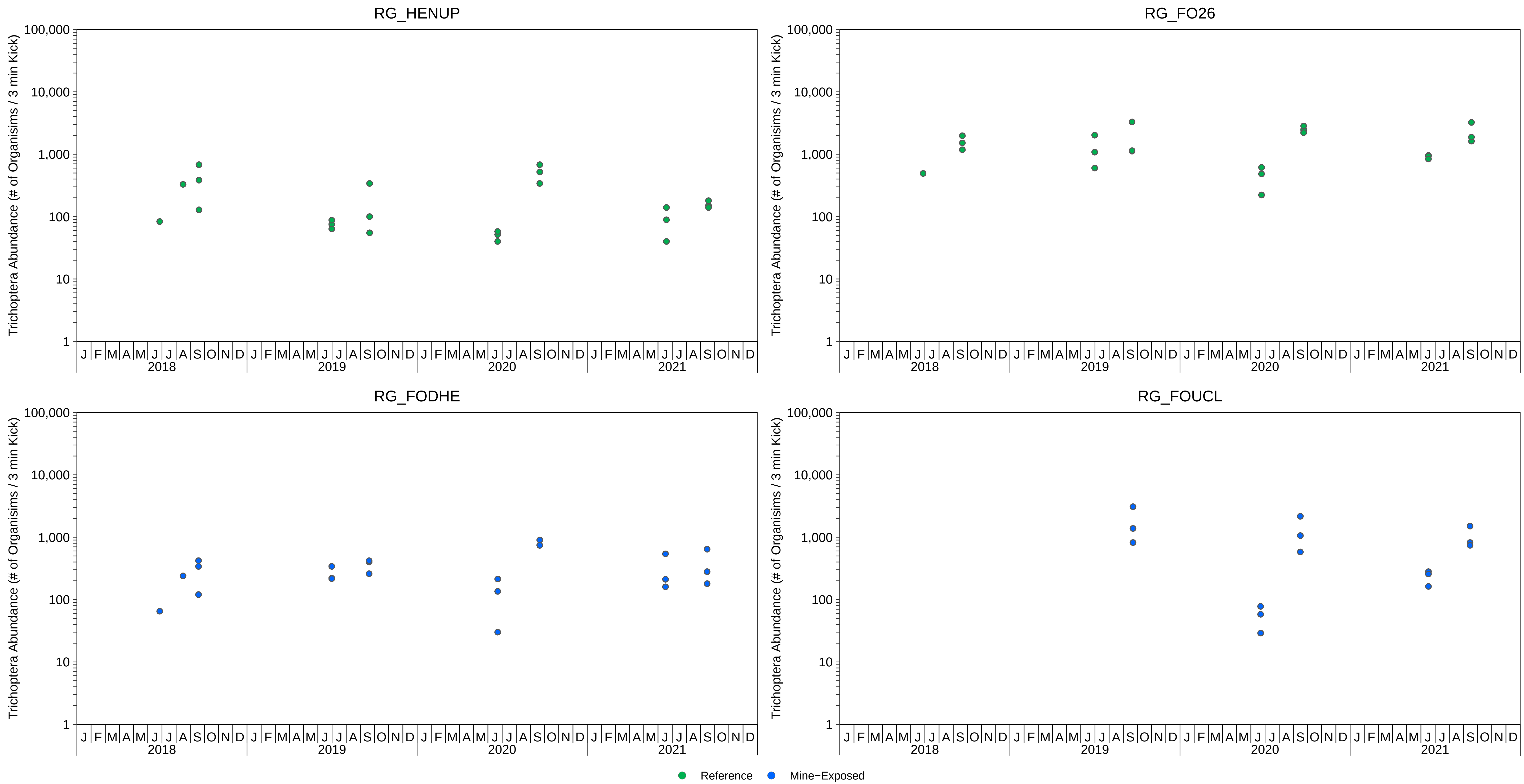


Figure E.36: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

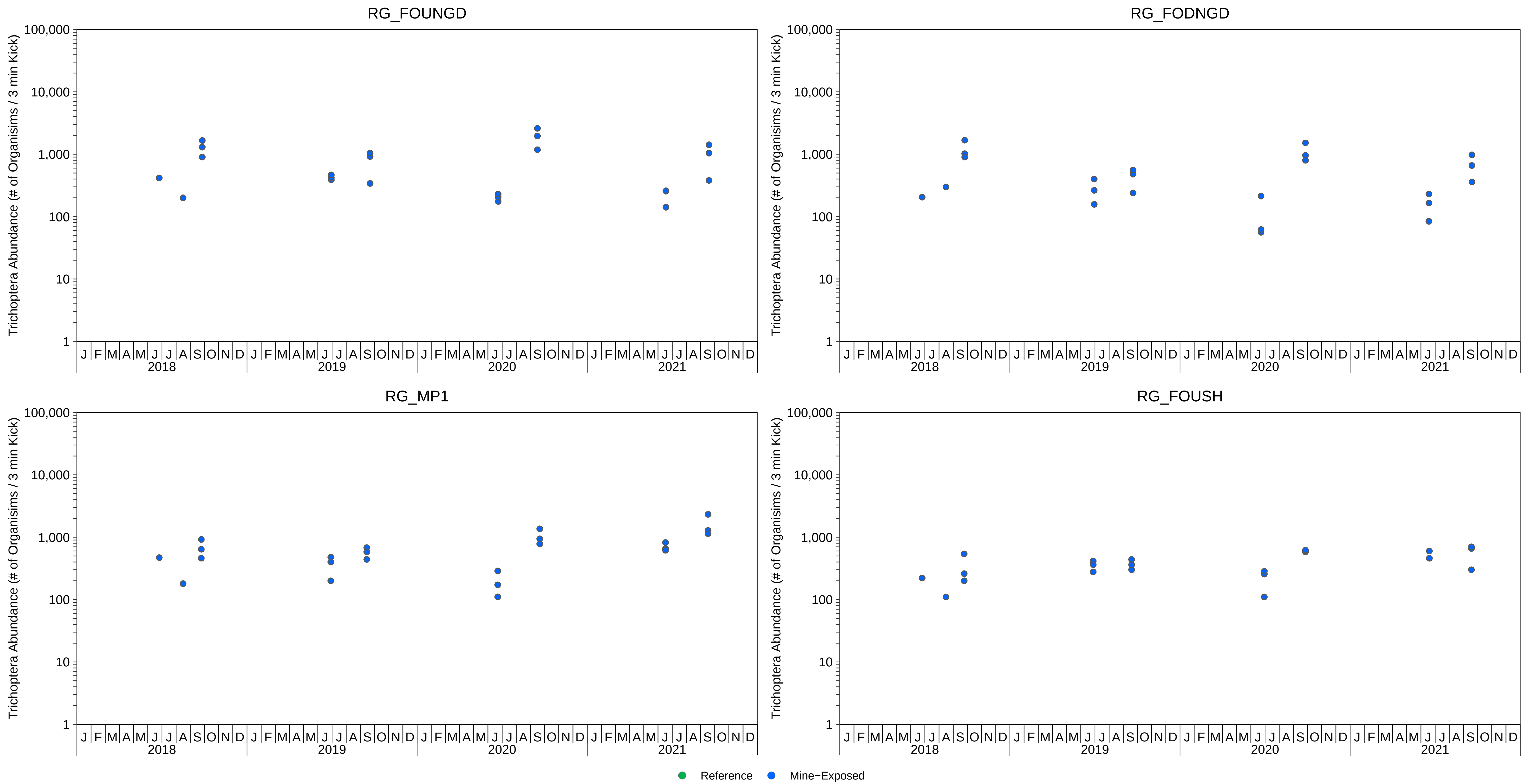


Figure E.36: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

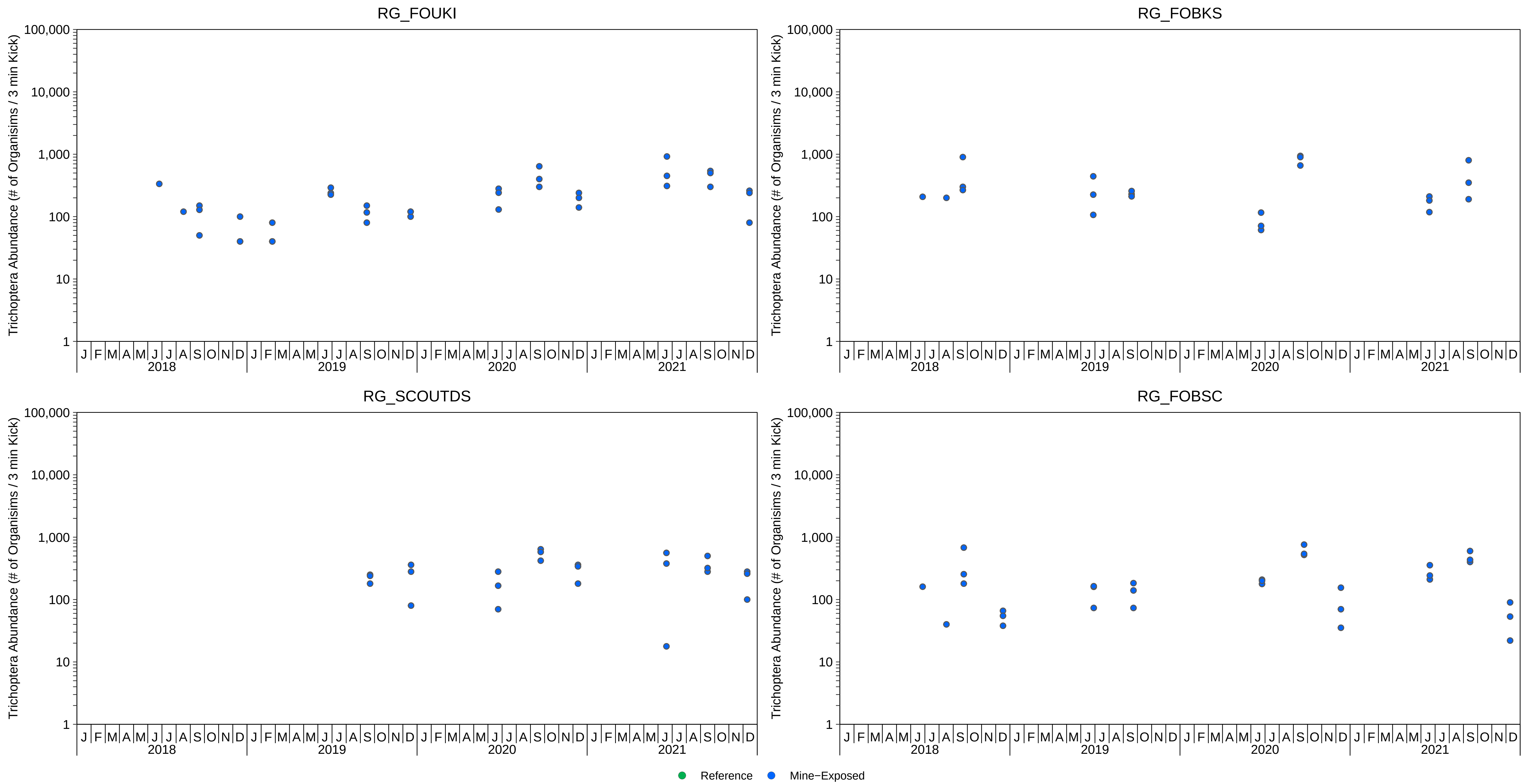


Figure E.36: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

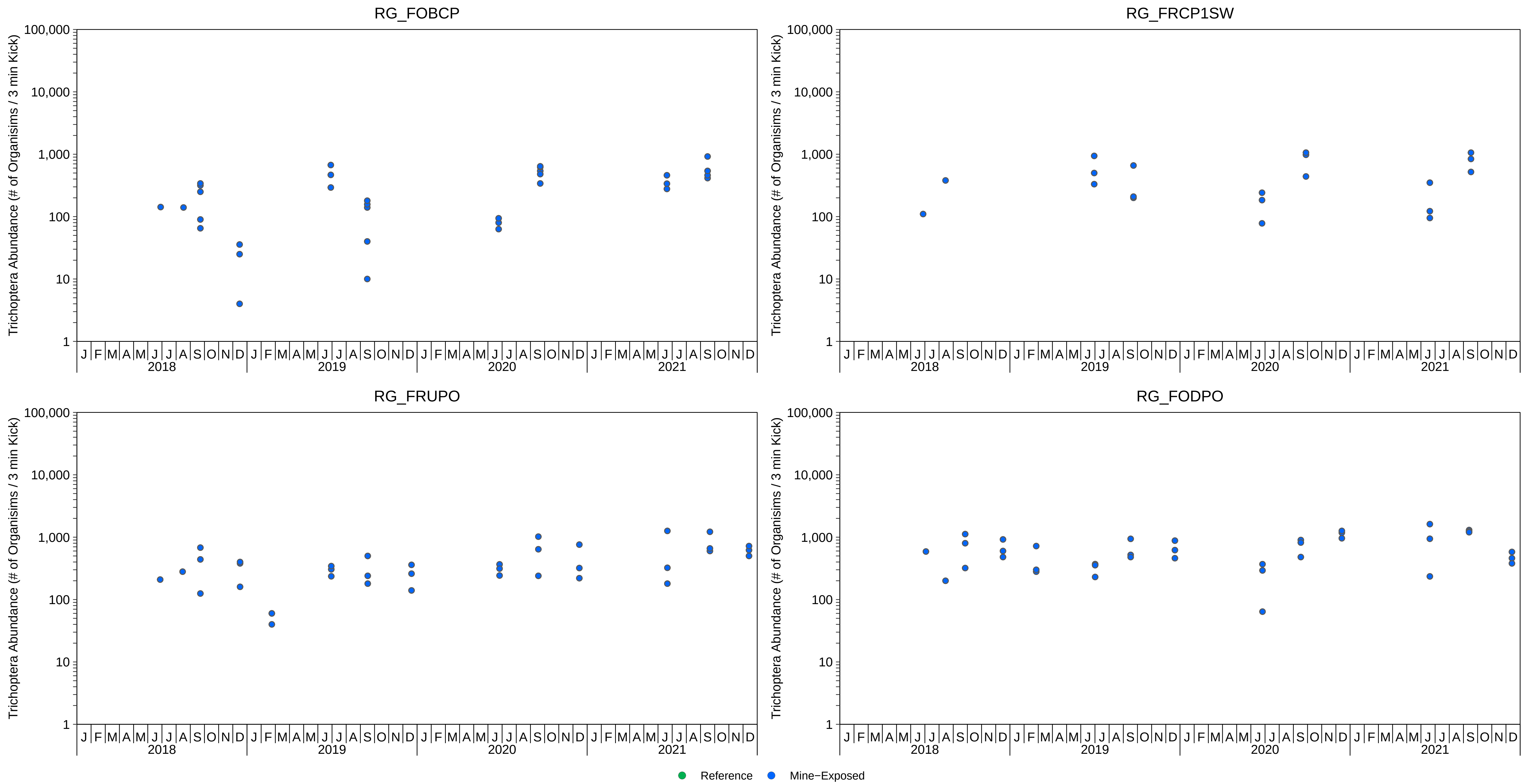


Figure E.36: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

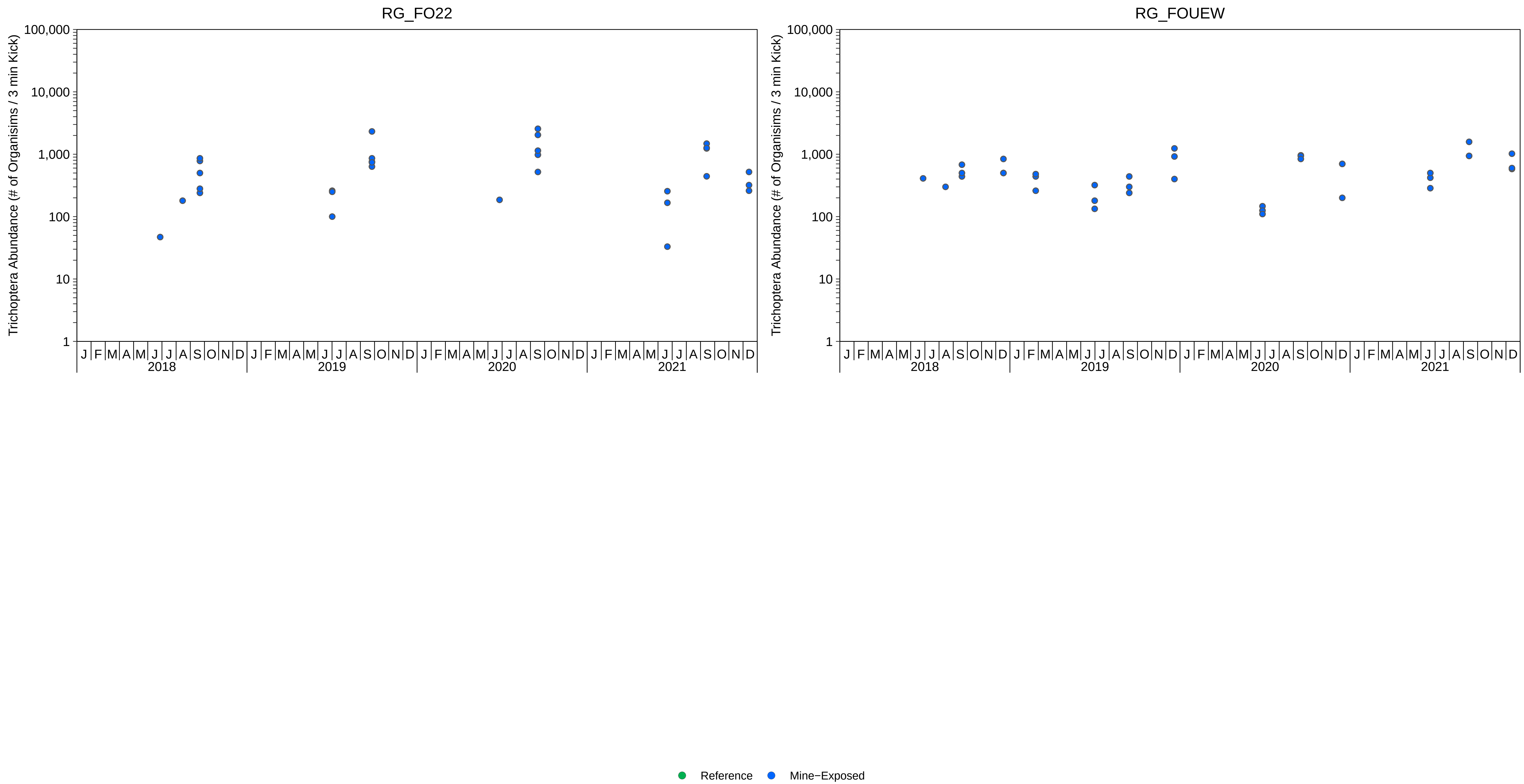


Figure E.36: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

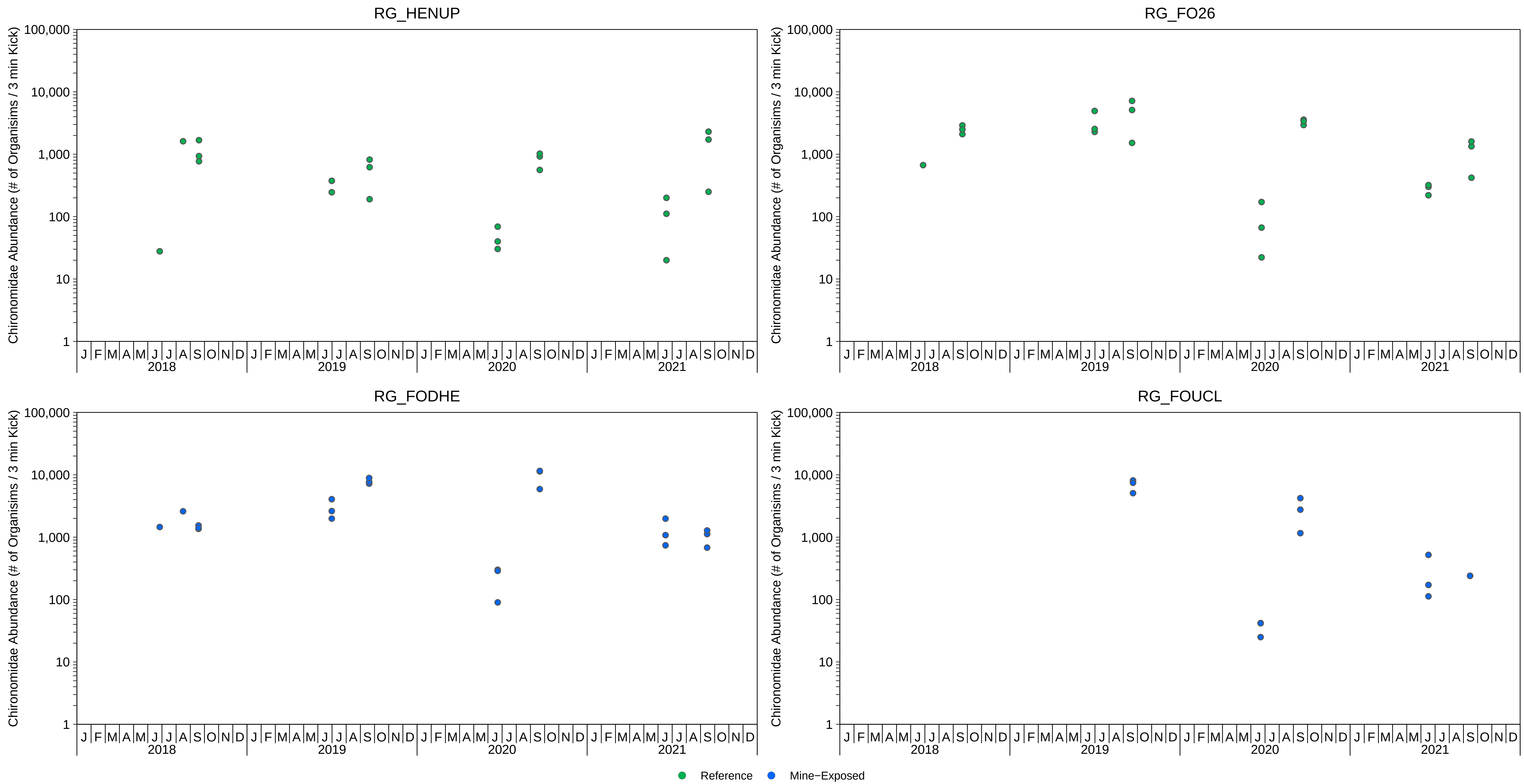


Figure E.37: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

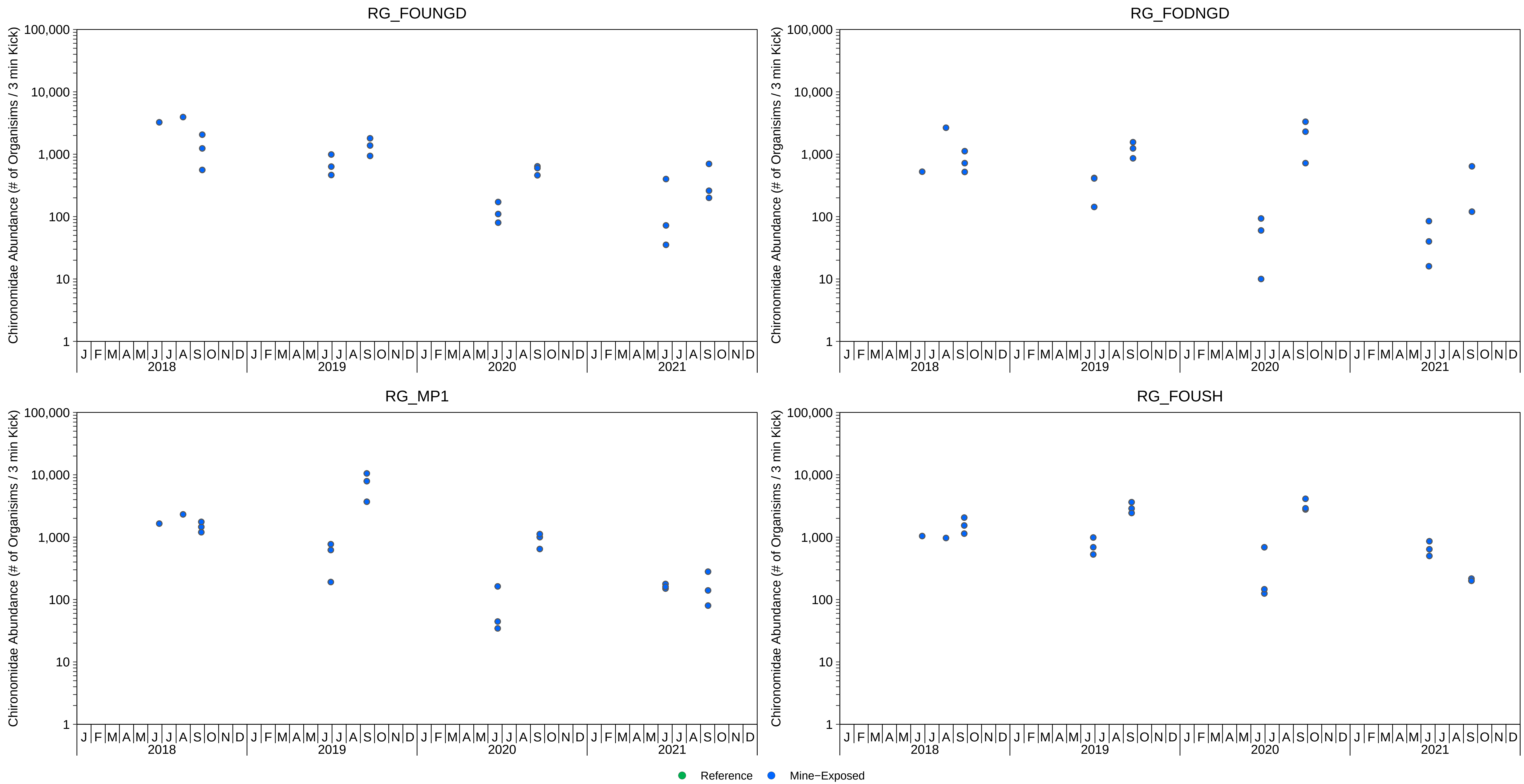
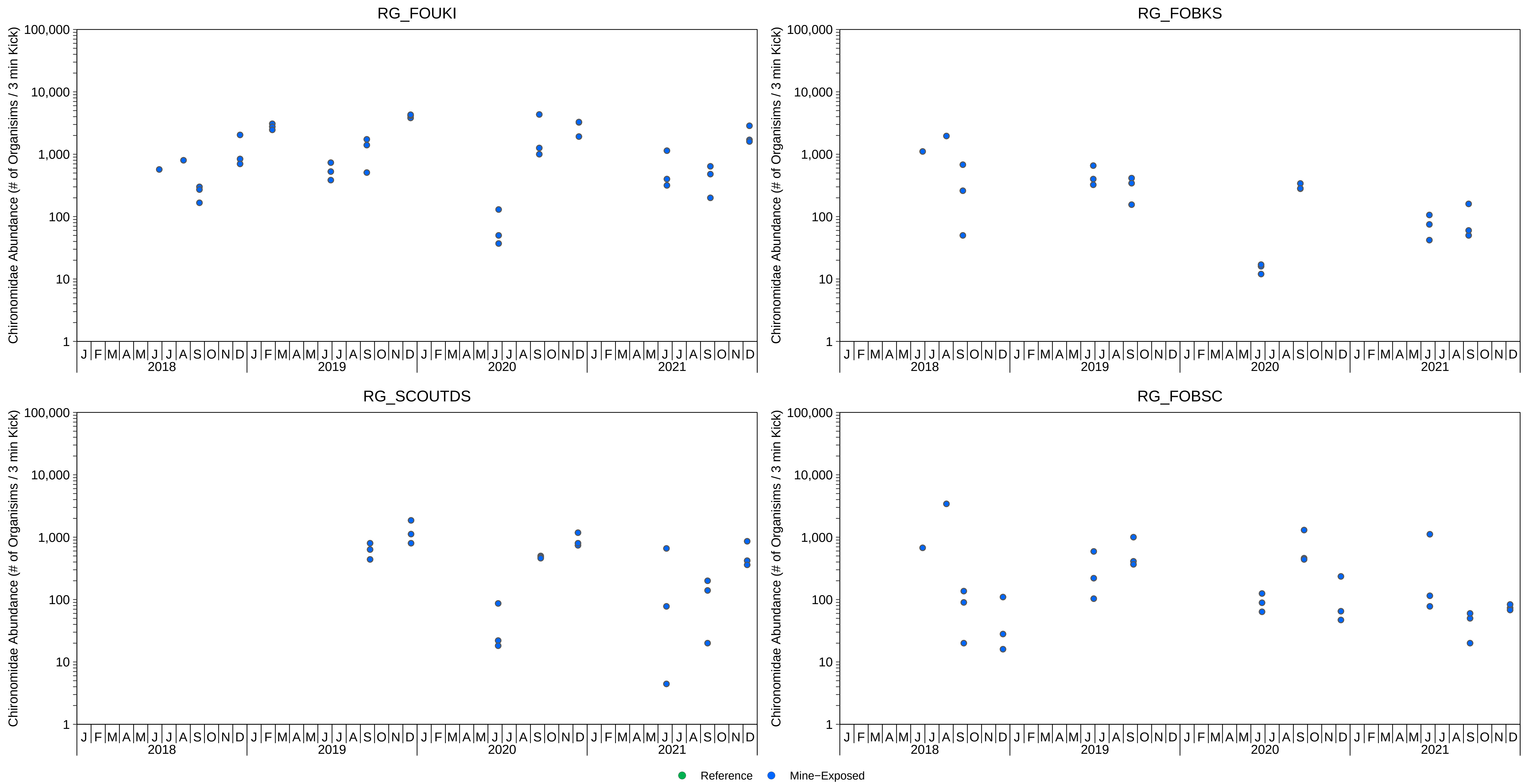


Figure E.37: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021



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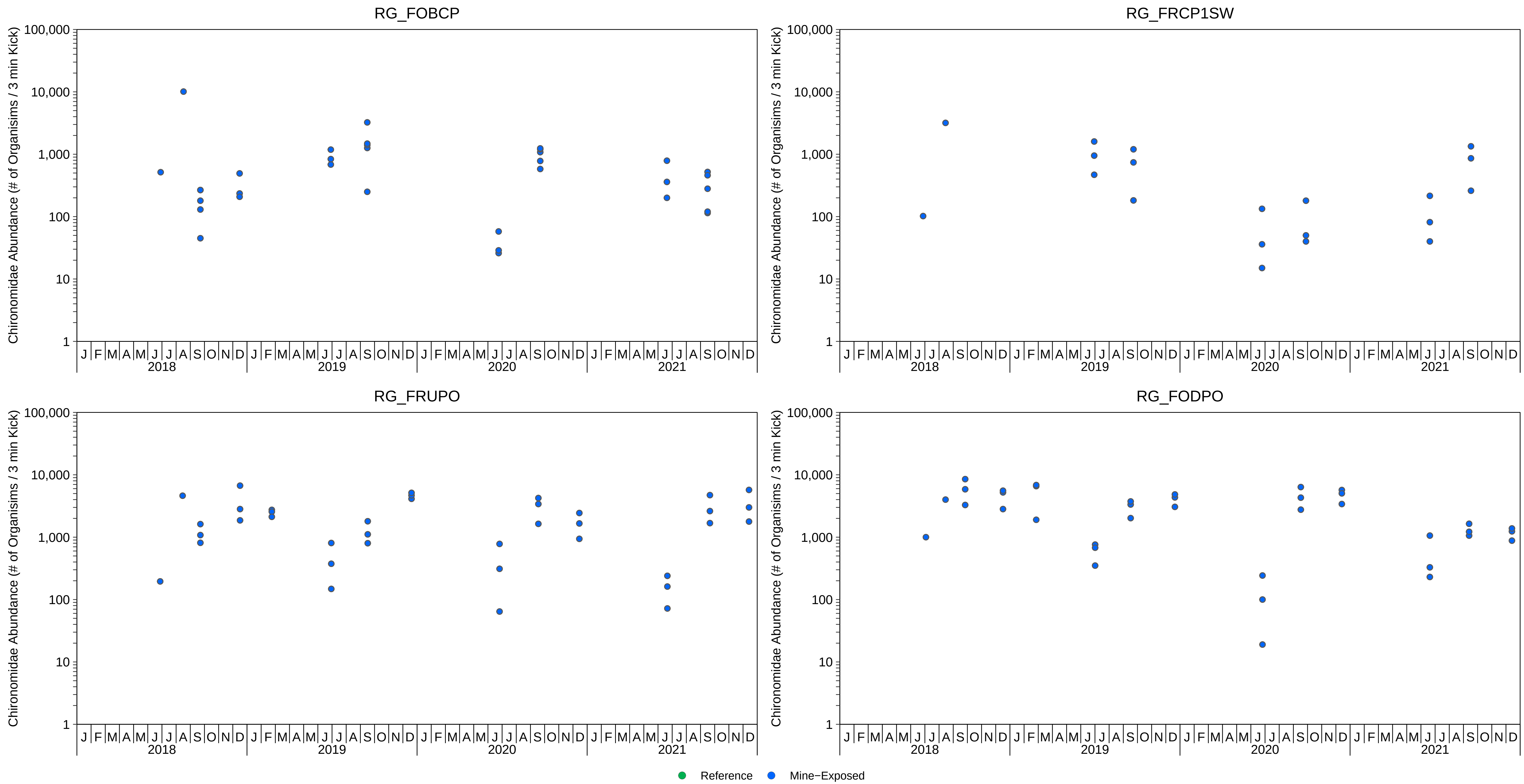

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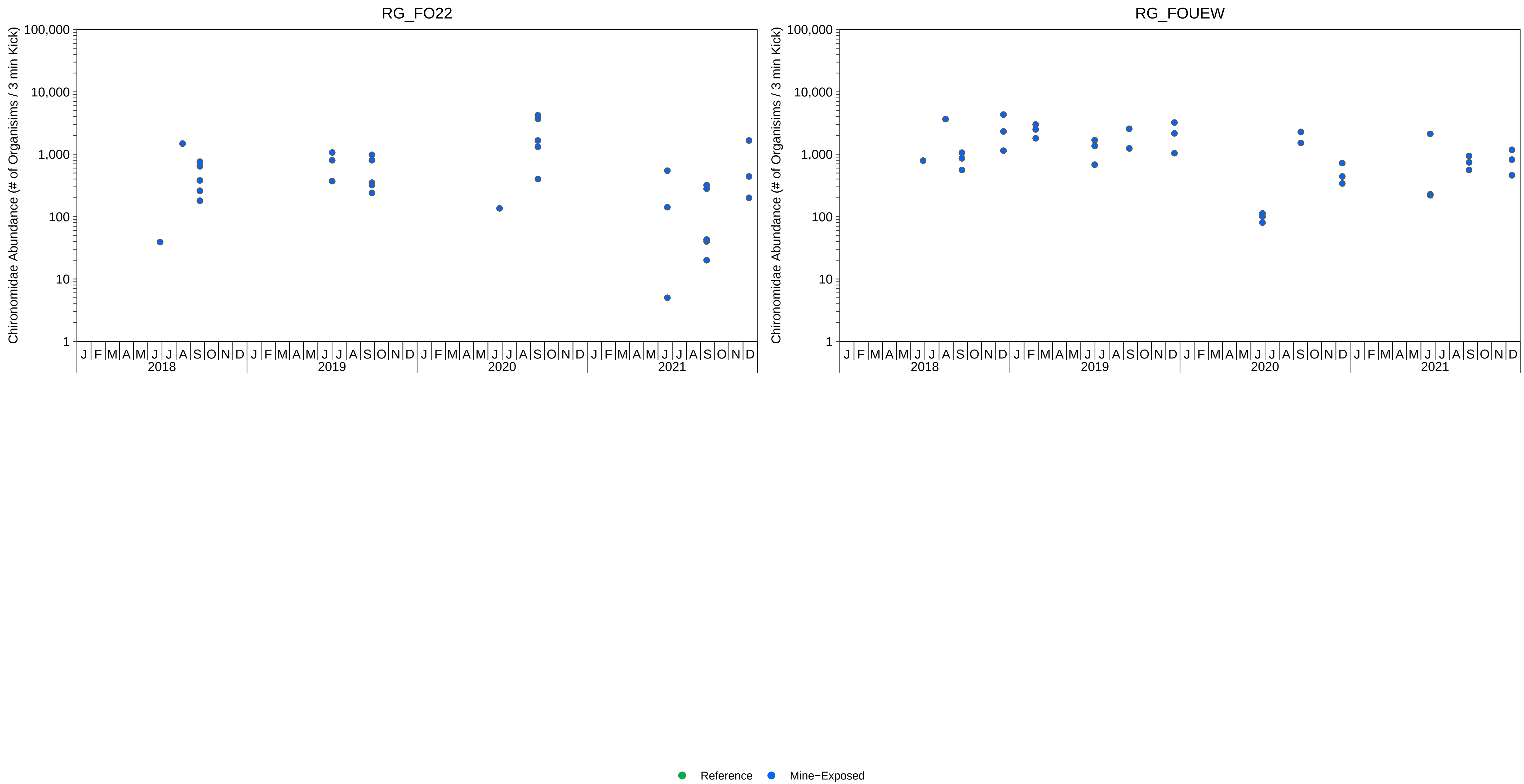


Figure E.37: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

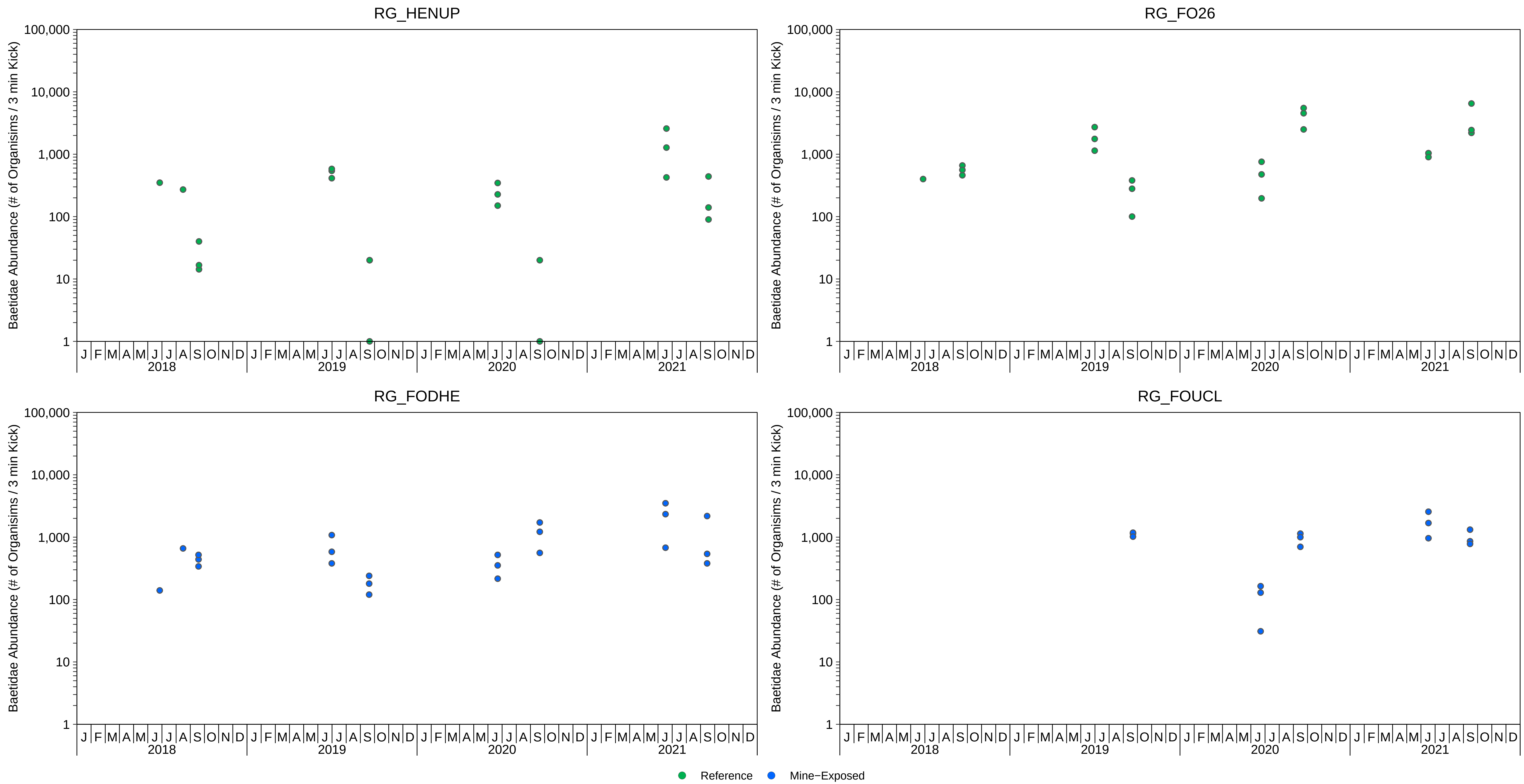
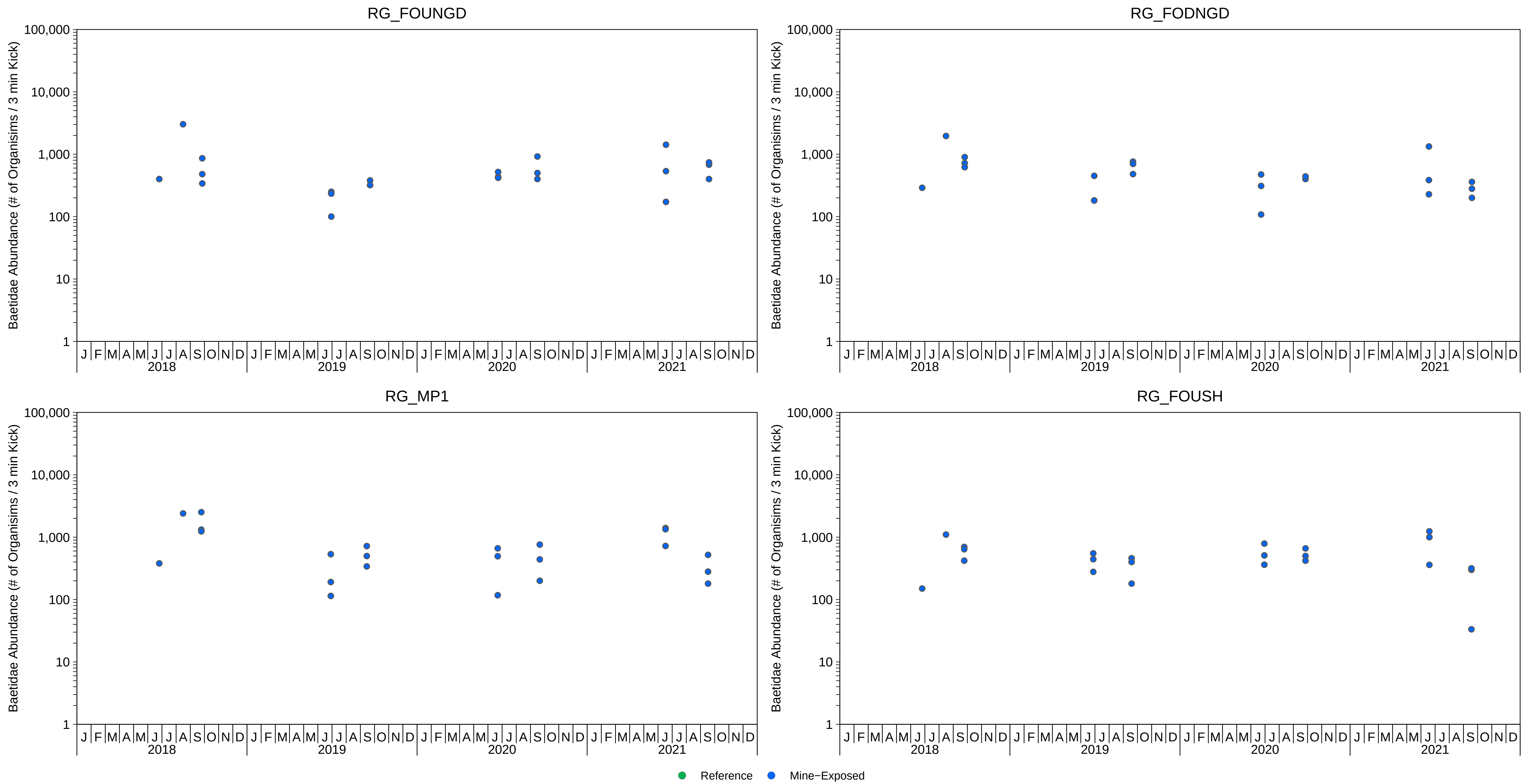


Figure E.38: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021



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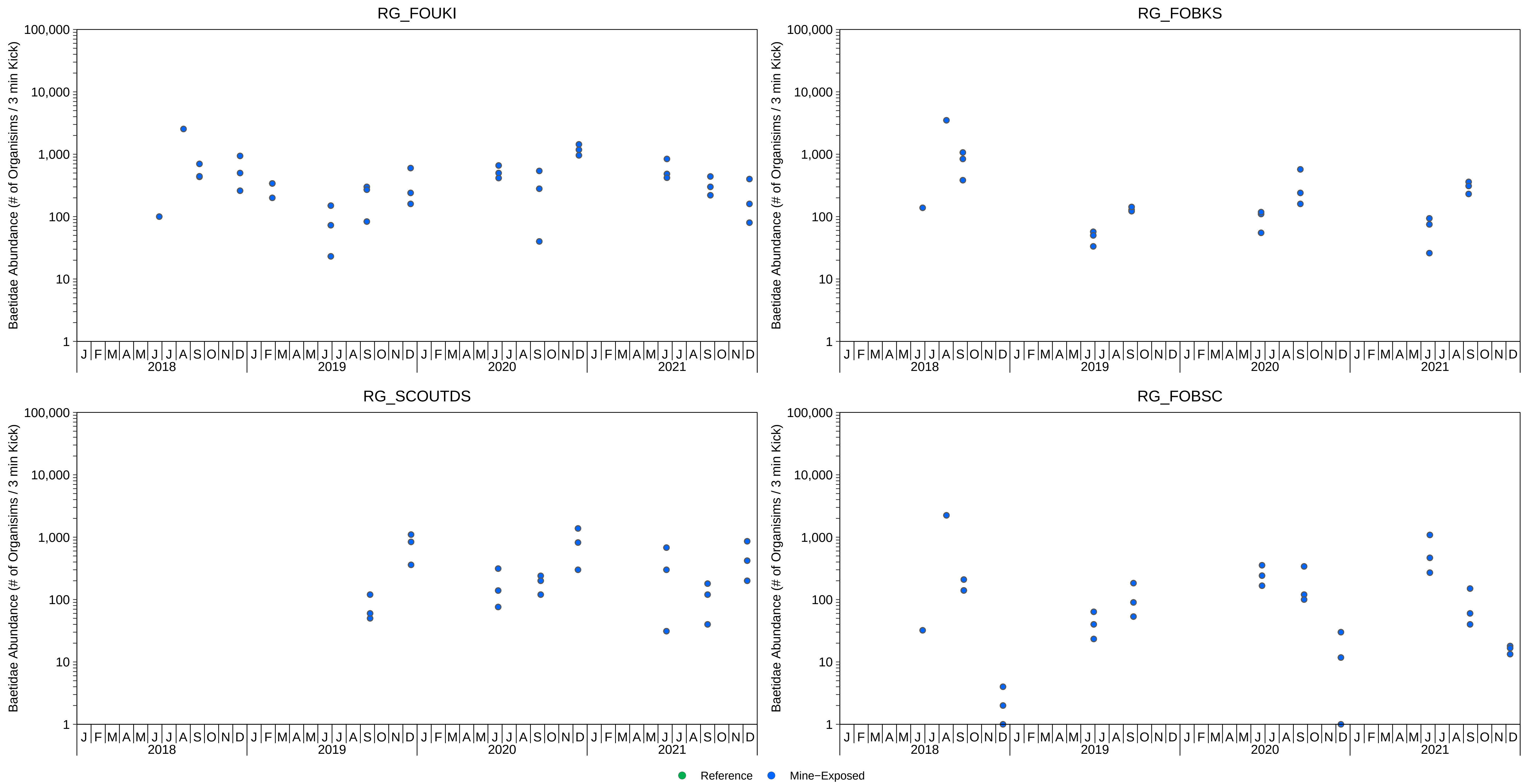

Figure E.38: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

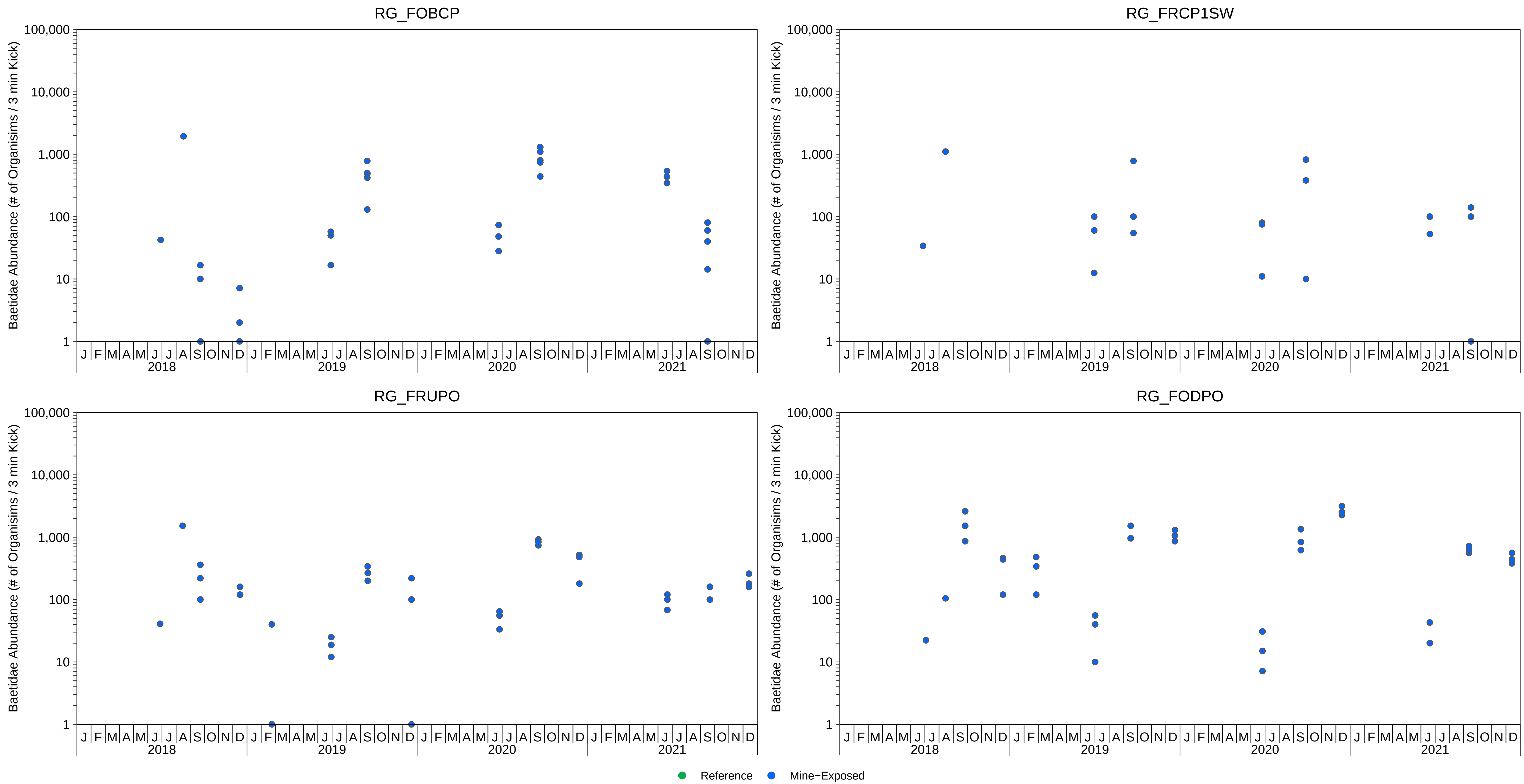

Figure E.38: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

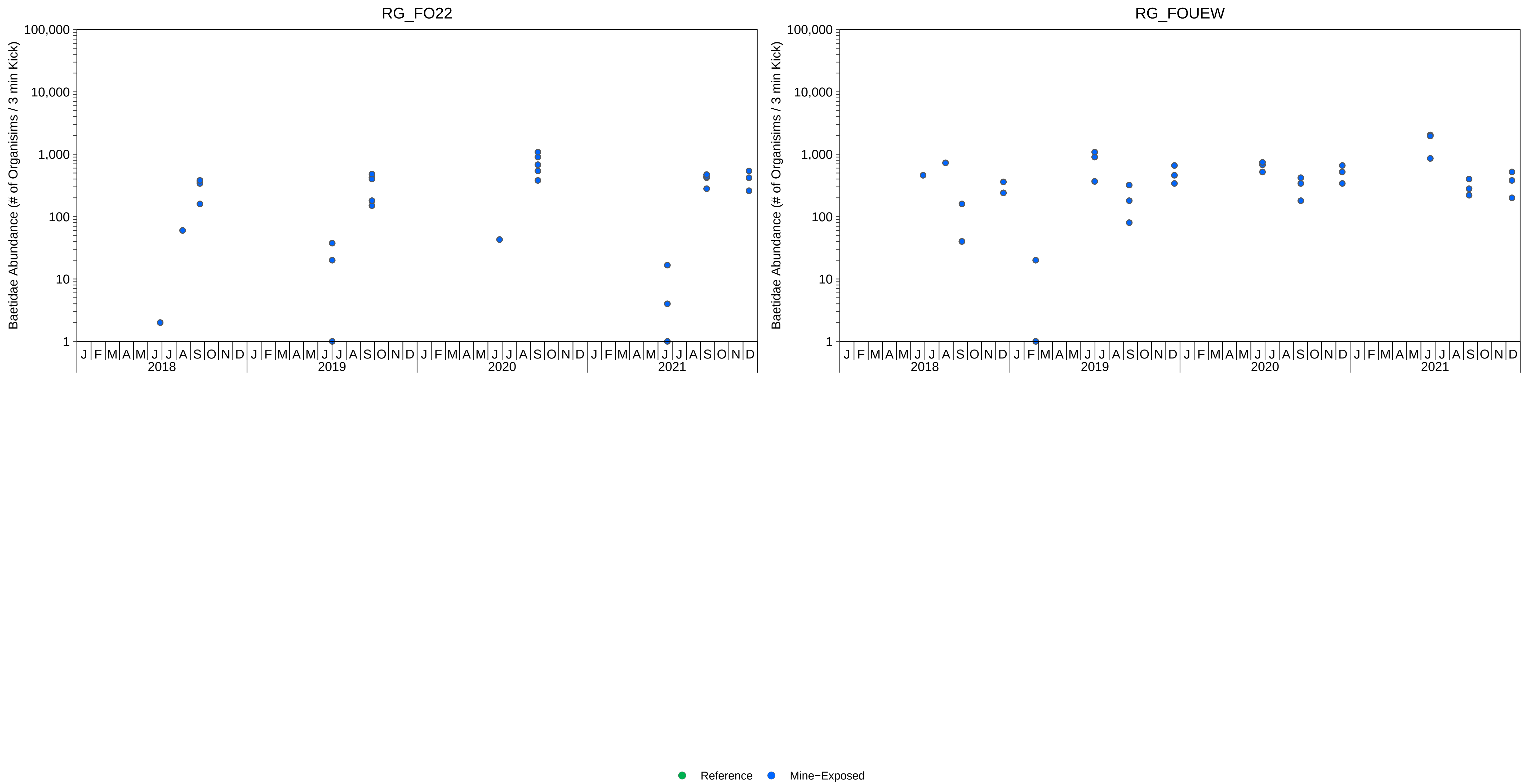

Figure E.38: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

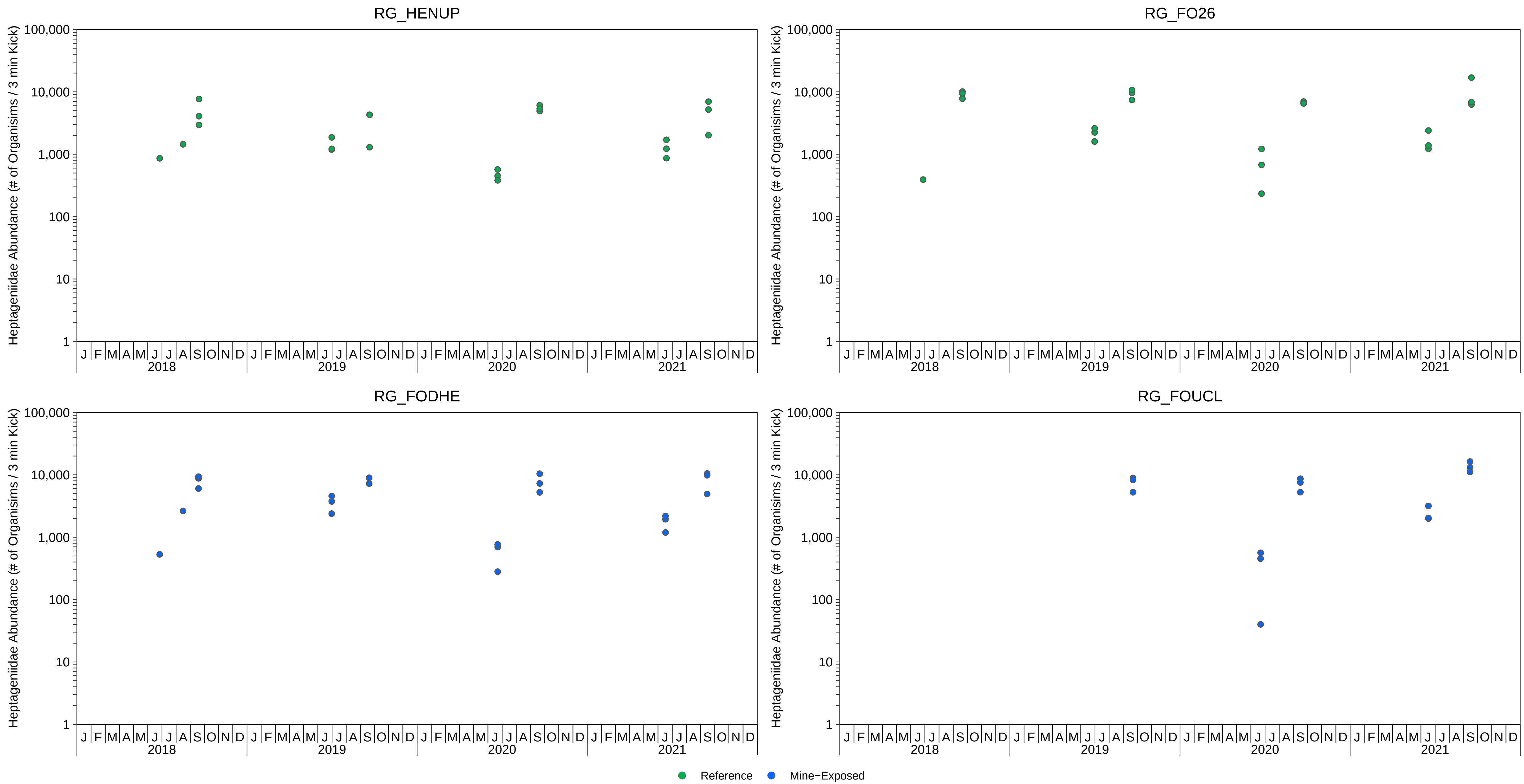

Figure E.39: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

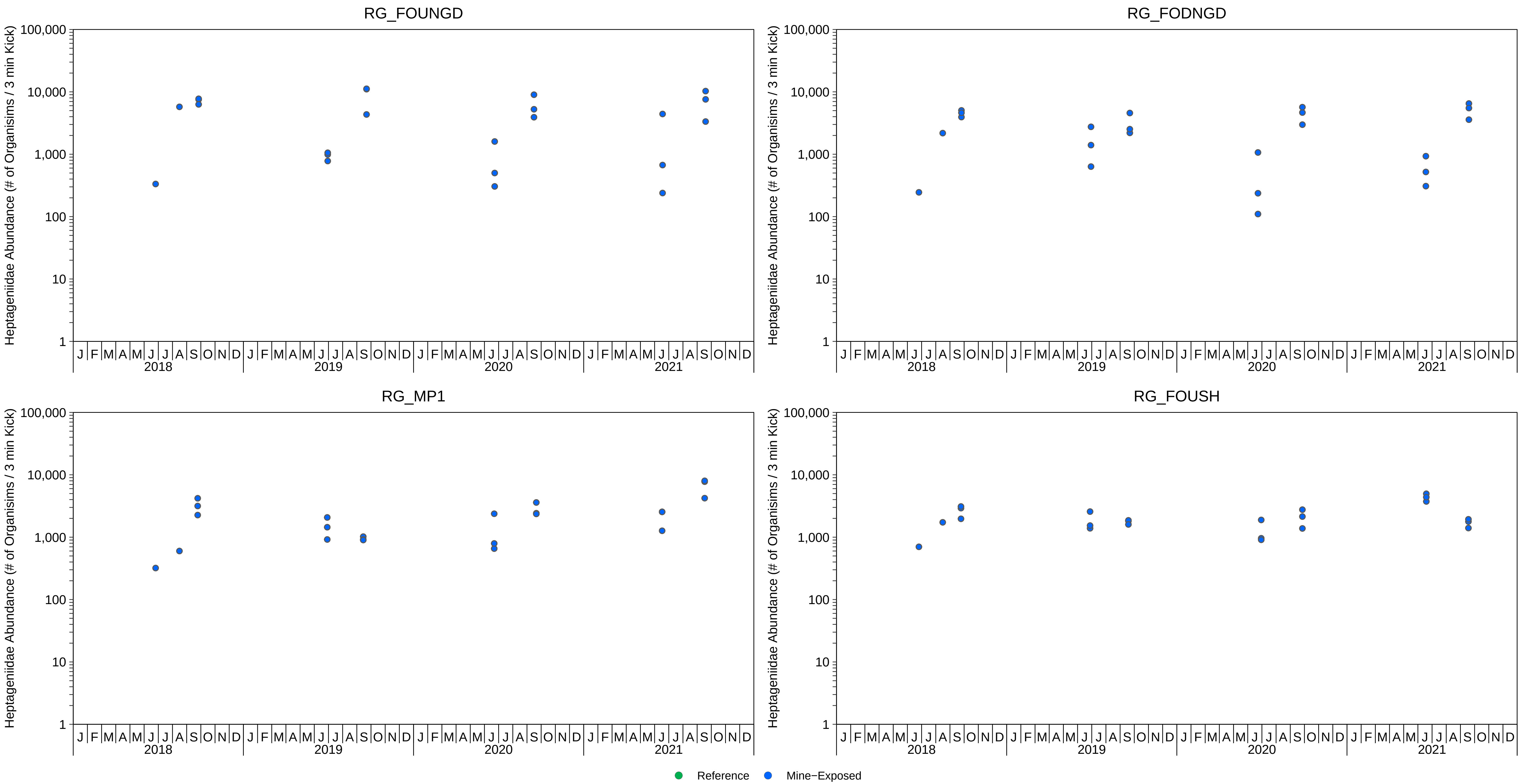

Figure E.39: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

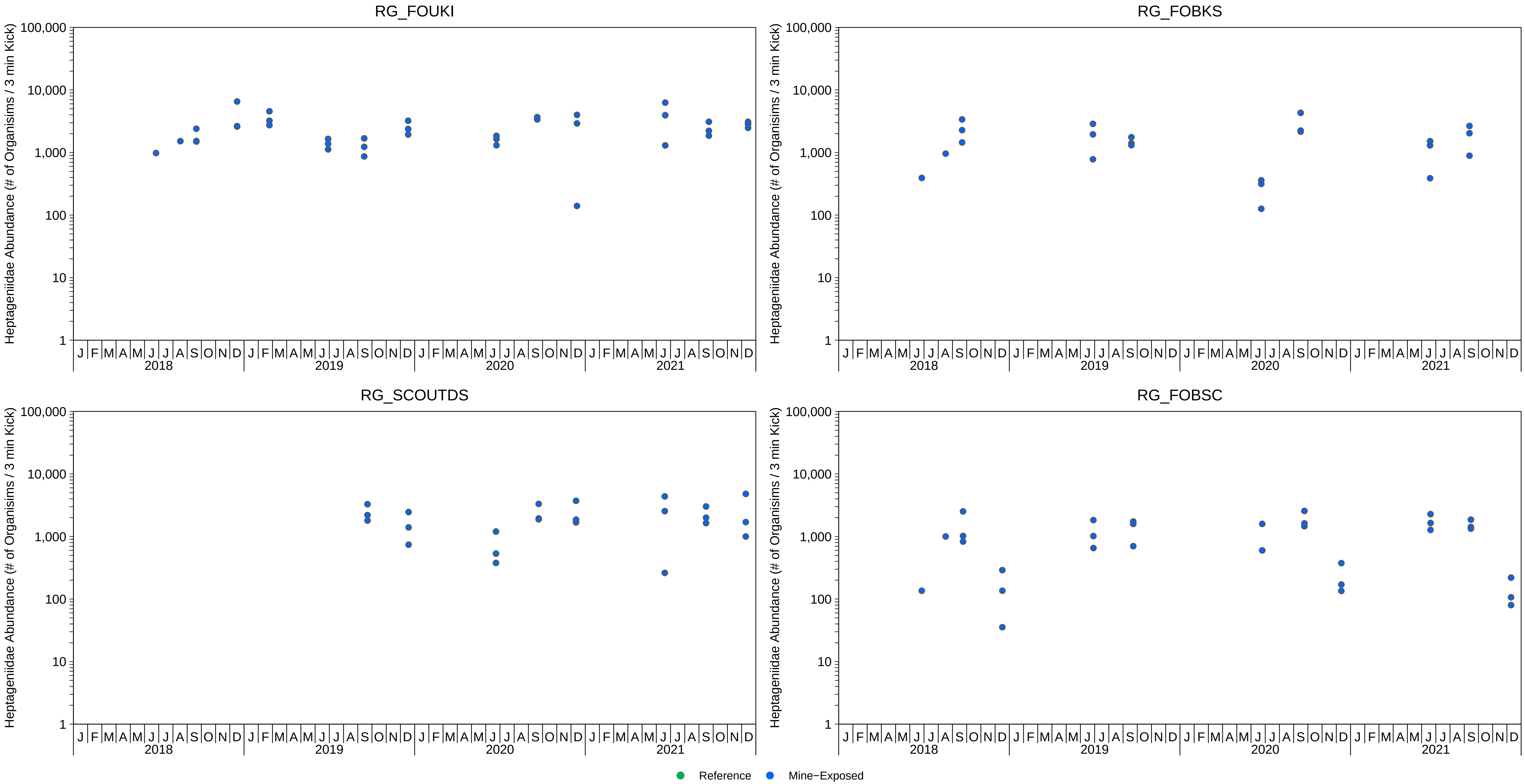

Figure E.39: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

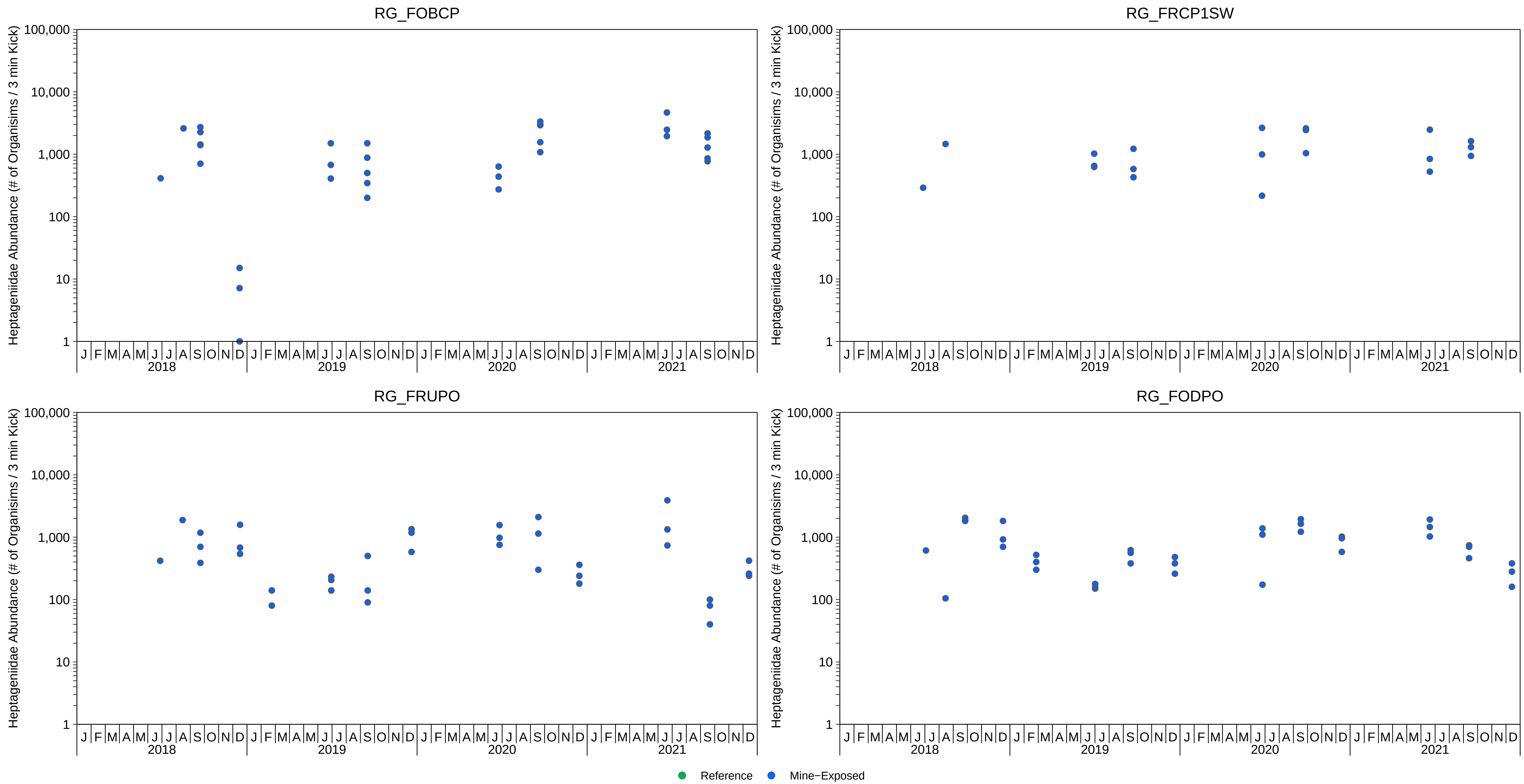

Figure E.39: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

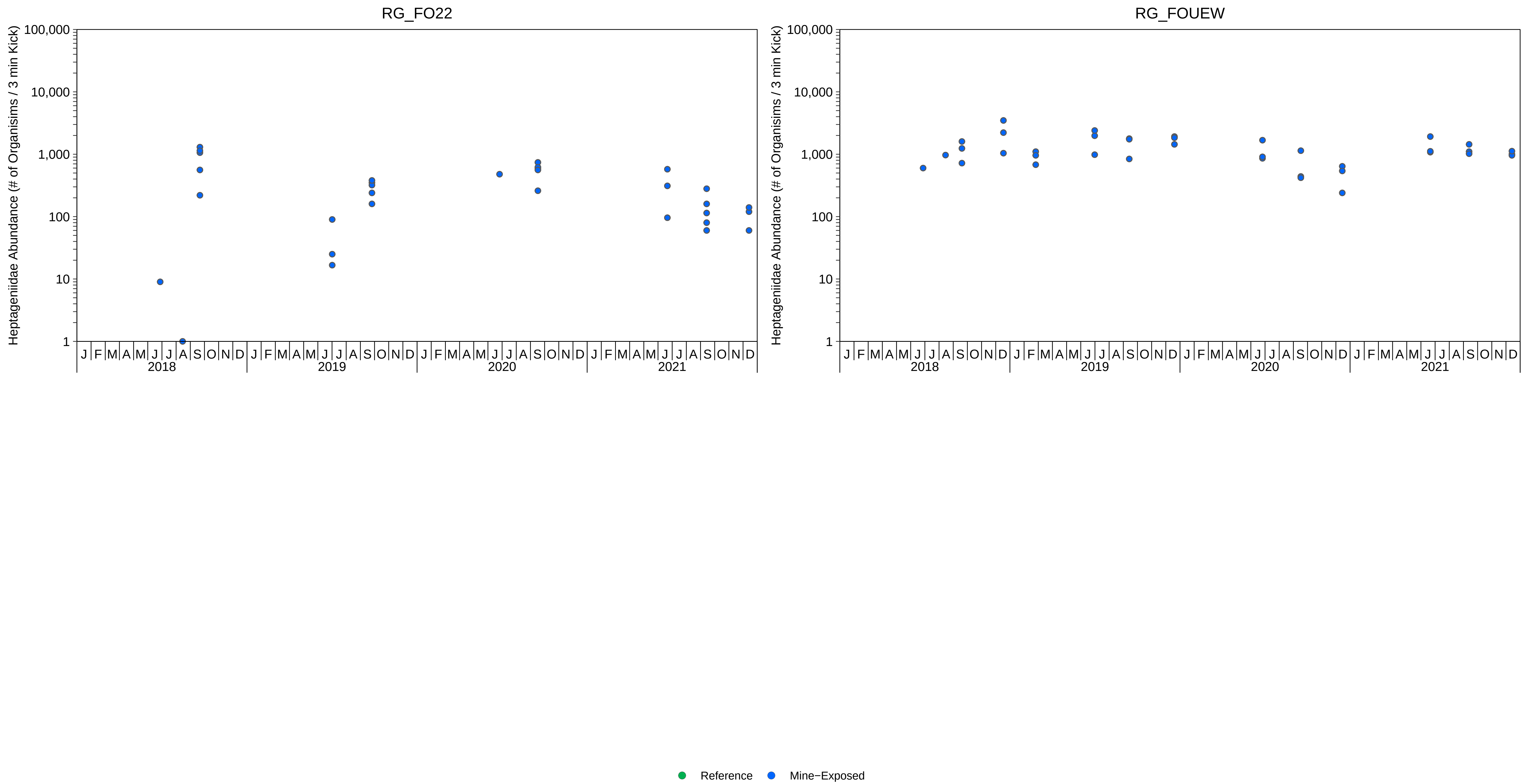

Figure E.39: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

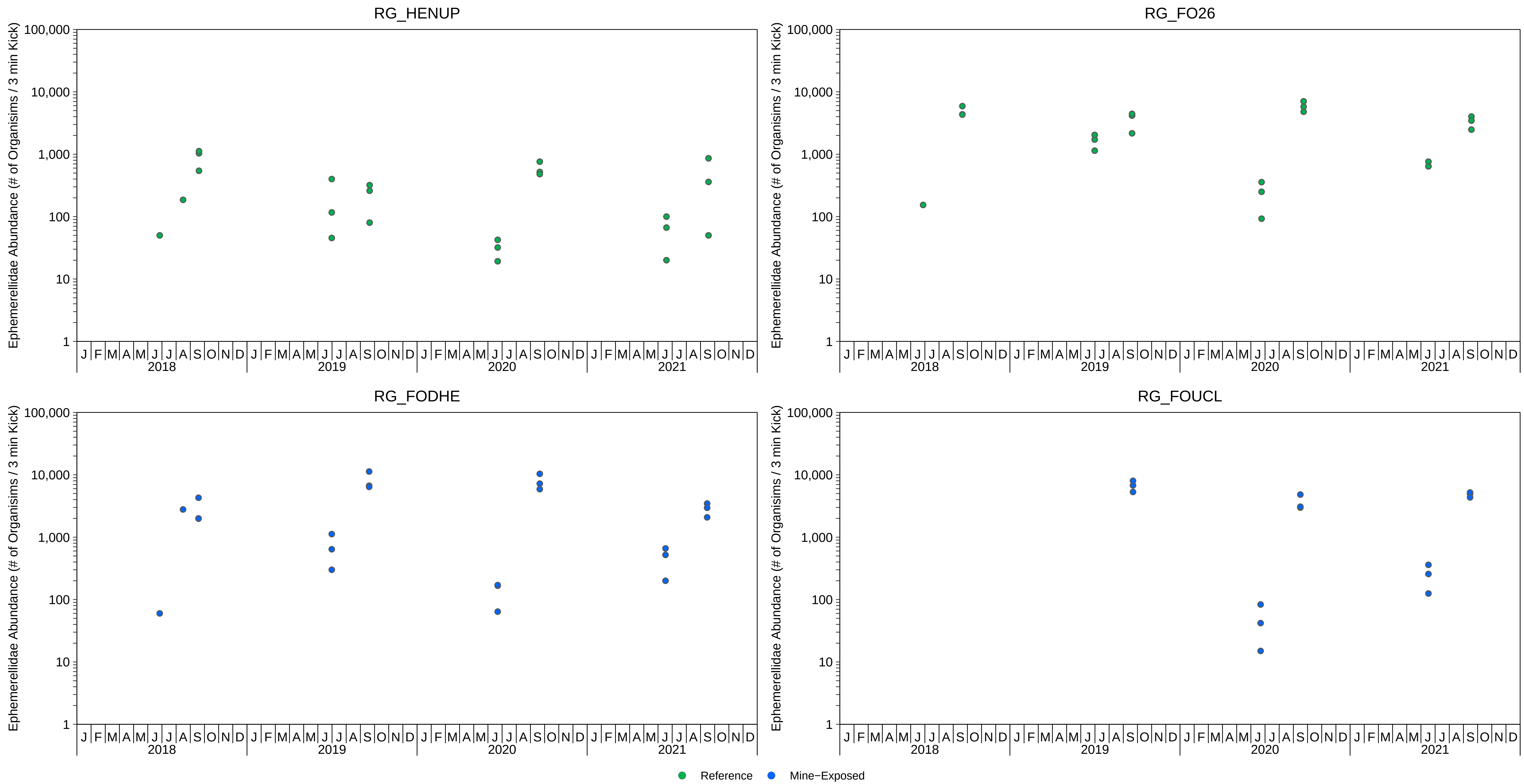

Figure E.40: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

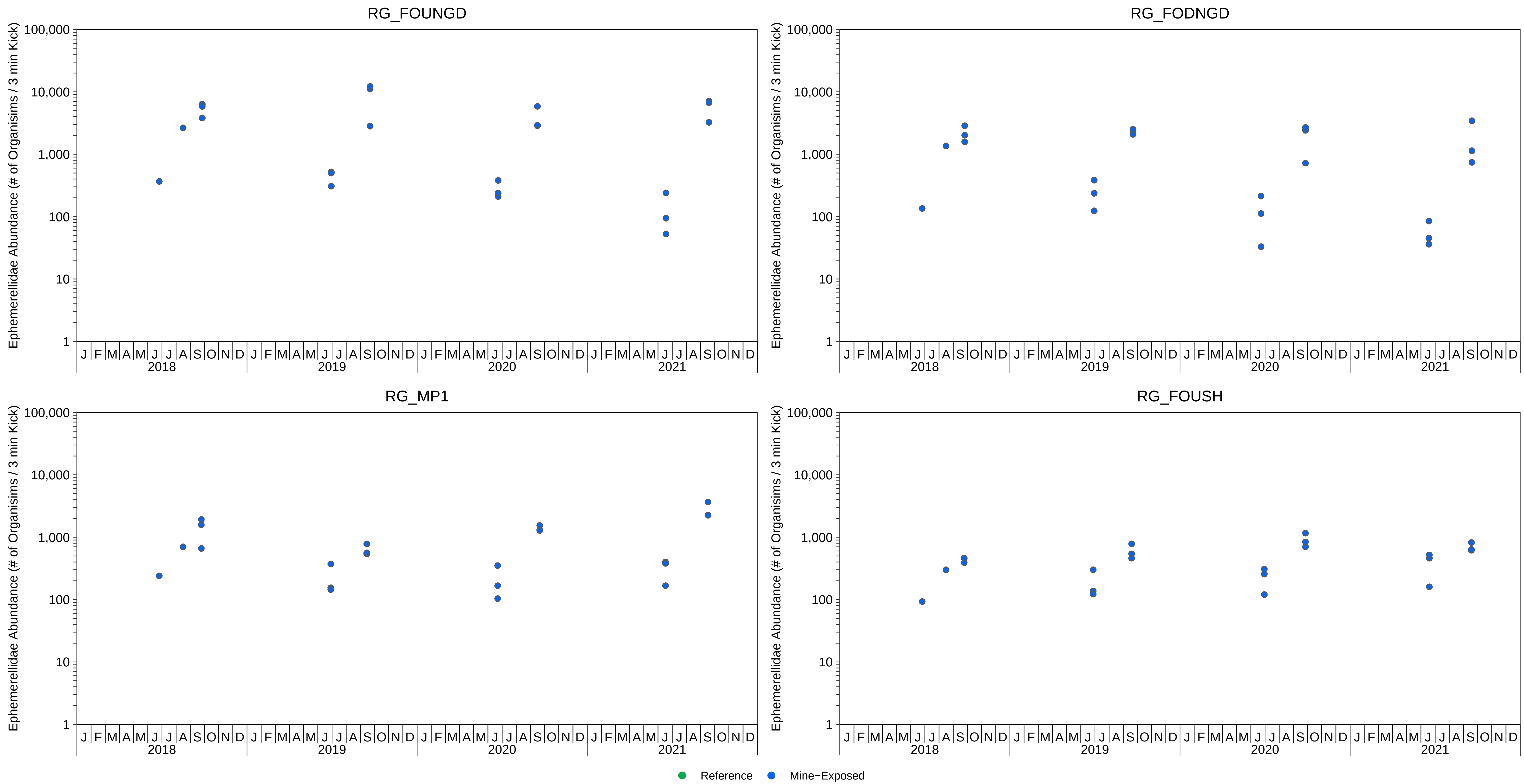

Figure E.40: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

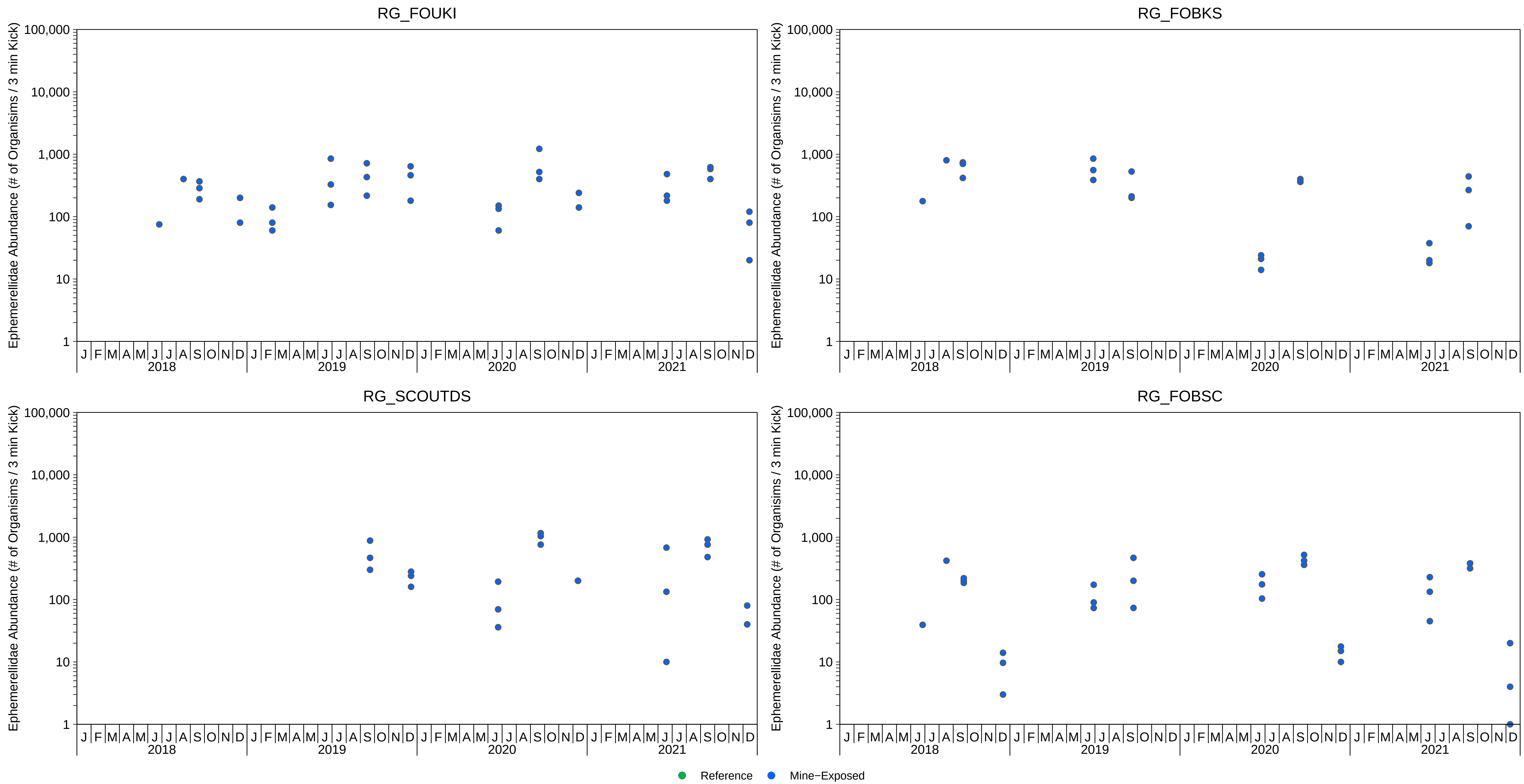

Figure E.40: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

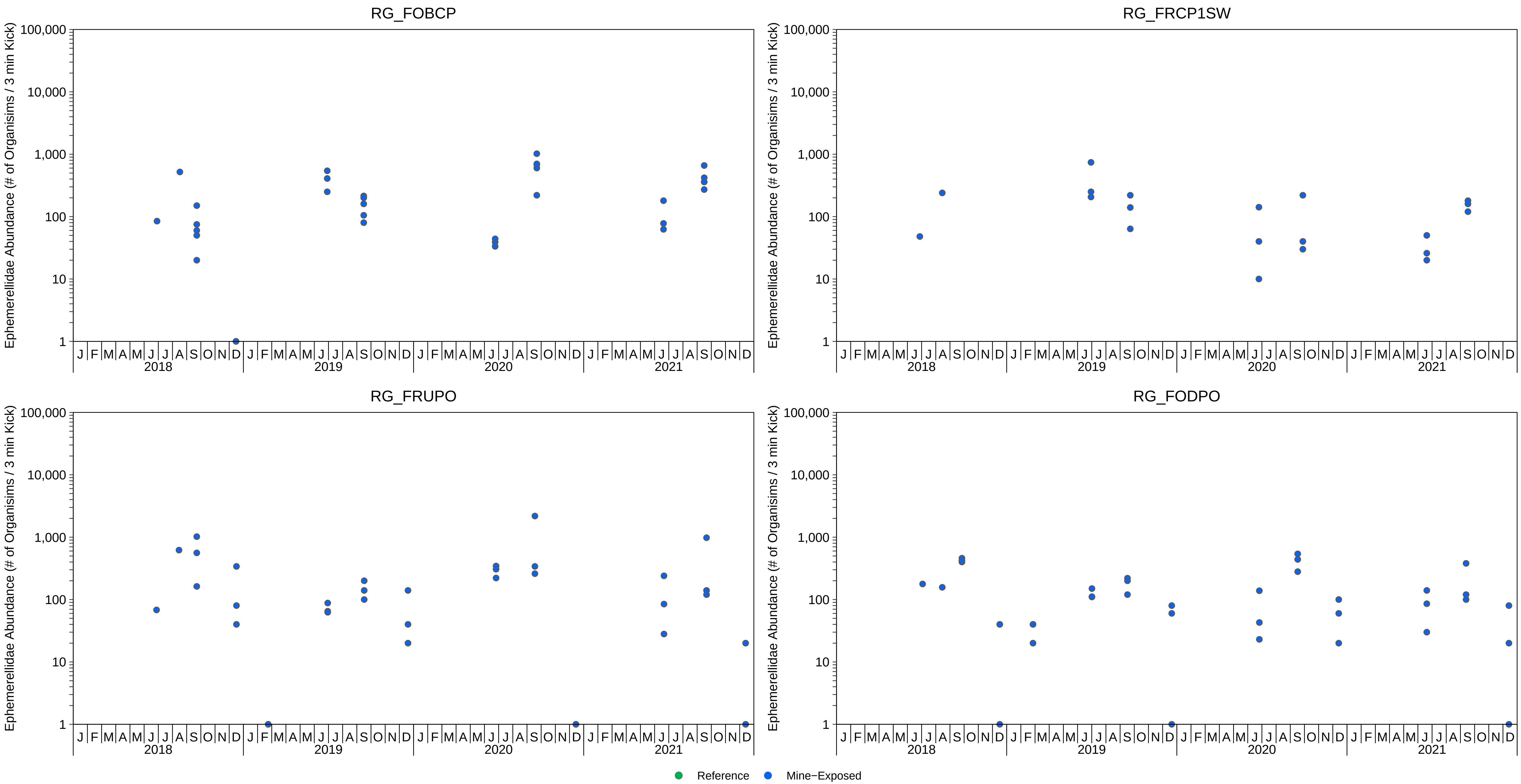

Figure E.40: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

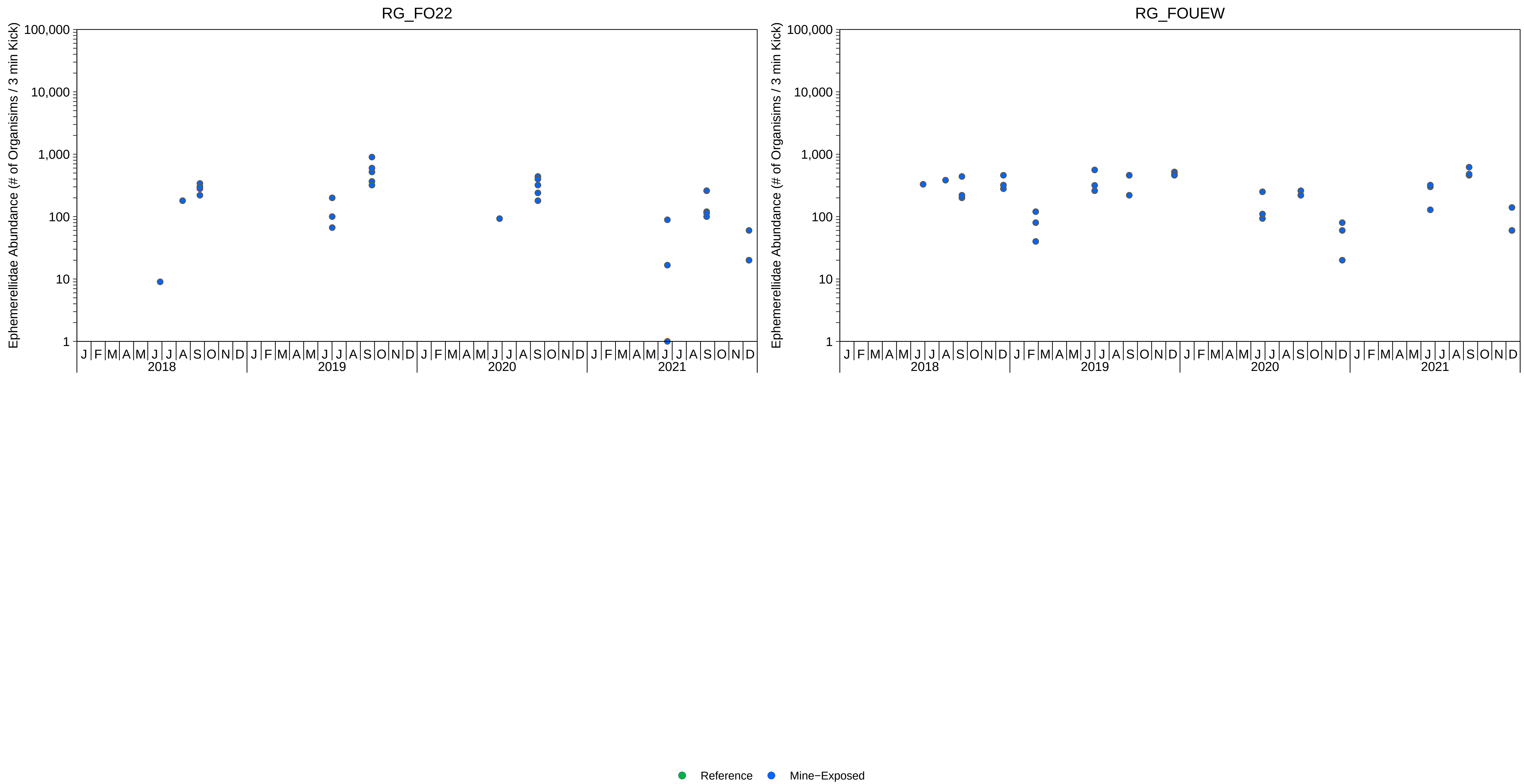

Figure E.40: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

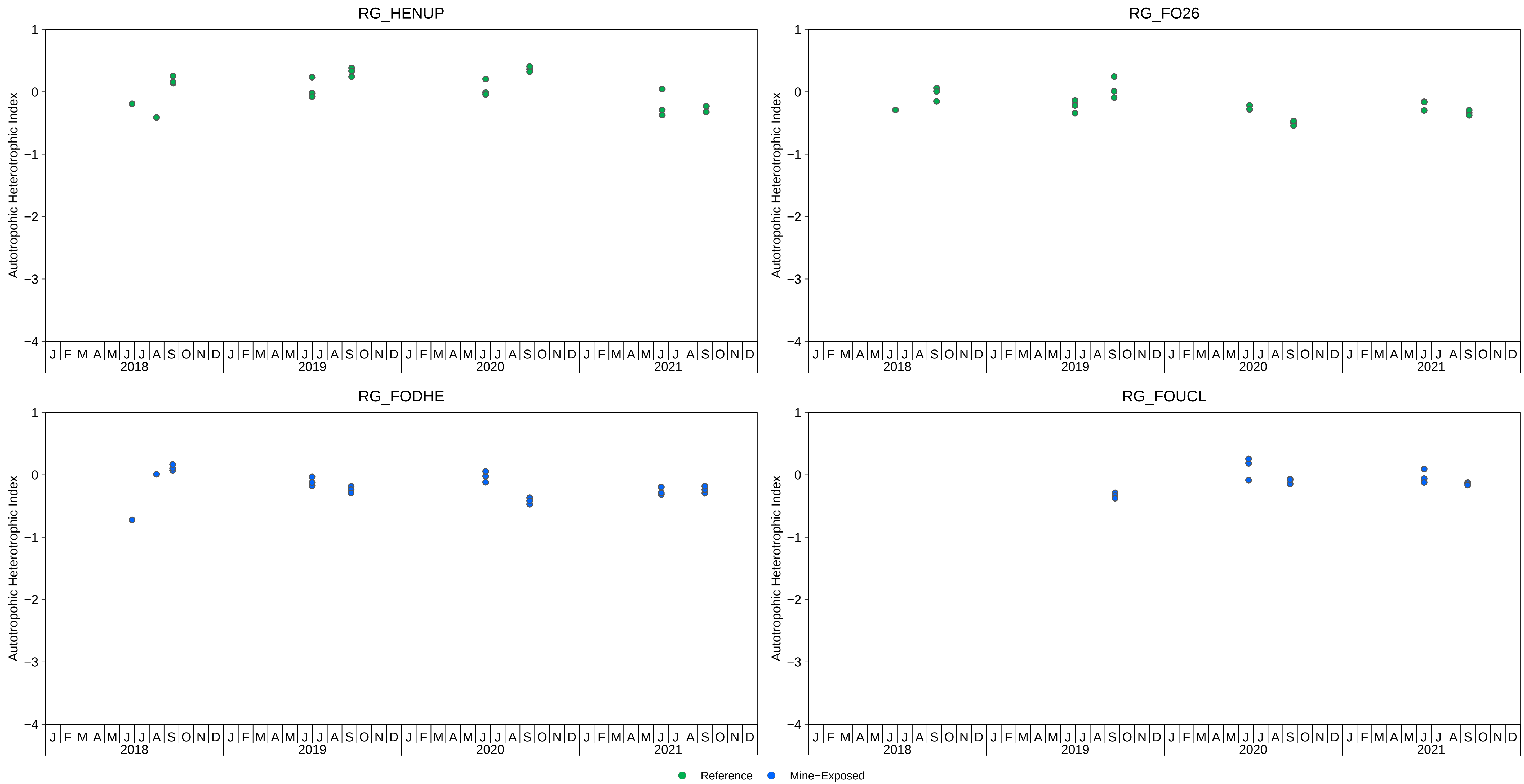

Figure E.41: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

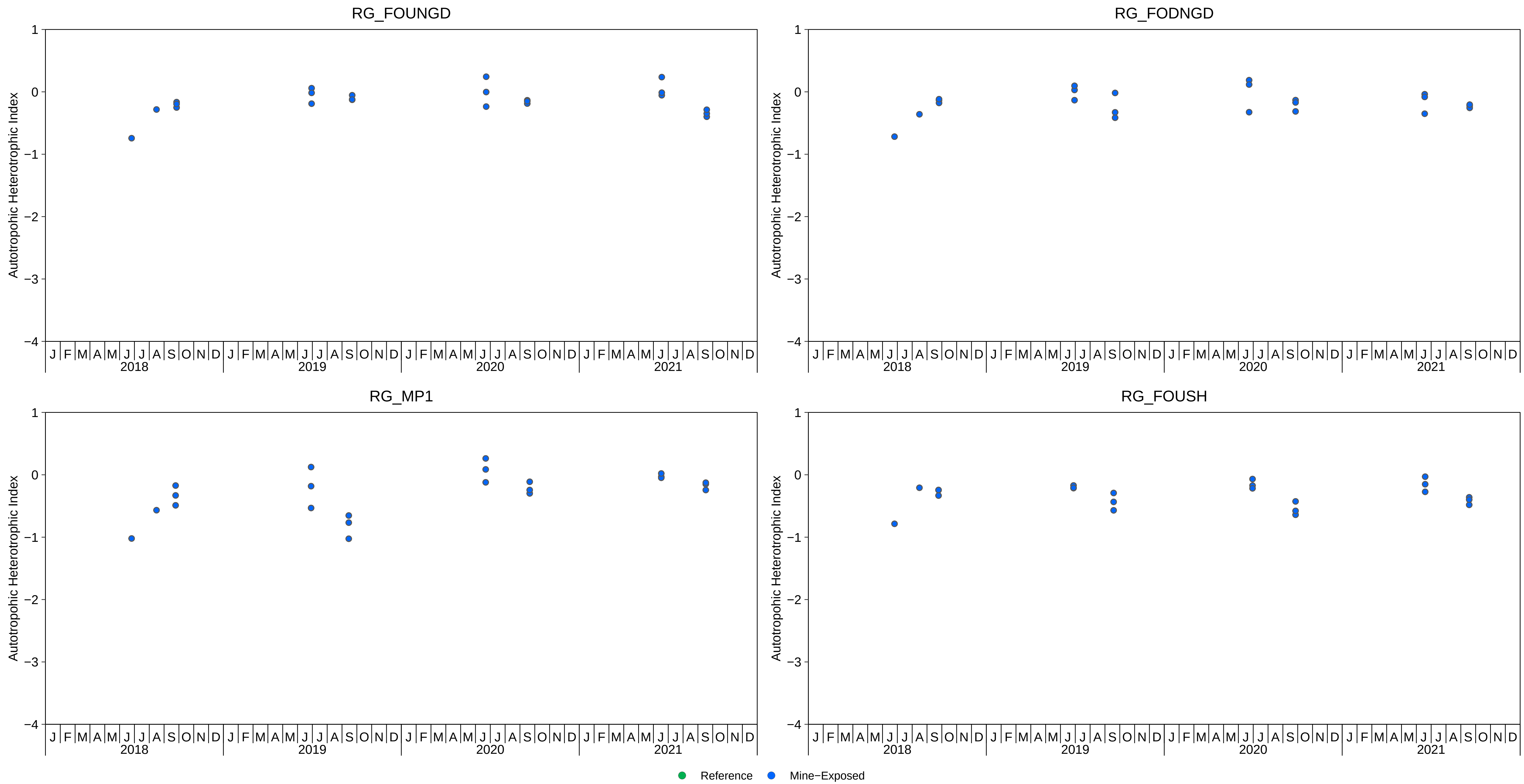

Figure E.41: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

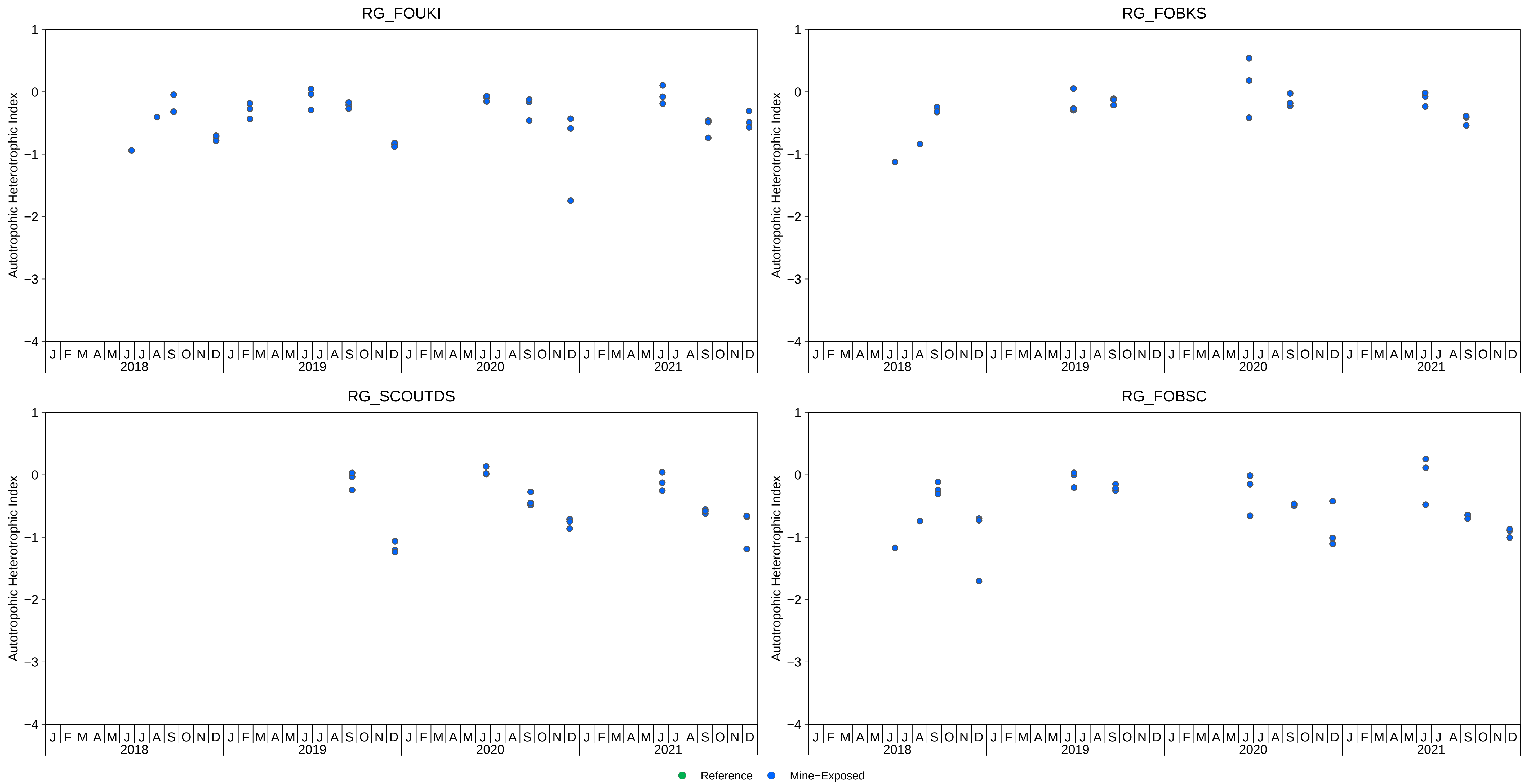

Figure E.41: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

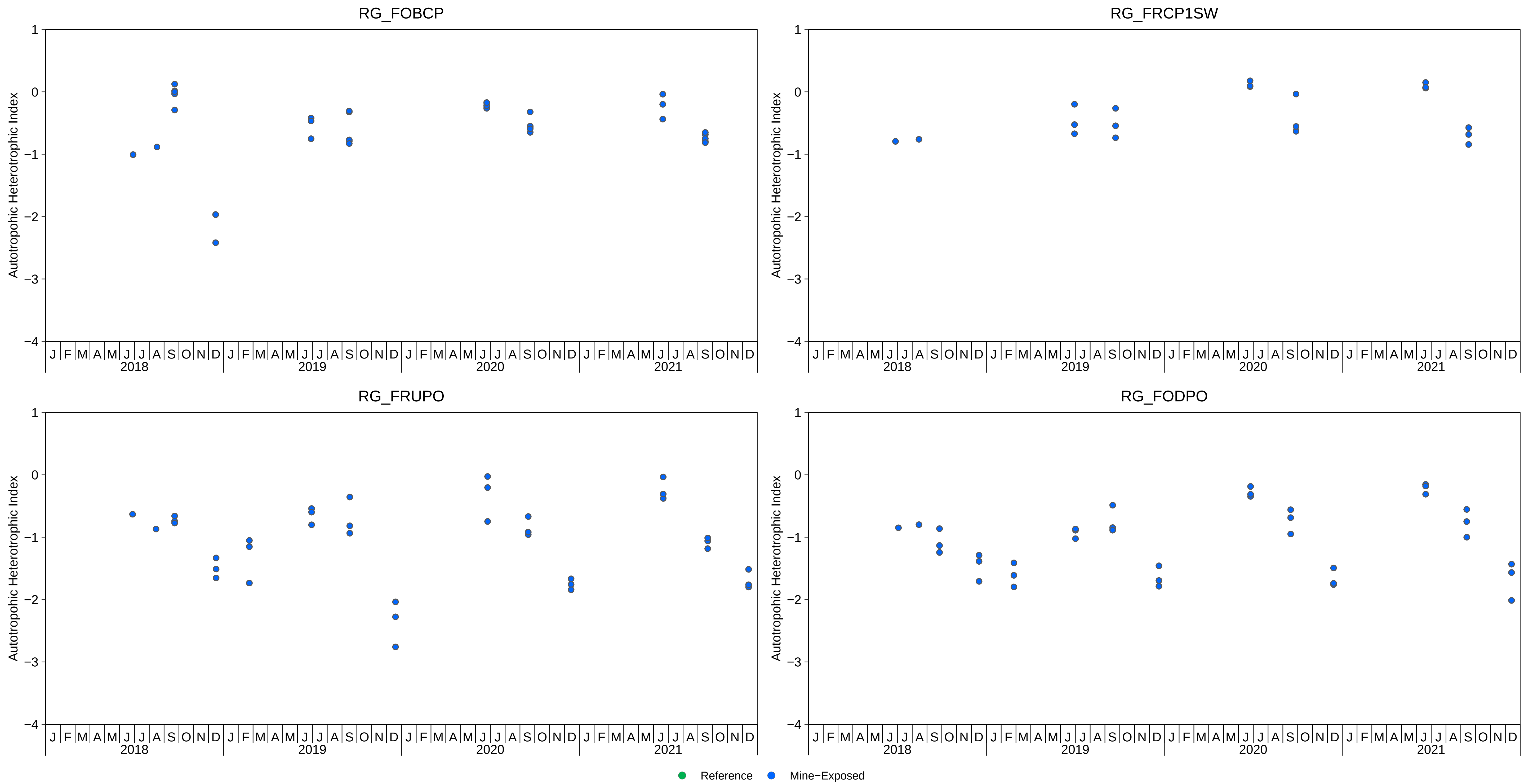

Figure E.41: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

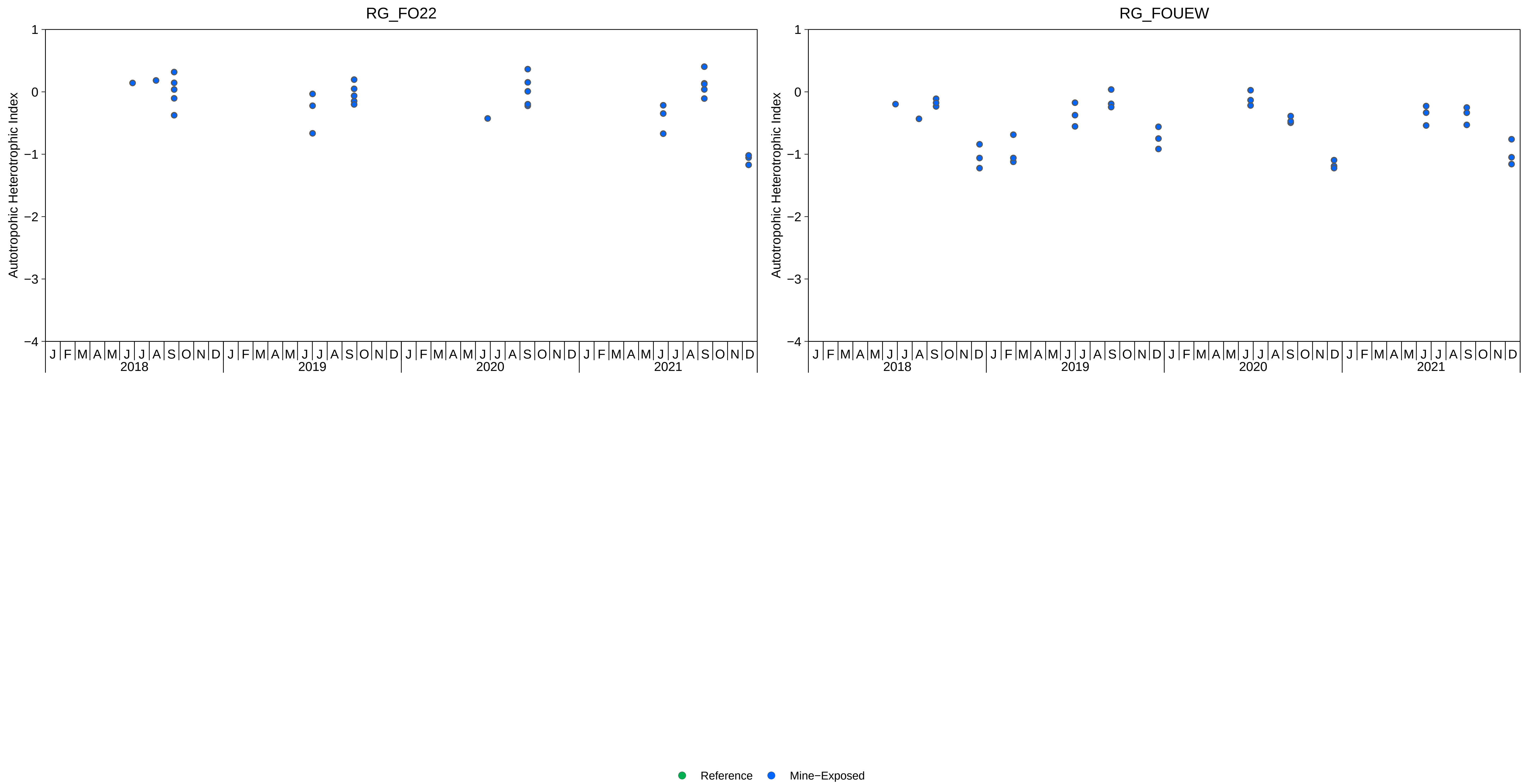

Figure E.41: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

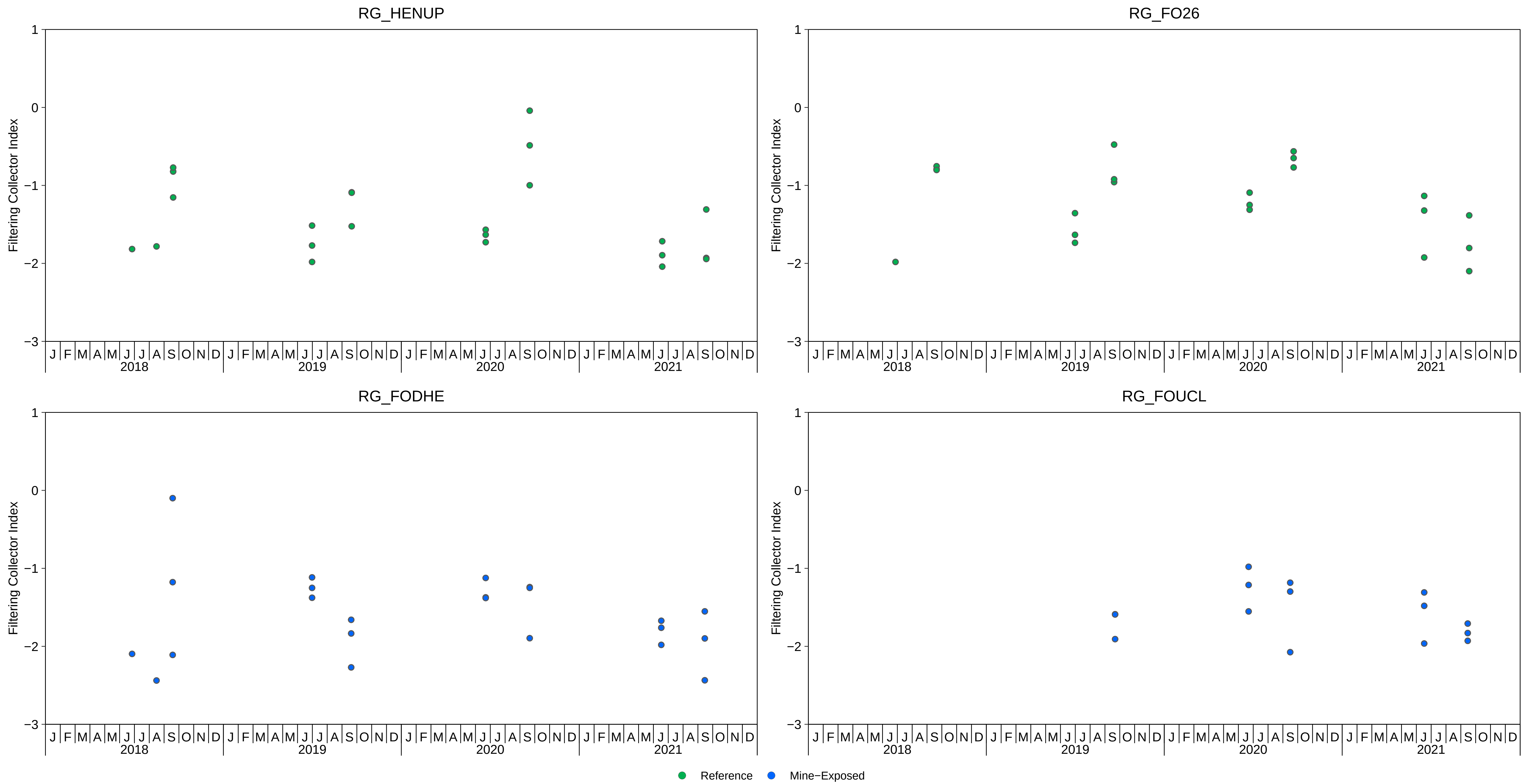

Figure E.42: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

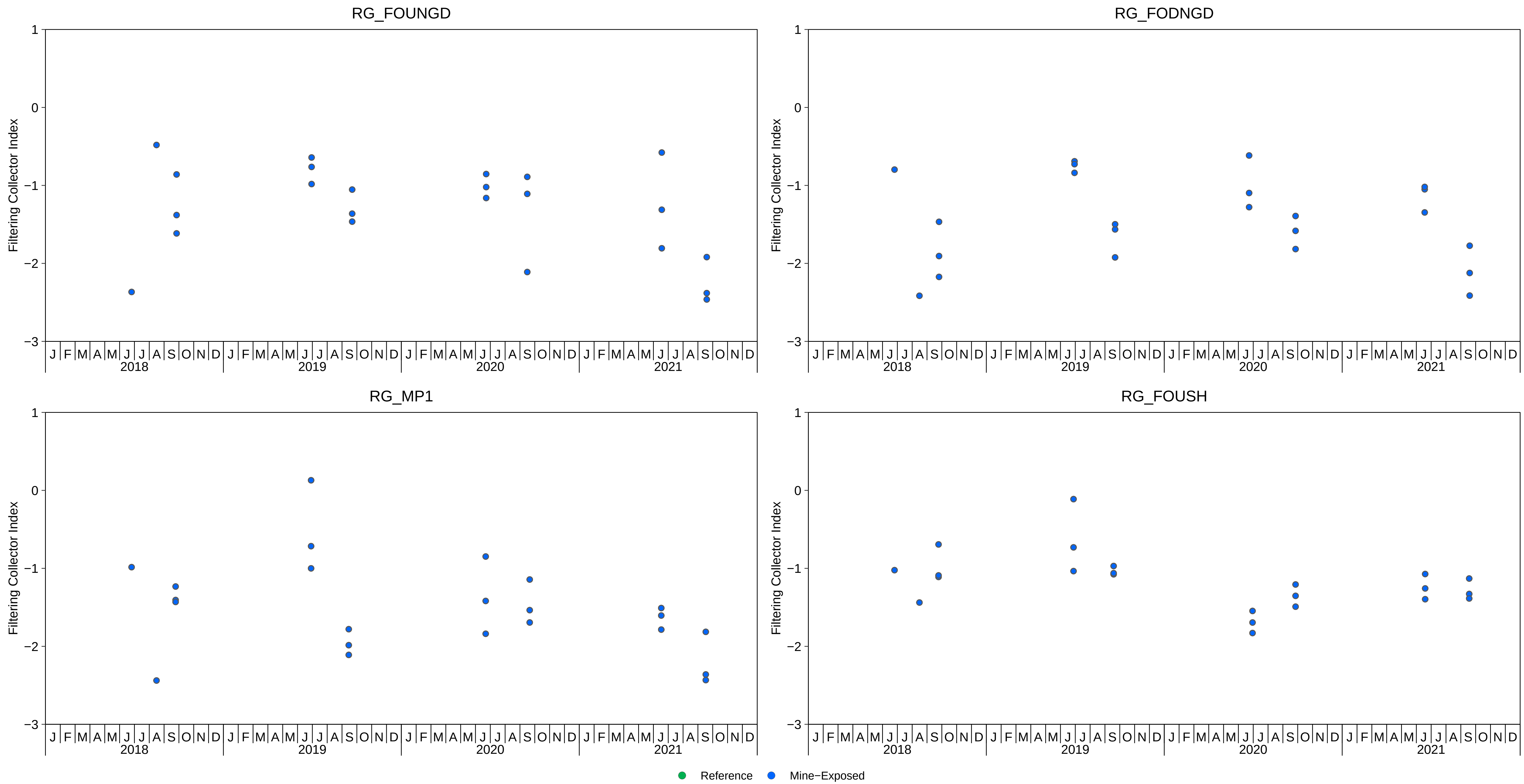

Figure E.42: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

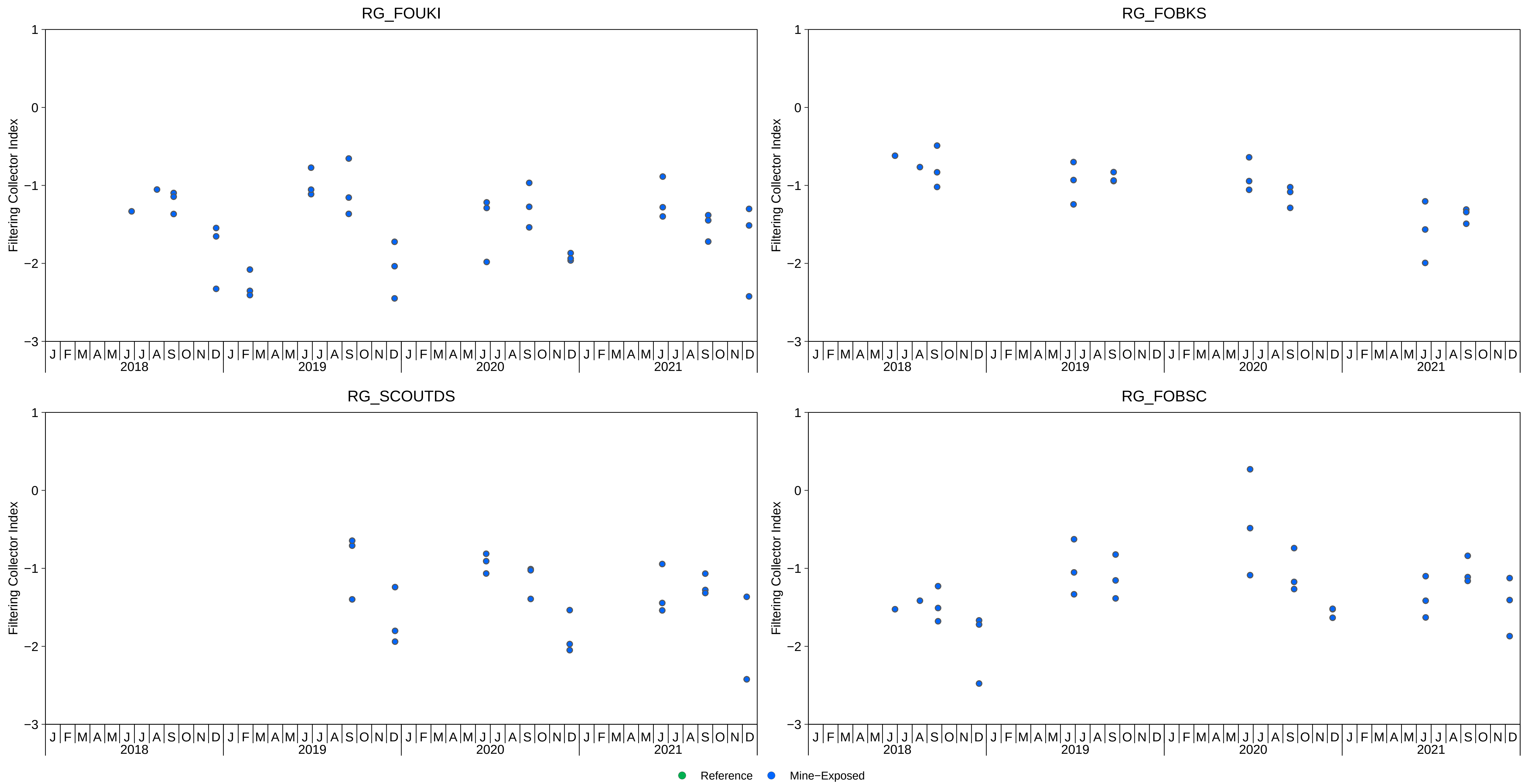

Figure E.42: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

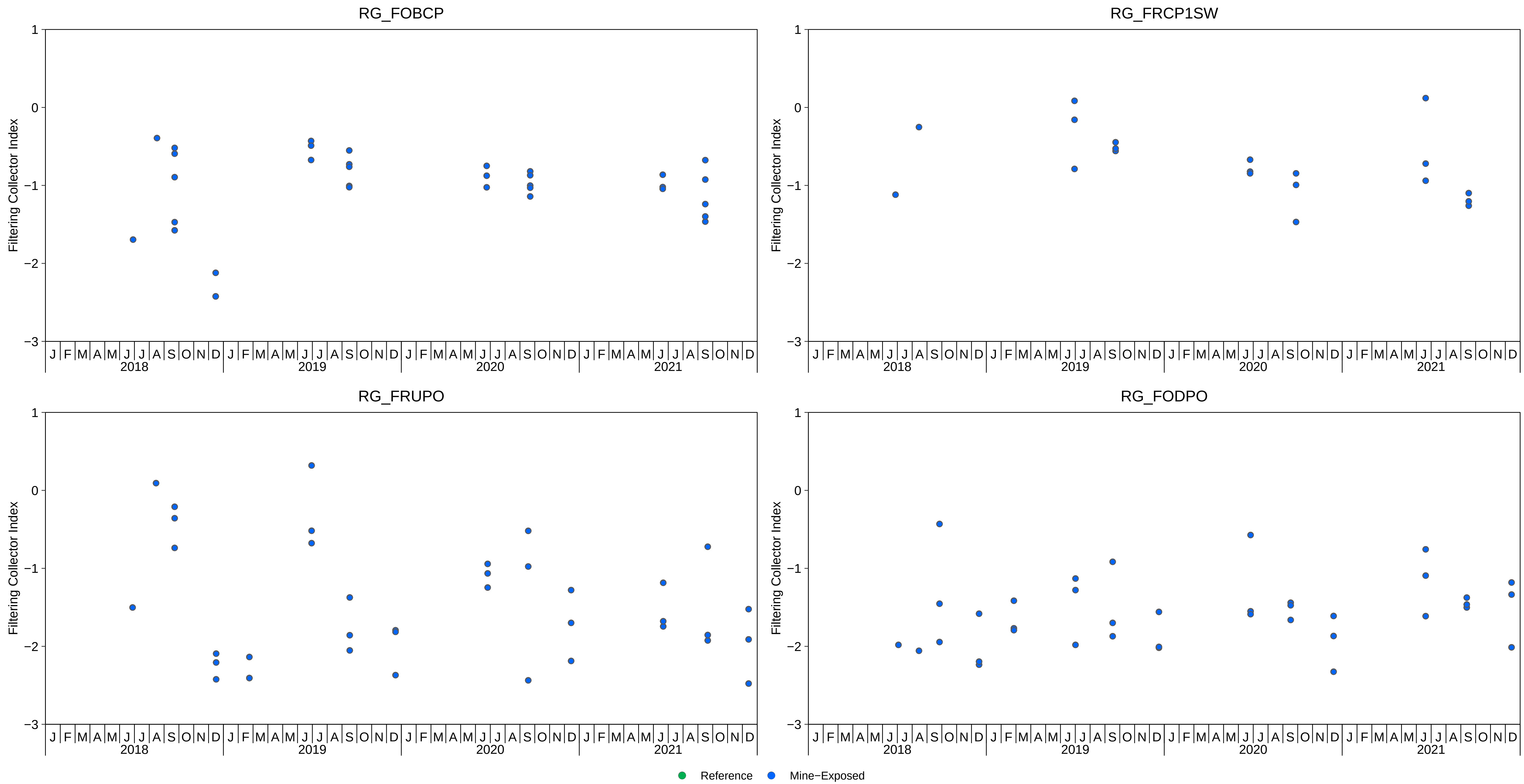

Figure E.42: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

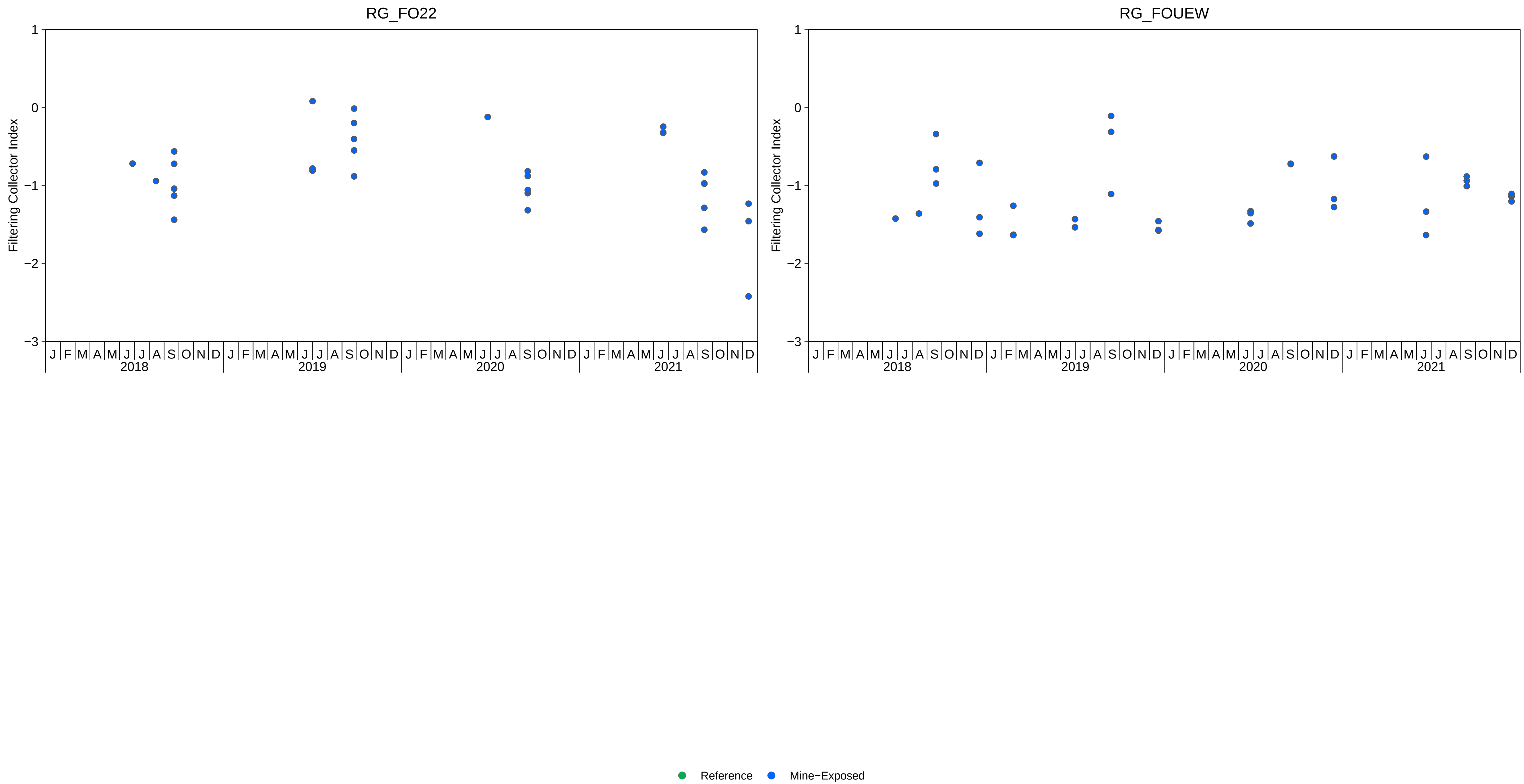

Figure E.42: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

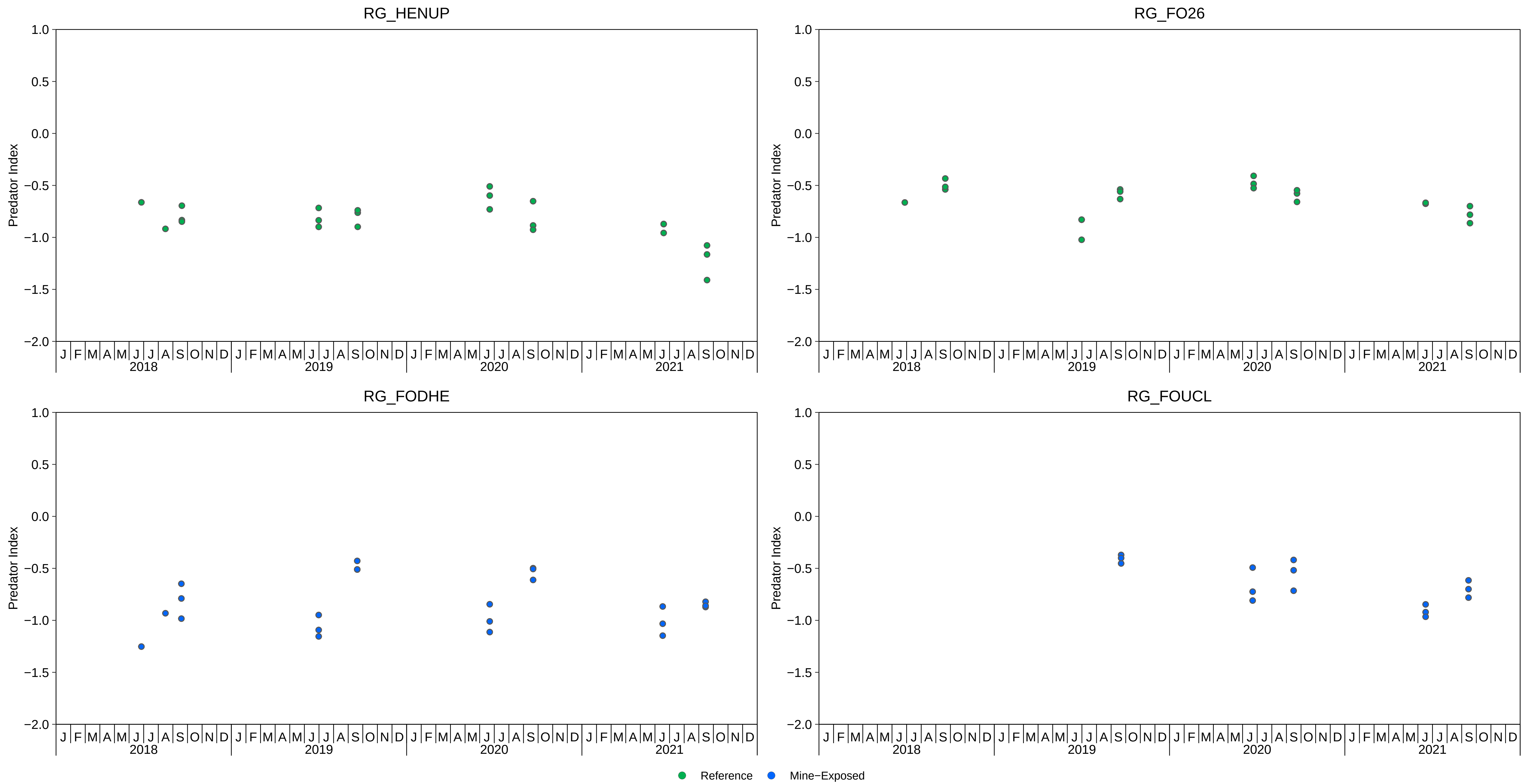

Figure E.43: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

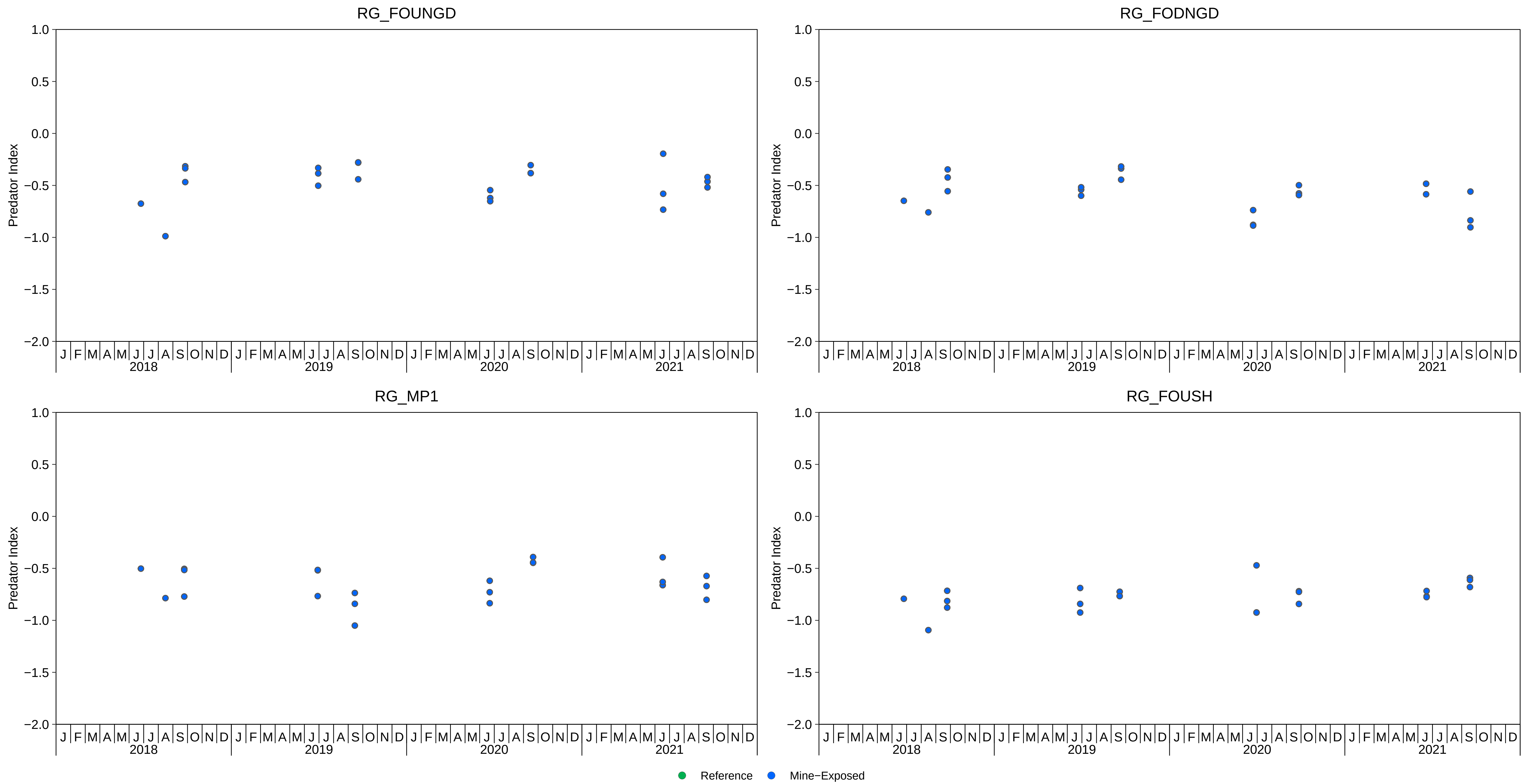

Figure E.43: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

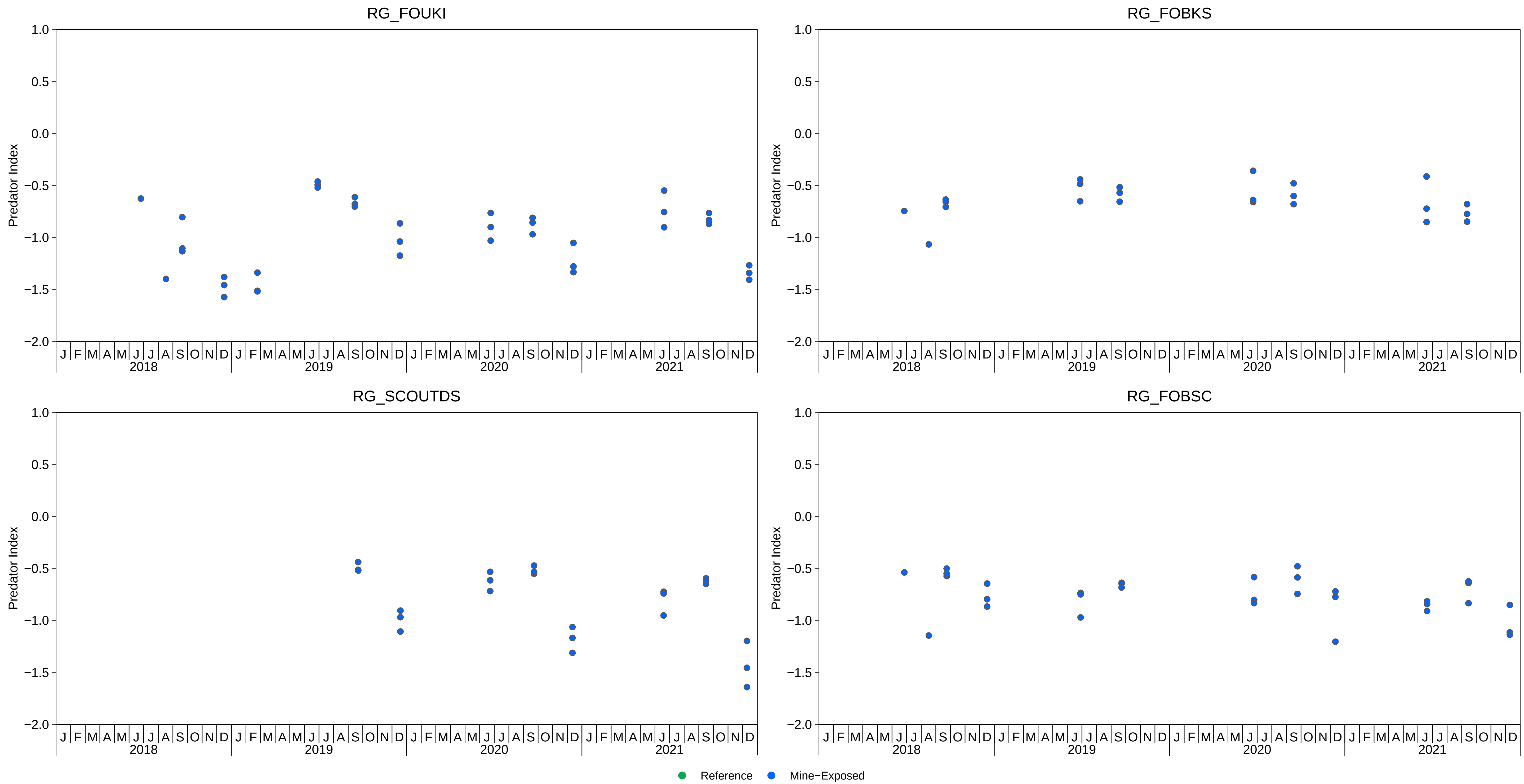

Figure E.43: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

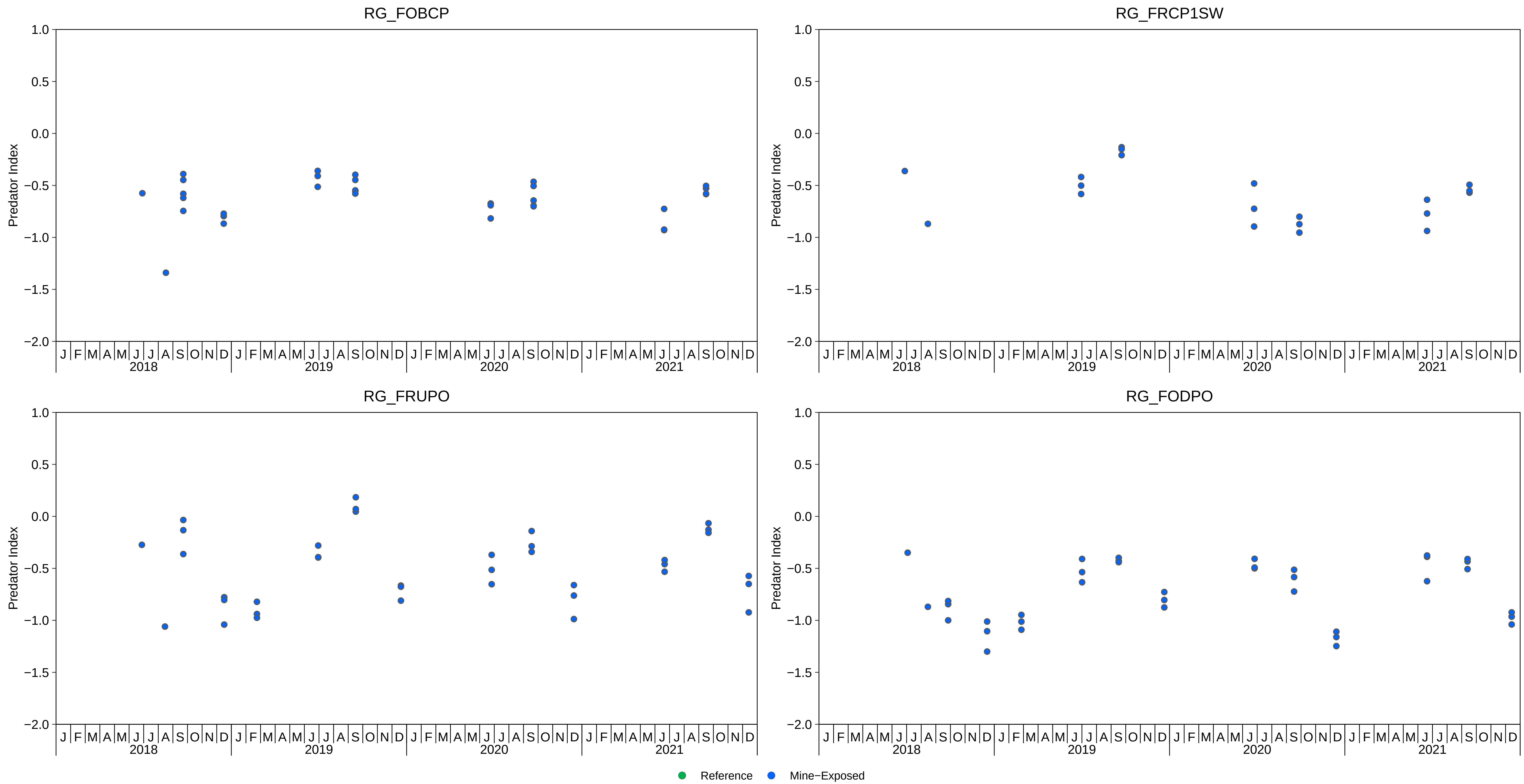

Figure E.43: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

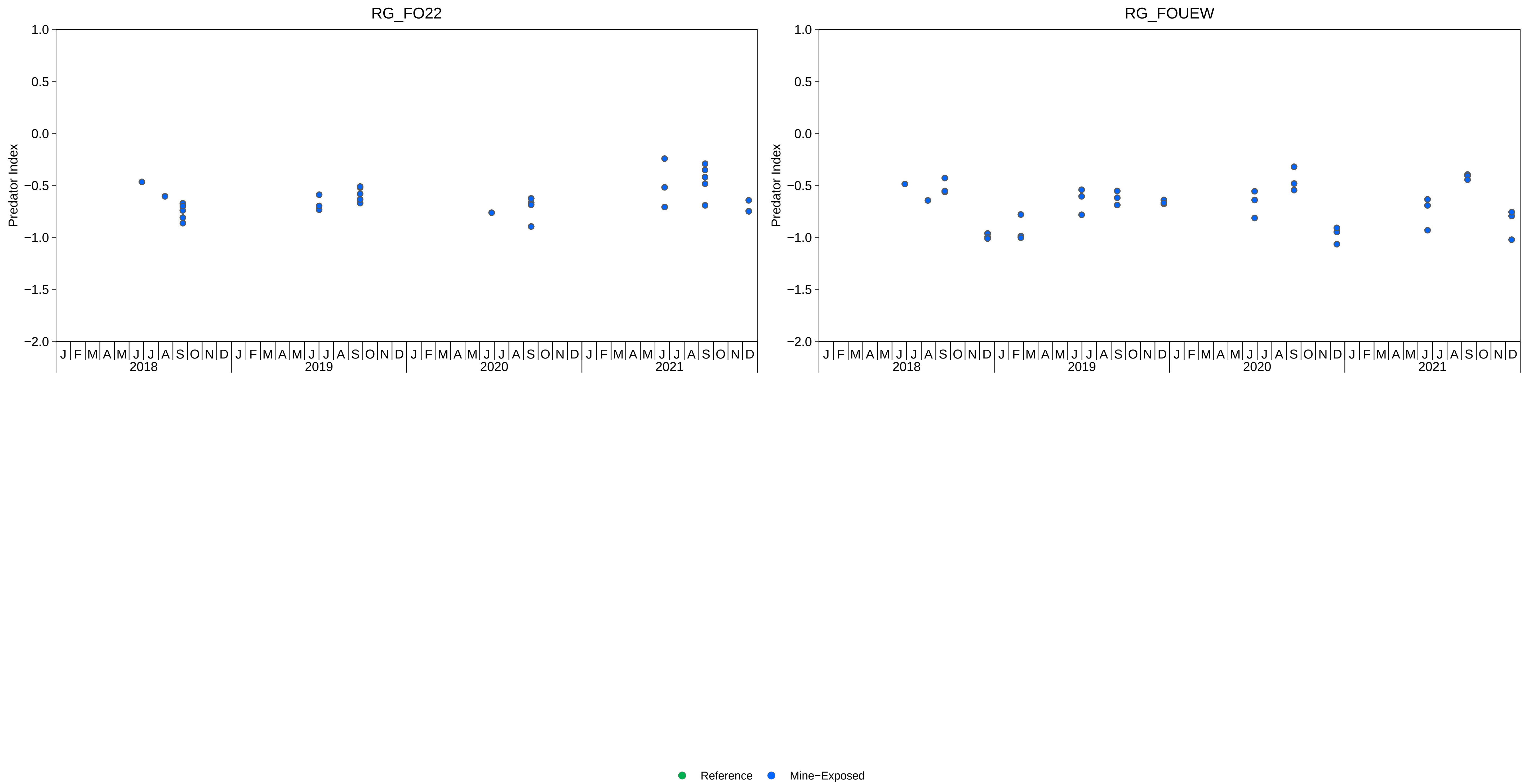

Figure E.43: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

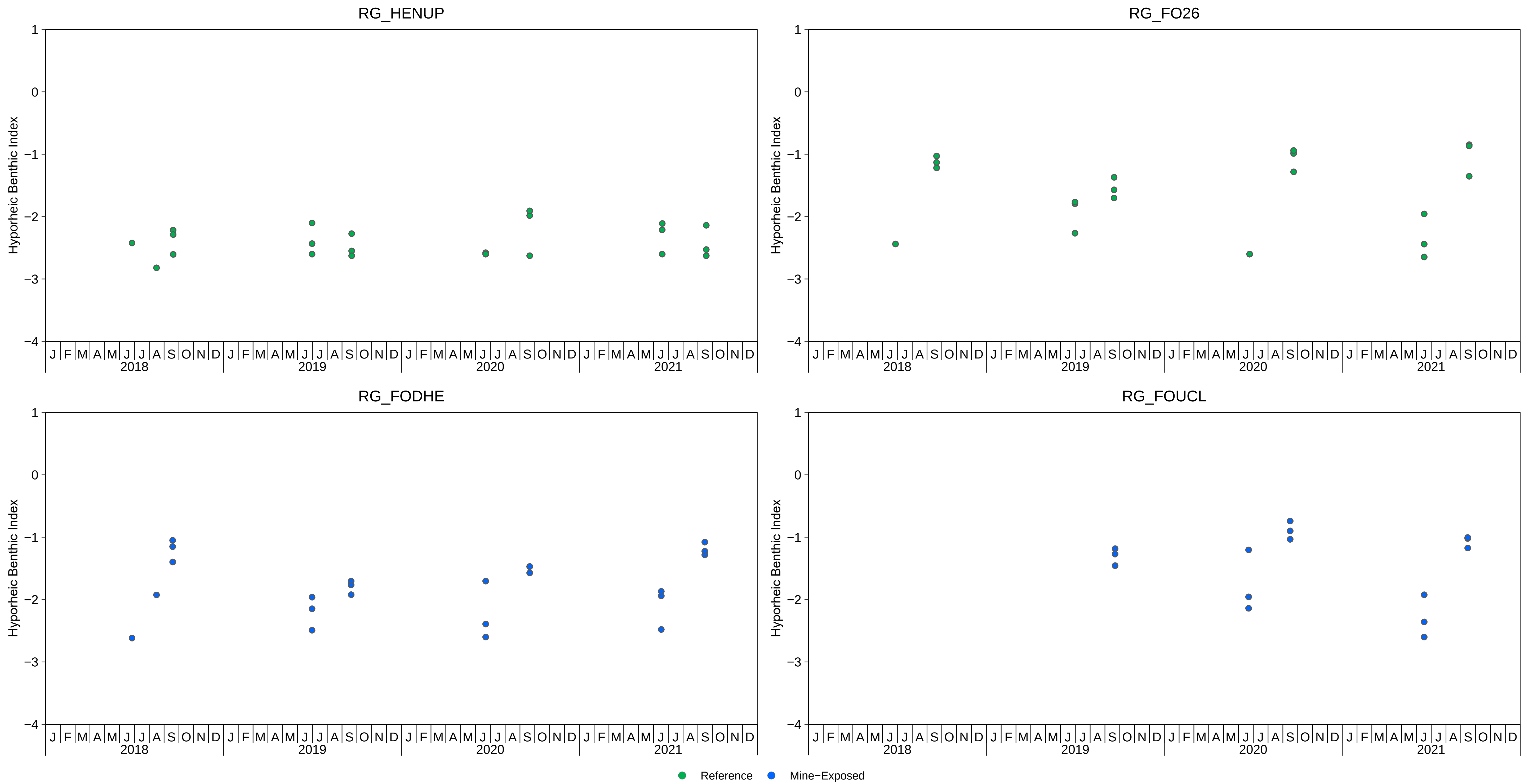

Figure E.44: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

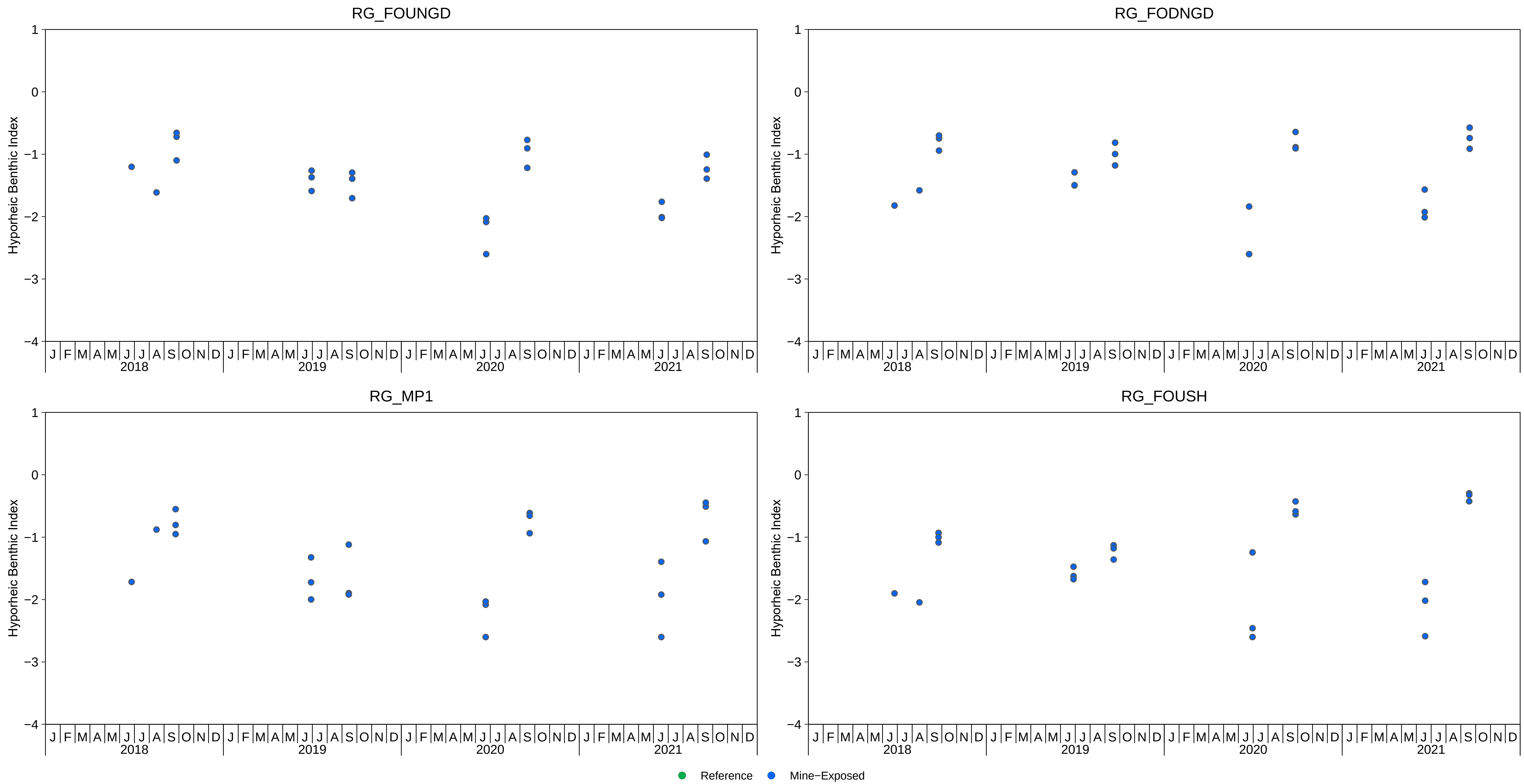

Figure E.44: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

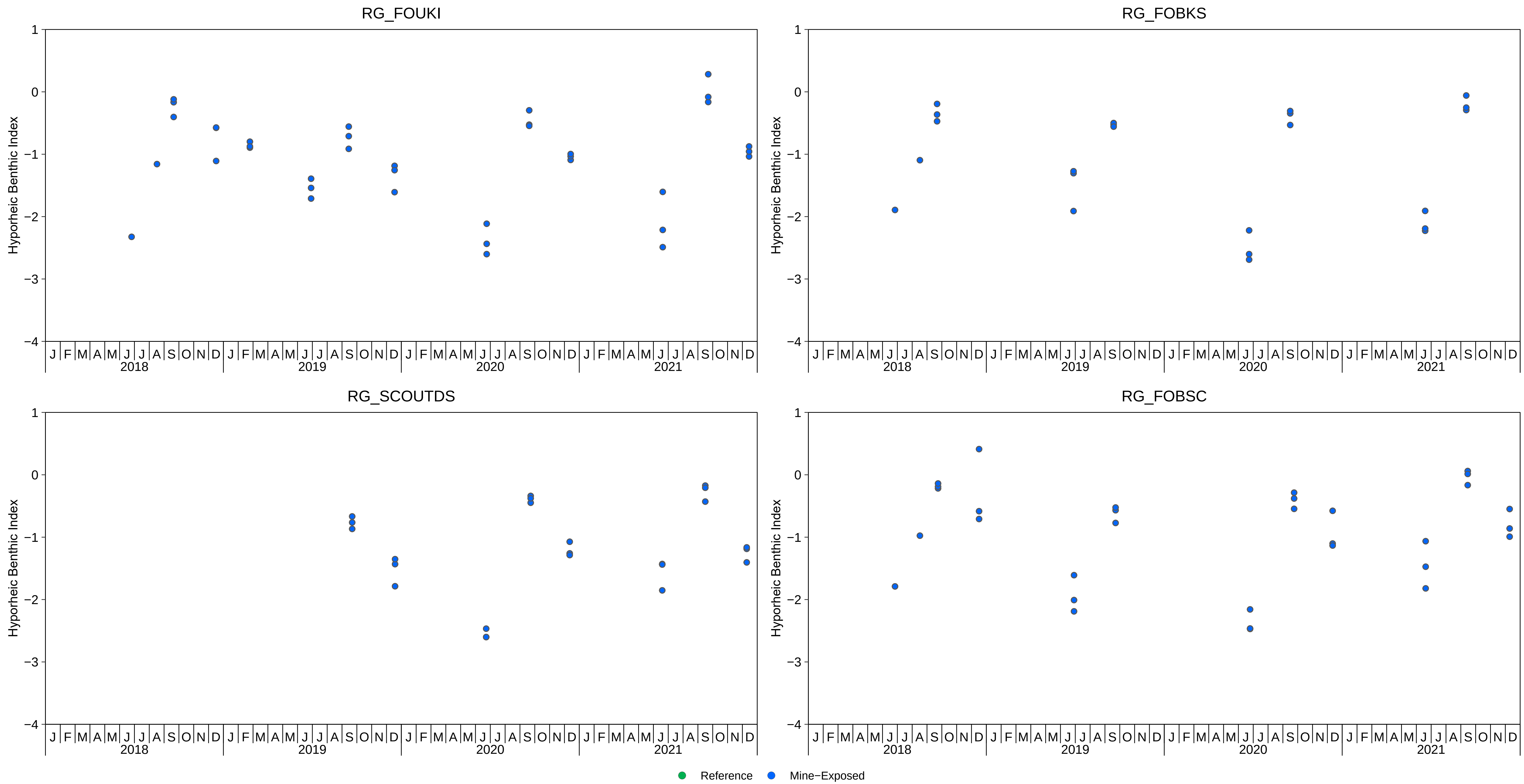

Figure E.44: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

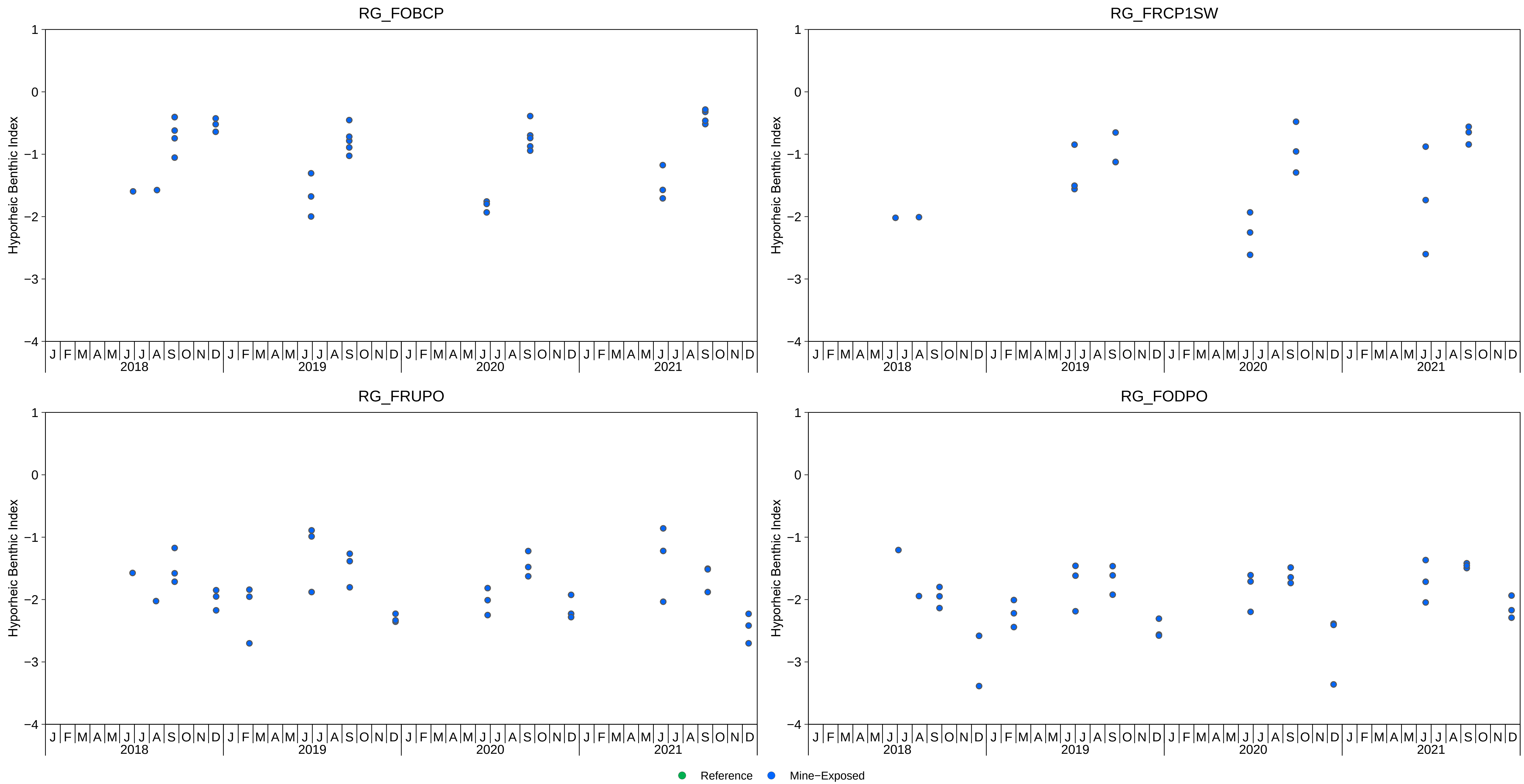

Figure E.44: **Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021**

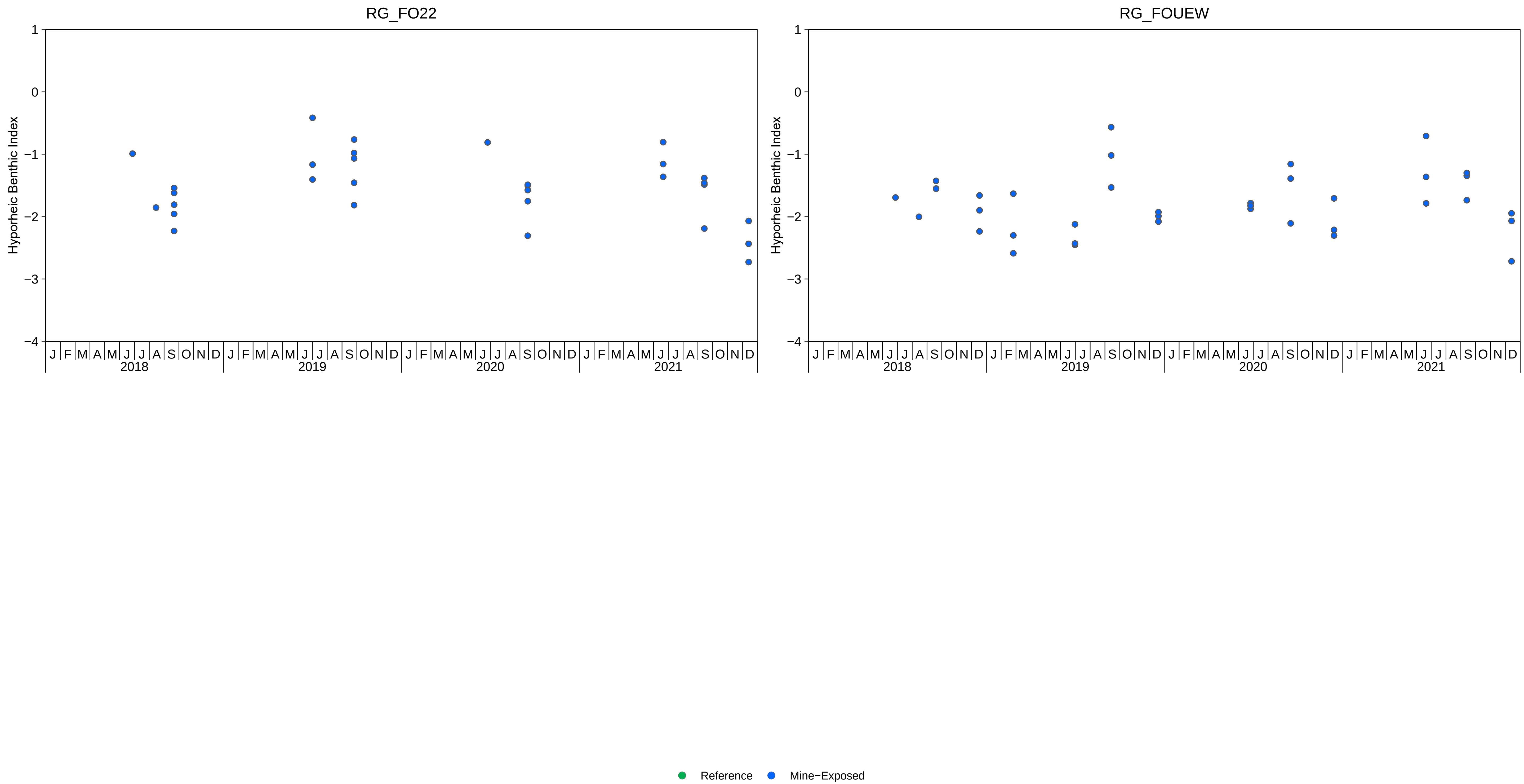

Figure E.44: Seasonal Variability in Benthic Invertebrate Community, FRO LAEMP 2018 to 2021

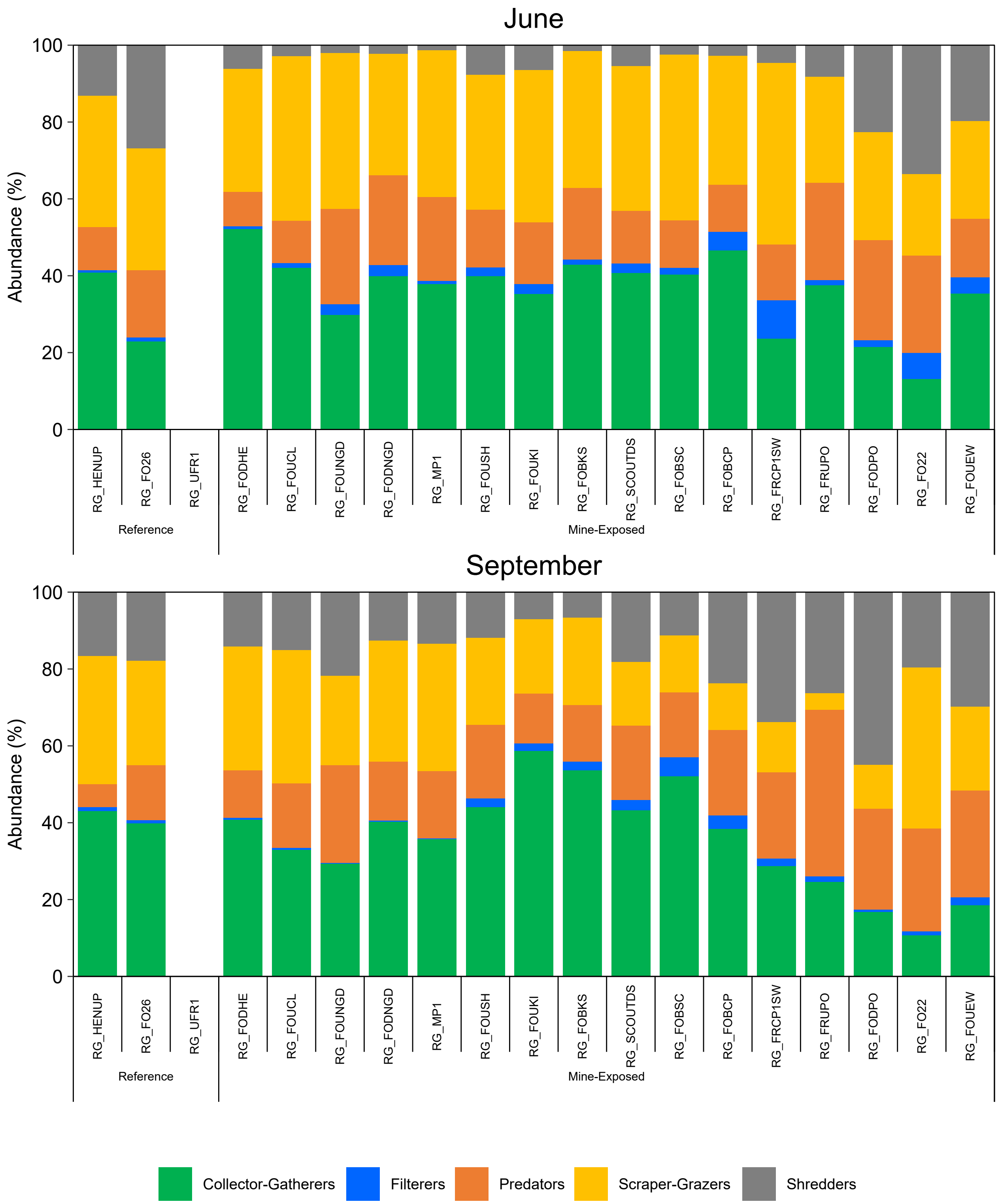

Figure E.45: Benthic Invertebrate Community Feeding Groups Percent Composition, FRO LAEMP, June to December 2021

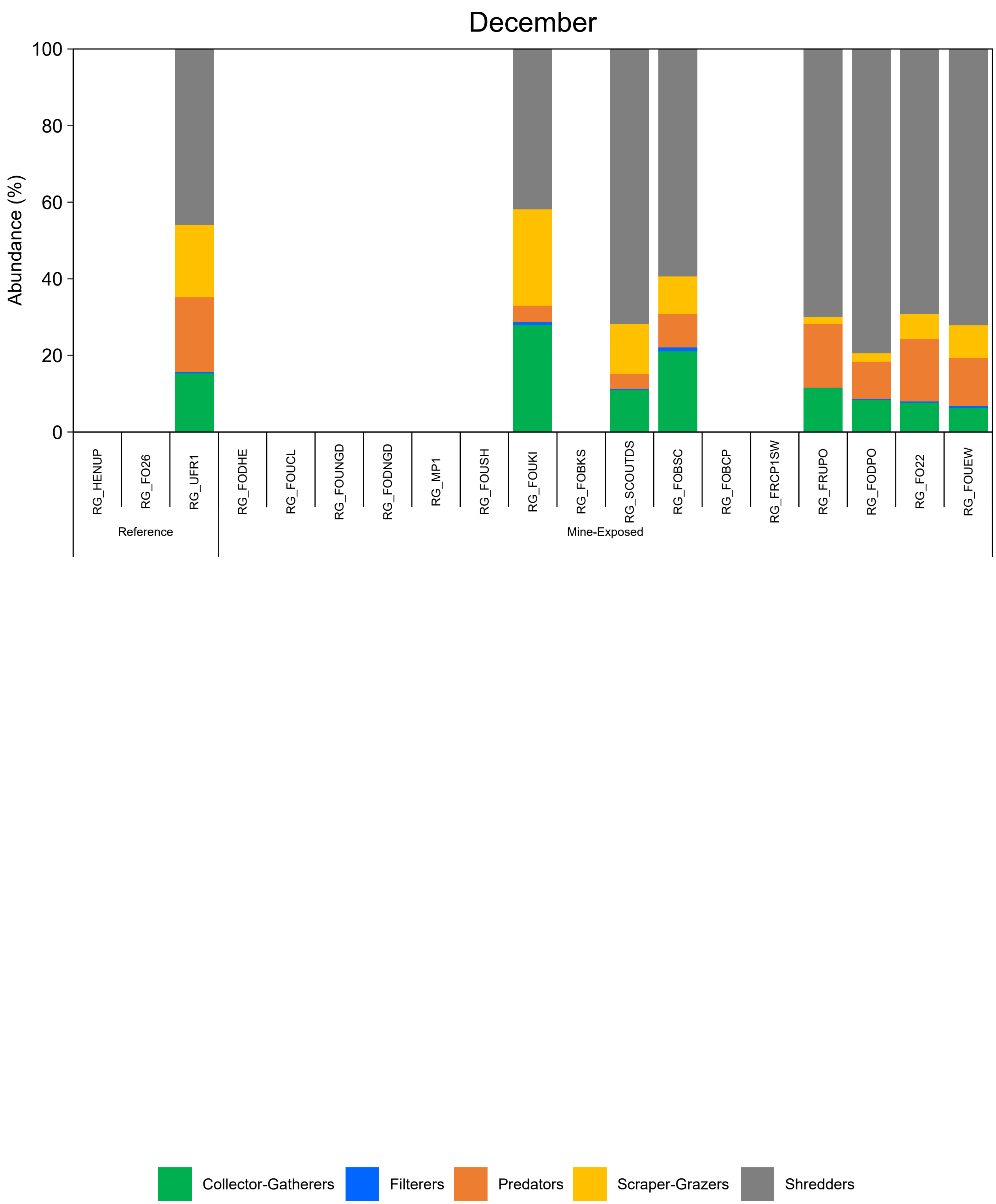

Figure E.45: Benthic Invertebrate Community Feeding Groups Percent Composition, FRO LAEMP, June to December 2021

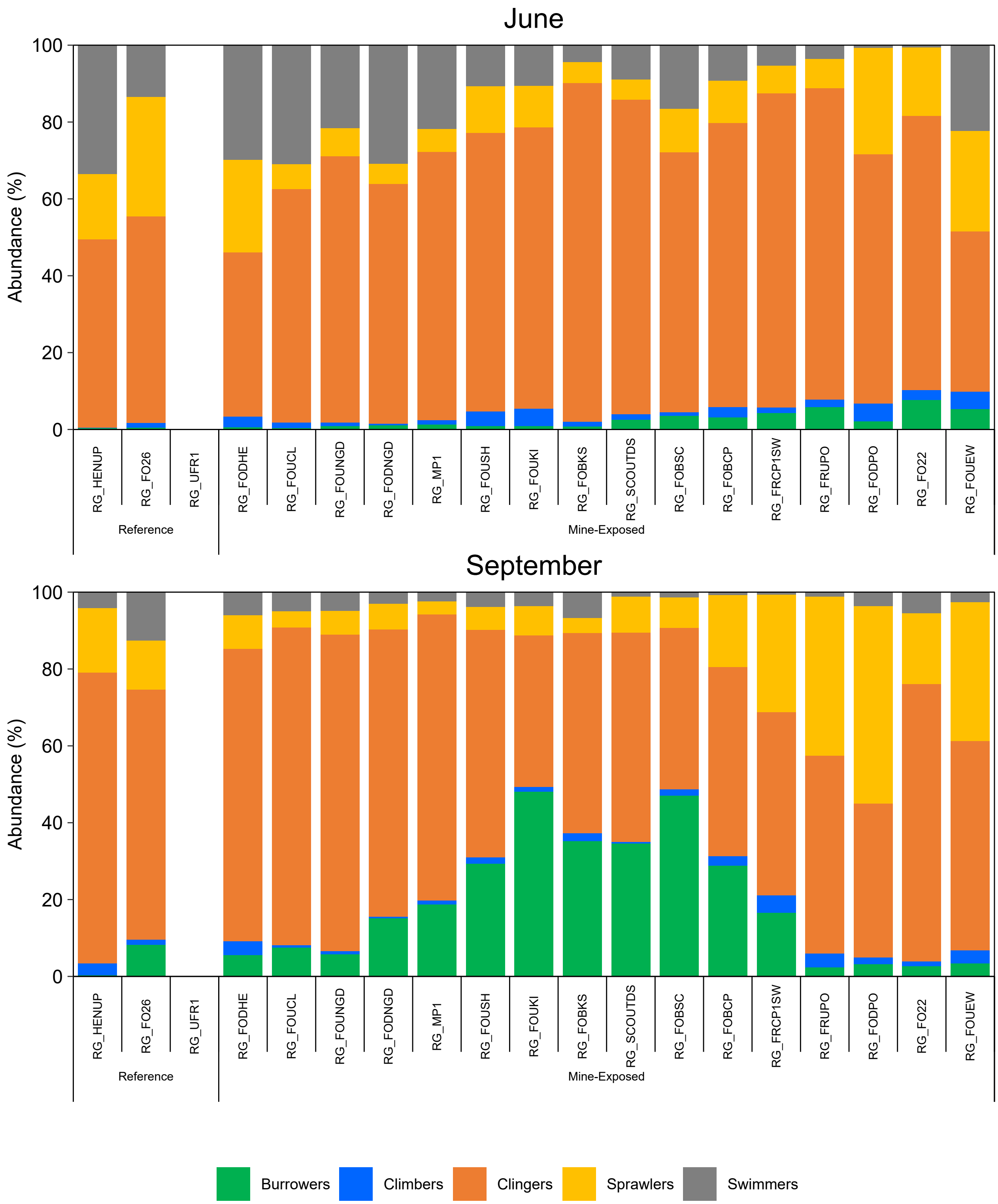

Figure E.46: Benthic Invertebrate Community Habitat Groups Percent Composition, FRO LAEMP, June to December 2021

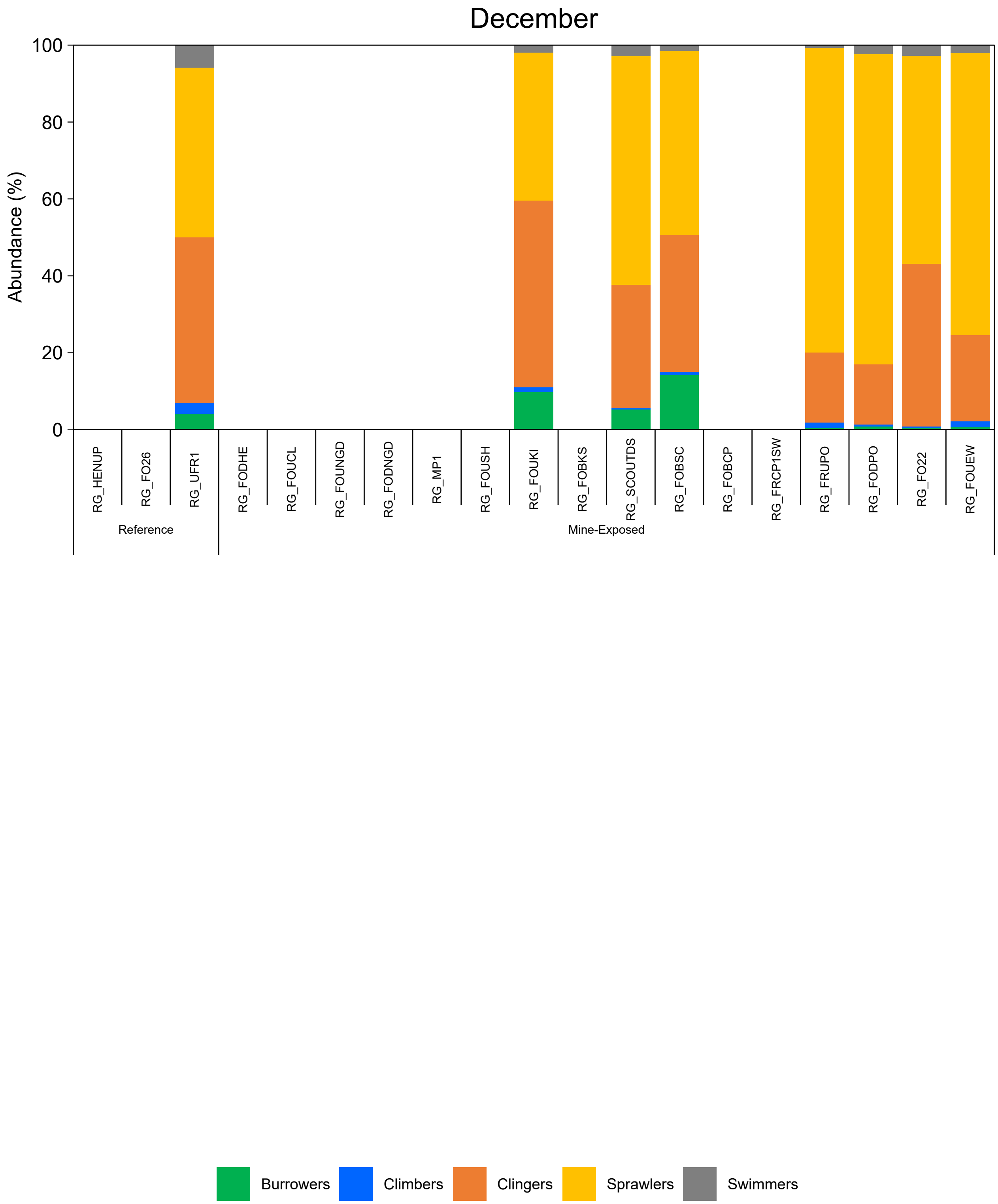

Figure E.46: Benthic Invertebrate Community Habitat Groups Percent Composition, FRO LAEMP, June to December 2021

Table E.1: Benthic Invertebrate Traits at the Family Level, FRO LAEMP, 2021

Phylum	Subphylum	Class	Subclass	Order	Suborder	Family	HBI[a]	CEFI[b]		Feeding Preferences[c]	Habitat Preferences[c]
								Velocity (m/s)	Specificity		
Annelida	NA	Clitellata	NA	NA	NA	Enchytraeidae	10	0.25	4	Filterer	-
Annelida	NA	Clitellata	Lumbriculata	Hirudinida	Rhynchobdellida	Glossiphoniidae	8	-	-	Predator	Climber
Annelida	NA	Clitellata	Lumbriculata	Lumbriculida	NA	Lumbriculidae	5	0.37	2	Filterer	Burrower
Annelida	NA	Clitellata	Tubificata	Tubificida	NA	Naididae	8	0.25	4	Filterer | Scraper/Grazer	Burrower
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Sarcoptiformes	Oribatida	Hydrozetidae	-	0.34	4	Gatherer	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Arrenuridae	-	-	-	Predator	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Aturidae	-	-	-	Predator	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Feltriidae	-	-	-	Predator	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Hydryphantidae	-	0.3	4	Parasite	Swimmer
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Hygrobatidae	-	0.17	4	Predator	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Lebertiidae	-	0.32	2	Parasite	Swimmer
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Mideopsidae	-	0.17	4	Predator	Swimmer
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Pionidae	-	-	-	Parasite	Climber
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Sperchontidae	-	-	-	Parasite	-
Arthropoda	Chelicerata	Euchelicerata	Arachnida	Trombidiformes	Prostigmata	Torrenticolidae	-	0.3	4	Parasite	Swimmer
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Gammaridea	Gammaridae	6	-	-	Predator | Shredder	Swimmer
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Amphipoda	Gammaridea	Hyalellidae	8	0.07	8	Filterer	Swimmer
Arthropoda	Crustacea	Malacostraca	Eumalacostraca	Isopoda	Asellota	Asellidae	8	-	-	Gatherer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Adephaga	Carabidae	4	-	-	Predator	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Adephaga	Dytiscidae	5	-	-	Predator	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Adephaga	Haliplidae	5	-	-	Piercer Herbivore | Predator | Scraper/Grazer	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Polyphaga	Curculionidae	5	-	-	Piercer Herbivore	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Polyphaga	Elmidae	5	0.29	4	Scraper/Grazer	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Polyphaga	Helophoridae	5	-	-	Shredder	Climber
Arthropoda	Hexapoda	Insecta	Pterygota	Coleoptera	Polyphaga	Hydrophilidae	5	-	-	Predator	Swimmer | Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Athericidae	4	0.35	2	Predator	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Dolichopodidae	4	-	-	Predator	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Empididae	6	0.4	2	Predator	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Muscidae	6	-	-	Predator	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Pelecorhynchidae	-	-	-	Predator	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Stratiomyidae	7	-	-	Gatherer	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Syrphidae	10	-	-	Gatherer	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Brachycera	Tabanidae	5	-	-	Predator	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Blephariceridae	0	-	-	Scraper/Grazer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Ceratopogonidae	6	0.21	4	Predator	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Chironomidae	6	0.31	4	Gatherer	Sprawler
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Dixidae	1	-	-	Filterer	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Psychodidae	10	0.37	4	Gatherer	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Simuliidae	5	0.42	2	Filterer	Clinger | Climber
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Tanyderidae	3	-	-	-	Sprawler

Notes: "-" indicates no sample collected, NA not applicable for these taxa.

[a] Hilsenhoff Biotic Index. Higher values indicate higher tolerance to organic pollution - Hilsenhoff, William L. "An improved biotic index of organic stream pollution." The great lakes entomologist 20.1 (1987): 7.

[b] Canadian Ecological Flow Index - Calculated based on velocity preference and specificity (high specificity indicate the organism has a lower tolerance for deviations from preferred velocity) - Peters, Daniel L., et al. "Establishing standards and assessment criteria for ecological instream flow needs in agricultural regions of Canada." Journal of environmental quality 41.1 (2012): 41-51.

[c] Multiple preferences separated by "\|". Value modified from USGS Trait Database (https://pubs.usgs.gov/ds/ds187/) and the bio.inf R package Lester L. Yuan (2014). bio.infer: Predict environmental conditions from biological observations. R package version

Table E.1: Benthic Invertebrate Traits at the Family Level, FRO LAEMP, 2021

Phylum	Subphylum	Class	Subclass	Order	Suborder	Family	HBI[a]	CEFI[b]		Feeding Preferences[c]	Habitat Preferences[c]
								Velocity (m/s)	Specificity		
Arthropoda	Hexapoda	Insecta	Pterygota	Diptera	Nematocera	Tipulidae	4	0.39	4	Shredder	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Caenidae	6	0.06	8	Gatherer	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Ephemerellidae	2	0.42	4	Predator | Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Leptohyphidae	4	-	-	Gatherer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Furcatergalia	Leptophlebiidae	4	0.26	4	Gatherer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Pisciforma	Ameletidae	0	0.45	2	Scraper/Grazer | Shredder	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Pisciforma	Baetidae	6	0.43	2	Gatherer	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Pisciforma	Heptageniidae	3	0.48	2	Scraper/Grazer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Ephemeroptera	Pisciforma	Siphlonuridae	4	-	-	Gatherer	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Hemiptera	Heteroptera	Corixidae	5	-	-	Gatherer	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Megaloptera	NA	Sialidae	4	-	-	Predator	Burrower
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Anisoptera	Aeshnidae	5	-	-	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Odonata	Zygoptera	Coenagrionidae	8	-	-	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Euholognatha	Capniidae	3	0.4	4	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Euholognatha	Leuctridae	0	0.38	2	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Euholognatha	Nemouridae	2	0.44	2	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Euholognatha	Taeniopterygidae	2	0.5	4	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Systellognatha	Chloroperlidae	0	0.49	2	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Systellognatha	Peltoperlidae	0	-	-	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Systellognatha	Perlidae	3	0.54	2	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Systellognatha	Perlodidae	2	0.47	4	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Plecoptera	Systellognatha	Pteronarcyidae	2	-	-	Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Apataniidae	3	0.38	4	Scraper/Grazer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Brachycentridae	2	0.41	4	Filterer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Glossosomatidae	1	0.41	4	Scraper/Grazer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Hydropsychidae	5	0.43	2	Filterer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Hydroptilidae	6	0.27	4	Piercer Herbivore | Scraper/Grazer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Lepidostomatidae	1	0.39	2	Shredder	Climber
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Leptoceridae	4	0.15	4	Shredder	Swimmer
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Limnephilidae	4	0.33	4	Scraper/Grazer | Shredder	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Philopotamidae	4	0.49	2	Filterer	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Phryganeidae	4	-	-	Predator | Shredder	Climber
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Polycentropodidae	6	0.22	4	Filterer | Gatherer | Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Rhyacophilidae	1	0.44	2	Predator	Clinger
Arthropoda	Hexapoda	Insecta	Pterygota	Trichoptera	NA	Uenoidae	3	0.45	4	Scraper/Grazer	Clinger
Mollusca	NA	Bivalvia	Heterodonta	Veneroida	NA	Pisidiidae	6	-	-	Filterer	Burrower
Mollusca	NA	Gastropoda	NA	Basommatophora	NA	Lymnaeidae	6	0.42	2	Scraper/Grazer	Clinger
Mollusca	NA	Gastropoda	NA	Basommatophora	NA	Physidae	8	-	-	Scraper/Grazer	Clinger
Mollusca	NA	Gastropoda	NA	Basommatophora	NA	Planorbidae	6	0.1	4	Scraper/Grazer	Clinger
Mollusca	NA	Gastropoda	NA	Heterostropha	NA	Valvatidae	8	0.18	4	Scraper/Grazer	Clinger
Mollusca	NA	Gastropoda	NA	Neotaenioglossa	NA	Hydrobiidae	8	0.16	4	Scraper/Grazer	Clinger

Notes: "-" indicates no sample collected, NA not applicable for these taxa.

[a] Hilsenhoff Biotic Index. Higher values indicate higher tolerance to organic pollution - Hilsenhoff, William L. "An improved biotic index of organic stream pollution." The great lakes entomologist 20.1 (1987): 7.

[b] Canadian Ecological Flow Index - Calculated based on velocity preference and specificity (high specificity indicate the organism has a lower tolerance for deviations from preferred velocity) - Peters, Daniel L., et al. "Establishing standards and assessment criteria for ecological instream flow needs in agricultural regions of Canada." Journal of environmental quality 41.1 (2012): 41-51.

[c] Multiple preferences separated by "|". Value modified from USGS Trait Database (https://pubs.usgs.gov/ds/ds187/) and the bio.inf R package Lester L. Yuan (2014). bio.infer: Predict environmental conditions from biological observations. R package version

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Reference	RG_HENUP	FR_HC3	2012	18-Sep-12	0.830	18-Sep-12	6.38
				2016	12-Sep-16	1.11	12-Sep-16	3.77
				2017	15-Sep-17	1.04	15-Sep-17	4.90
				2018	06-Sep-18	1.11	06-Sep-18	2.50
				2018	06-Sep-18	1.11	06-Sep-18	4.60
				2018	06-Sep-18	1.11	06-Sep-18	4.80
				2019	-	-	20-Jun-19	4.90
				2019	-	-	20-Jun-19	7.30
				2019	-	-	20-Jun-19	6.20
				2019	11-Sep-19	1.11	11-Sep-19	5.20
				2019	11-Sep-19	1.11	11-Sep-19	4.60
				2019	11-Sep-19	1.11	11-Sep-19	3.90
				2020	15-Jun-20	0.342	15-Jun-20	5.10
				2020	15-Jun-20	0.342	15-Jun-20	7.50
				2020	15-Jun-20	0.342	15-Jun-20	3.60
				2020	15-Sep-20	1.03	15-Sep-20	6.00
				2020	15-Sep-20	1.03	15-Sep-20	6.90
				2020	15-Sep-20	1.03	15-Sep-20	5.70
				2021	16-Jun-21	0.403	16-Jun-21	5.10
				2021	16-Jun-21	0.403	16-Jun-21	5.20
				2021	16-Jun-21	0.403	16-Jun-21	4.80
				2021	16-Sep-21	1.16	16-Sep-21	4.80
				2021	16-Sep-21	1.16	16-Sep-21	6.00
				2021	16-Sep-21	1.16	16-Sep-21	6.00
		RG_FO26	FR_UFR1	2012	18-Sep-12	0.580	18-Sep-12	4.91
				2012	18-Sep-12	0.580	18-Sep-12	3.62
				2012	18-Sep-12	0.580	18-Sep-12	4.21
				2015	14-Sep-15	0.790	14-Sep-15	4.90
				2016	12-Sep-16	0.685	12-Sep-16	3.53
				2017	12-Sep-17	0.600	12-Sep-17	3.20
				2018	07-Sep-18	0.567	07-Sep-18	3.40
				2018	07-Sep-18	0.567	07-Sep-18	4.10
				2018	07-Sep-18	0.567	07-Sep-18	3.80
				2019	20-Jun-19	0.603	20-Jun-19	3.60
				2019	20-Jun-19	0.603	20-Jun-19	3.40
				2019	20-Jun-19	0.603	20-Jun-19	3.40
				2019	10-Sep-19	0.610	10-Sep-19	3.20
				2019	10-Sep-19	0.610	10-Sep-19	3.10
				2019	10-Sep-19	0.610	10-Sep-19	2.80
				2020	17-Jun-20	0.384	17-Jun-20	4.40
				2020	17-Jun-20	0.384	17-Jun-20	4.00
				2020	17-Jun-20	0.384	17-Jun-20	5.00
				2020	17-Sep-20	0.646	17-Sep-20	3.90
				2020	17-Sep-20	0.646	17-Sep-20	5.00
				2020	17-Sep-20	0.646	17-Sep-20	4.80
				2021	14-Jun-21	0.449	14-Jun-21	5.40
				2021	14-Jun-21	0.449	14-Jun-21	3.20
				2021	14-Jun-21	0.449	14-Jun-21	4.40
				2021	15-Sep-21	0.799	15-Sep-21	4.20
				2021	15-Sep-21	0.799	15-Sep-21	3.70
				2021	15-Sep-21	0.799	15-Sep-21	3.80
				2021	15-Sep-21	0.799	15-Sep-21	2.90
				2021	15-Sep-21	0.799	15-Sep-21	3.80
		RG_UFR1	FR_UFR1	2018	05-Dec-18	0.732	05-Dec-18	4.10
				2018	05-Dec-18	0.732	05-Dec-18	3.70
				2018	05-Dec-18	0.732	05-Dec-18	4.00
				2019	14-Feb-19	1.02	14-Feb-19	4.90
				2019	14-Feb-19	1.02	14-Feb-19	3.80
				2019	14-Feb-19	1.02	14-Feb-19	5.20
				2019	10-Dec-19	0.823	10-Dec-19	4.20
				2019	10-Dec-19	0.823	10-Dec-19	4.60
				2019	10-Dec-19	0.823	10-Dec-19	4.60

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Reference	RG_UFR1	FR_UFR1	2020	17-Jun-20	0.445	17-Jun-20	3.80
				2020	17-Jun-20	0.445	17-Jun-20	6.40
				2020	17-Jun-20	0.445	17-Jun-20	5.30
				2020	17-Jun-20	0.445	17-Jun-20	4.10
				2020	17-Jun-20	0.445	17-Jun-20	3.60
				2020	16-Sep-20	0.706	16-Sep-20	6.50
				2020	16-Sep-20	0.706	16-Sep-20	4.90
				2020	16-Sep-20	0.706	16-Sep-20	6.30
				2020	16-Sep-20	0.706	16-Sep-20	5.80
				2020	16-Sep-20	0.706	16-Sep-20	4.40
				2020	08-Dec-20	0.875	08-Dec-20	4.70
				2020	08-Dec-20	0.875	08-Dec-20	3.90
				2020	08-Dec-20	0.875	08-Dec-20	3.90
				2020	08-Dec-20	0.875	08-Dec-20	3.50
				2020	08-Dec-20	0.875	08-Dec-20	4.80
				2021	15-Jun-21	0.488	15-Jun-21	3.90
				2021	15-Jun-21	0.488	15-Jun-21	2.90
				2021	15-Jun-21	0.488	15-Jun-21	4.90
				2021	15-Jun-21	0.488	15-Jun-21	3.10
				2021	15-Jun-21	0.488	15-Jun-21	3.40
				2021	20-Sep-21	0.640	20-Sep-21	4.80
				2021	20-Sep-21	0.640	20-Sep-21	5.60
				2021	20-Sep-21	0.640	20-Sep-21	4.50
				2021	20-Sep-21	0.640	20-Sep-21	4.90
				2021	20-Sep-21	0.640	20-Sep-21	4.80
				2021	16-Dec-21	0.720	16-Dec-21	3.70
				2021	16-Dec-21	0.720	16-Dec-21	4.00
				2021	16-Dec-21	0.720	16-Dec-21	1.70
				2021	16-Dec-21	0.720	16-Dec-21	3.00
				2021	16-Dec-21	0.720	16-Dec-21	4.00
	Mine-Exposed	RG_FRSCH2	-	2021	15-Sep-21	85.5	14-Sep-21	9.60
				2021	15-Sep-21	85.5	14-Sep-21	7.30
				2021	15-Sep-21	85.5	14-Sep-21	6.70
				2021	15-Sep-21	85.5	14-Sep-21	3.50
				2021	15-Sep-21	85.5	14-Sep-21	6.70
				2021	14-Dec-21	96.1	14-Dec-21	4.40
				2021	14-Dec-21	96.1	14-Dec-21	4.40
				2021	14-Dec-21	96.1	14-Dec-21	5.10
				2021	14-Dec-21	96.1	14-Dec-21	7.40
				2021	14-Dec-21	96.1	14-Dec-21	6.70
		RG_FRGHSC	-	2021	19-Sep-21	107	19-Sep-21	19.0
				2021	19-Sep-21	107	19-Sep-21	5.50
				2021	19-Sep-21	107	19-Sep-21	13.0
				2021	19-Sep-21	107	19-Sep-21	18.0
				2021	19-Sep-21	107	19-Sep-21	28.0
				2021	13-Dec-21	103	13-Dec-21	13.0
				2021	13-Dec-21	103	13-Dec-21	17.0
				2021	13-Dec-21	103	13-Dec-21	15.0
				2021	13-Dec-21	103	13-Dec-21	6.50
				2021	13-Dec-21	103	13-Dec-21	4.60
		RG_FODHE	FR_FR1	2012	19-Sep-12	18.0	19-Sep-12	8.88
				2015	14-Sep-15	9.82	14-Sep-15	6.55
				2017	15-Sep-17	20.4	15-Sep-17	8.10
				2018	05-Sep-18	19.8	05-Sep-18	11.0
				2018	05-Sep-18	19.8	05-Sep-18	12.0
				2018	05-Sep-18	19.8	05-Sep-18	15.0
				2018	05-Dec-18	25.1	05-Dec-18	7.80
				2018	05-Dec-18	25.1	05-Dec-18	7.60
				2018	05-Dec-18	25.1	05-Dec-18	3.80
				2019	20-Jun-19	4.28	20-Jun-19	6.80
				2019	20-Jun-19	4.28	20-Jun-19	6.00
				2019	20-Jun-19	4.28	20-Jun-19	3.90

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FODHE	FR_FR1	2019	10-Sep-19	13.5	10-Sep-19	5.10
				2019	10-Sep-19	13.5	10-Sep-19	5.20
				2019	10-Sep-19	13.5	10-Sep-19	7.00
				2019	10-Dec-19	21.8	10-Dec-19	4.40
				2019	10-Dec-19	21.8	10-Dec-19	5.20
				2019	10-Dec-19	21.8	10-Dec-19	5.20
				2020	15-Jun-20	3.90	15-Jun-20	5.70
				2020	15-Jun-20	3.90	15-Jun-20	5.40
				2020	15-Jun-20	3.90	15-Jun-20	3.30
				2020	15-Sep-20	22.7	15-Sep-20	8.10
				2020	15-Sep-20	22.7	15-Sep-20	8.10
				2020	15-Sep-20	22.7	15-Sep-20	7.50
				2021	14-Jun-21	7.36	14-Jun-21	4.40
				2021	14-Jun-21	7.36	14-Jun-21	3.30
				2021	14-Jun-21	7.36	14-Jun-21	5.00
				2021	13-Sep-21	12.4	13-Sep-21	7.40
				2021	13-Sep-21	12.4	13-Sep-21	7.90
				2021	13-Sep-21	12.4	13-Sep-21	12.0
				2021	15-Dec-21	40.1	15-Dec-21	7.30
				2021	15-Dec-21	40.1	15-Dec-21	7.80
				2021	15-Dec-21	40.1	15-Dec-21	5.90
		RG_FOUCL	RG_FOUCL	2019	12-Sep-19	16.5	12-Sep-19	7.20
				2019	12-Sep-19	16.5	12-Sep-19	5.50
				2019	12-Sep-19	16.5	12-Sep-19	5.80
				2019	09-Dec-19	30.0	09-Dec-19	4.50
				2019	09-Dec-19	30.0	09-Dec-19	4.60
				2019	09-Dec-19	30.0	09-Dec-19	3.40
				2020	15-Jun-20	5.54	15-Jun-20	7.90
				2020	15-Jun-20	5.54	15-Jun-20	5.50
				2020	15-Jun-20	5.54	15-Jun-20	6.60
				2020	10-Sep-20	27.3	10-Sep-20	13.0
				2020	10-Sep-20	27.3	10-Sep-20	10.0
				2020	10-Sep-20	27.3	10-Sep-20	6.70
				2020	08-Dec-20	32.4	08-Dec-20	6.40
				2020	08-Dec-20	32.4	08-Dec-20	5.90
				2020	08-Dec-20	32.4	08-Dec-20	5.80
				2021	14-Jun-21	4.99	14-Jun-21	6.10
				2021	14-Jun-21	4.99	14-Jun-21	5.40
				2021	14-Jun-21	4.99	14-Jun-21	8.70
				2021	13-Sep-21	15.3	13-Sep-21	11.0
				2021	13-Sep-21	15.3	13-Sep-21	8.80
				2021	13-Sep-21	15.3	13-Sep-21	11.0
				2021	15-Dec-21	37.3	15-Dec-21	7.30
				2021	15-Dec-21	37.3	15-Dec-21	7.50
				2021	15-Dec-21	37.3	15-Dec-21	8.70
		RG_FOUNGD	-	2012	12-Sep-12	23.5	12-Sep-12	8.15
				2015	15-Sep-15	24.0	15-Sep-15	7.19
				2017	16-Sep-17	53.0	16-Sep-17	6.50
				2018	13-Sep-18	37.9	13-Sep-18	6.00
				2018	13-Sep-18	37.9	13-Sep-18	7.00
				2018	13-Sep-18	37.9	13-Sep-18	8.00
				2018	05-Dec-18	52.2	05-Dec-18	6.00
				2018	05-Dec-18	52.2	05-Dec-18	6.10
				2018	05-Dec-18	52.2	05-Dec-18	5.00
				2019	12-Feb-19	48.4	12-Feb-19	5.60
				2019	12-Feb-19	48.4	12-Feb-19	5.50
				2019	12-Feb-19	48.4	12-Feb-19	5.70
				2019	26-Mar-19	29.9	26-Mar-19	5.40
				2019	19-Jun-19	8.86	19-Jun-19	5.10
				2019	19-Jun-19	8.86	19-Jun-19	4.50
				2019	19-Jun-19	8.86	19-Jun-19	5.10
				2019	12-Sep-19	27.7	12-Sep-19	7.50

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOUNGD	-	2019	12-Sep-19	27.7	12-Sep-19	6.40
				2019	12-Sep-19	27.7	12-Sep-19	6.10
				2019	09-Dec-19	53.8	09-Dec-19	5.10
				2019	09-Dec-19	53.8	09-Dec-19	4.30
				2019	09-Dec-19	53.8	09-Dec-19	4.40
				2020	06-Jun-20	9.33	16-Jun-20	4.50
				2020	06-Jun-20	9.33	16-Jun-20	4.70
				2020	06-Jun-20	9.33	16-Jun-20	4.30
				2020	10-Sep-20	39.9	10-Sep-20	11.0
				2020	10-Sep-20	39.9	10-Sep-20	11.0
				2020	10-Sep-20	39.9	10-Sep-20	9.60
				2020	08-Dec-20	58.6	08-Dec-20	5.10
				2020	08-Dec-20	58.6	08-Dec-20	6.70
				2020	08-Dec-20	58.6	08-Dec-20	6.30
				2021	15-Jun-21	9.36	15-Jun-21	7.10
				2021	15-Jun-21	9.36	15-Jun-21	5.20
				2021	15-Jun-21	9.36	15-Jun-21	5.40
				2021	16-Sep-21	36.5	17-Sep-21	8.10
				2021	16-Sep-21	36.5	17-Sep-21	8.10
				2021	16-Sep-21	36.5	17-Sep-21	7.80
				2021	15-Dec-21	72.0	15-Dec-21	4.60
				2021	15-Dec-21	72.0	15-Dec-21	3.30
				2021	15-Dec-21	72.0	15-Dec-21	3.20
		RG_FODNGD	FR_FRABEC1	2017	16-Sep-17	54.3	16-Sep-17	5.60
				2018	12-Sep-18	42.0	12-Sep-18	9.00
				2018	12-Sep-18	42.0	12-Sep-18	8.00
				2018	12-Sep-18	42.0	12-Sep-18	8.00
				2018	05-Dec-18	51.8	05-Dec-18	4.70
				2018	05-Dec-18	51.8	05-Dec-18	4.20
				2018	05-Dec-18	51.8	05-Dec-18	7.00
				2019	12-Feb-19	54.4	12-Feb-19	7.20
				2019	12-Feb-19	54.4	12-Feb-19	5.00
				2019	12-Feb-19	54.4	12-Feb-19	8.10
				2019	19-Jun-19	8.59	19-Jun-19	4.10
				2019	19-Jun-19	8.59	19-Jun-19	5.60
				2019	19-Jun-19	8.59	19-Jun-19	4.40
				2019	12-Sep-19	30.2	12-Sep-19	8.00
				2019	12-Sep-19	30.2	12-Sep-19	4.50
				2019	12-Sep-19	30.2	12-Sep-19	7.00
				2019	09-Dec-19	55.4	09-Dec-19	4.90
				2019	09-Dec-19	55.4	09-Dec-19	5.90
				2019	09-Dec-19	55.4	09-Dec-19	5.60
				2020	16-Jun-20	9.86	16-Jun-20	6.30
				2020	16-Jun-20	9.86	16-Jun-20	5.80
				2020	16-Jun-20	9.86	16-Jun-20	2.50
				2020	21-Sep-20	49.0	21-Sep-20	6.90
				2020	21-Sep-20	49.0	21-Sep-20	7.90
				2020	21-Sep-20	49.0	21-Sep-20	9.60
				2020	08-Dec-20	68.8	08-Dec-20	6.00
				2020	08-Dec-20	68.8	08-Dec-20	5.60
				2020	08-Dec-20	68.8	08-Dec-20	5.70
				2021	16-Jun-21	10.9	16-Jun-21	6.50
				2021	16-Jun-21	10.9	16-Jun-21	3.70
				2021	16-Jun-21	10.9	16-Jun-21	6.20
				2021	16-Sep-21	41.0	17-Sep-21	7.70
				2021	16-Sep-21	41.0	17-Sep-21	8.00
				2021	16-Sep-21	41.0	17-Sep-21	11.0
				2021	15-Dec-21	87.0	15-Dec-21	5.20
				2021	15-Dec-21	87.0	15-Dec-21	4.60
				2021	15-Dec-21	87.0	15-Dec-21	5.40
		RG_MP1	FR_MULTIPLATE	2012	12-Sep-12	36.1	12-Sep-12	9.04
				2015	15-Sep-15	23.2	15-Sep-15	5.85

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_MP1	FR_MULTIPLATE	2017	12-Sep-17	52.2	12-Sep-17	5.60
				2018	11-Sep-18	44.3	11-Sep-18	7.00
				2018	11-Sep-18	44.3	11-Sep-18	8.60
				2018	11-Sep-18	44.3	11-Sep-18	8.00
				2018	06-Dec-18	57.0	06-Dec-18	6.60
				2018	06-Dec-18	57.0	06-Dec-18	6.80
				2018	06-Dec-18	57.0	06-Dec-18	5.30
				2019	13-Feb-19	62.5	13-Feb-19	5.00
				2019	13-Feb-19	62.5	13-Feb-19	4.70
				2019	13-Feb-19	62.5	13-Feb-19	8.40
				2019	18-Jun-19	10.8	18-Jun-19	5.20
				2019	18-Jun-19	10.8	18-Jun-19	6.00
				2019	18-Jun-19	10.8	18-Jun-19	6.10
				2019	05-Sep-19	34.4	05-Sep-19	5.60
				2019	05-Sep-19	34.4	05-Sep-19	7.00
				2019	05-Sep-19	34.4	05-Sep-19	7.30
				2019	09-Dec-19	57.0	09-Dec-19	5.10
				2019	09-Dec-19	57.0	09-Dec-19	6.40
				2019	09-Dec-19	57.0	09-Dec-19	5.80
				2020	15-Jun-20	11.2	15-Jun-20	6.10
				2020	15-Jun-20	11.2	15-Jun-20	6.80
				2020	15-Jun-20	11.2	15-Jun-20	6.70
				2020	15-Sep-20	49.5	15-Sep-20	13.0
				2020	15-Sep-20	49.5	15-Sep-20	12.0
				2020	15-Sep-20	49.5	15-Sep-20	9.60
				2020	09-Dec-20	68.1	09-Dec-20	5.70
				2020	09-Dec-20	68.1	09-Dec-20	5.90
				2020	09-Dec-20	68.1	09-Dec-20	6.00
				2021	14-Jun-21	15.5	14-Jun-21	6.20
				2021	14-Jun-21	15.5	14-Jun-21	9.70
				2021	14-Jun-21	15.5	14-Jun-21	13.0
				2021	15-Sep-21	54.6	14-Sep-21	5.00
				2021	15-Sep-21	54.6	14-Sep-21	8.50
				2021	15-Sep-21	54.6	14-Sep-21	8.40
				2021	15-Dec-21	81.9	15-Dec-21	6.10
				2021	15-Dec-21	81.9	15-Dec-21	4.10
				2021	15-Dec-21	81.9	15-Dec-21	4.40
		RG_FOUSH	FR_FRNTP	2012	13-Sep-12	36.0	13-Sep-12	7.65
				2015	15-Sep-15	25.5	15-Sep-15	6.04
				2017	14-Sep-17	47.9	14-Sep-17	6.50
				2018	11-Sep-18	43.2	11-Sep-18	8.00
				2018	11-Sep-18	43.2	11-Sep-18	8.00
				2018	11-Sep-18	43.2	11-Sep-18	9.10
				2018	06-Dec-18	57.1	06-Dec-18	5.50
				2018	06-Dec-18	57.1	06-Dec-18	5.00
				2018	06-Dec-18	57.1	06-Dec-18	5.20
				2019	13-Feb-19	61.2	13-Feb-19	9.60
				2019	13-Feb-19	61.2	13-Feb-19	6.90
				2019	13-Feb-19	61.2	13-Feb-19	6.60
				2019	17-Jun-19	10.7	17-Jun-19	5.90
				2019	17-Jun-19	10.7	17-Jun-19	6.10
				2019	17-Jun-19	10.7	17-Jun-19	4.70
				2019	09-Sep-19	36.3	09-Sep-19	5.60
				2019	09-Sep-19	36.3	09-Sep-19	5.90
				2019	09-Sep-19	36.3	09-Sep-19	6.00
				2019	09-Dec-19	56.1	09-Dec-19	5.80
				2019	09-Dec-19	56.1	09-Dec-19	7.10
				2019	09-Dec-19	56.1	09-Dec-19	5.30
				2020	23-Jun-20	11.9	23-Jun-20	6.30
				2020	23-Jun-20	11.9	23-Jun-20	4.50
				2020	23-Jun-20	11.9	23-Jun-20	7.70
				2020	21-Sep-20	52.4	21-Sep-20	8.10

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOUSH	FR_FRNTP	2020	21-Sep-20	52.4	21-Sep-20	7.30
				2020	21-Sep-20	52.4	21-Sep-20	11.0
				2020	09-Dec-20	61.3	09-Dec-20	5.80
				2020	09-Dec-20	61.3	09-Dec-20	4.70
				2020	09-Dec-20	61.3	09-Dec-20	5.30
				2021	15-Jun-21	12.9	15-Jun-21	5.40
				2021	15-Jun-21	12.9	15-Jun-21	4.50
				2021	15-Jun-21	12.9	15-Jun-21	6.00
				2021	16-Sep-21	47.6	16-Sep-21	7.50
				2021	16-Sep-21	47.6	16-Sep-21	7.30
				2021	16-Sep-21	47.6	16-Sep-21	5.70
				2021	15-Dec-21	79.2	15-Dec-21	5.10
				2021	15-Dec-21	79.2	15-Dec-21	2.40
				2021	15-Dec-21	79.2	15-Dec-21	3.80
		RG_FOUKI	FR_FR2	2012	14-Sep-12	33.6	14-Sep-12	8.55
				2015	16-Sep-15	23.3	16-Sep-15	5.13
				2016	12-Sep-16	28.9	12-Sep-16	5.24
				2017	12-Sep-17	44.5	12-Sep-17	6.70
				2017	12-Sep-17	44.5	12-Sep-17	6.60
				2017	12-Sep-17	44.5	12-Sep-17	6.80
				2018	06-Mar-18	54.9	06-Mar-18	4.90
				2018	06-Mar-18	54.9	06-Mar-18	5.40
				2018	06-Mar-18	54.9	06-Mar-18	5.00
				2018	07-Sep-18	38.0	07-Sep-18	9.40
				2018	07-Sep-18	38.0	07-Sep-18	10.0
				2018	07-Sep-18	38.0	07-Sep-18	11.0
				2018	04-Dec-18	47.4	04-Dec-18	4.90
				2018	04-Dec-18	47.4	04-Dec-18	5.50
				2018	04-Dec-18	47.4	04-Dec-18	7.20
				2019	12-Feb-19	46.8	12-Feb-19	4.50
				2019	12-Feb-19	46.8	12-Feb-19	4.80
				2019	12-Feb-19	46.8	12-Feb-19	4.70
				2019	18-Jun-19	9.68	18-Jun-19	4.70
				2019	18-Jun-19	9.68	18-Jun-19	4.70
				2019	18-Jun-19	9.68	18-Jun-19	5.00
				2019	05-Sep-19	31.2	05-Sep-19	6.20
				2019	05-Sep-19	31.2	05-Sep-19	8.80
				2019	05-Sep-19	31.2	05-Sep-19	9.20
				2019	09-Dec-19	52.2	09-Dec-19	4.10
				2019	09-Dec-19	52.2	09-Dec-19	4.40
				2019	09-Dec-19	52.2	09-Dec-19	4.40
				2020	17-Jun-20	16.1	17-Jun-20	6.30
				2020	17-Jun-20	16.1	17-Jun-20	6.80
				2020	17-Jun-20	16.1	17-Jun-20	6.30
				2020	17-Jun-20	16.1	17-Jun-20	4.90
				2020	17-Jun-20	16.1	17-Jun-20	4.80
				2020	14-Sep-20	57.2	14-Sep-20	9.40
				2020	14-Sep-20	57.2	14-Sep-20	9.00
				2020	14-Sep-20	57.2	14-Sep-20	8.50
				2020	14-Sep-20	57.2	14-Sep-20	12.0
				2020	14-Sep-20	57.2	14-Sep-20	11.0
				2020	09-Dec-20	56.2	09-Dec-20	5.60
				2020	09-Dec-20	56.2	09-Dec-20	6.20
				2020	09-Dec-20	56.2	09-Dec-20	4.20
				2020	09-Dec-20	56.2	09-Dec-20	5.60
				2020	09-Dec-20	56.2	09-Dec-20	3.00
				2021	17-Jun-21	16.2	17-Jun-21	5.60
				2021	17-Jun-21	16.2	17-Jun-21	5.70
				2021	17-Jun-21	16.2	17-Jun-21	5.40
				2021	17-Jun-21	16.2	17-Jun-21	4.60
				2021	17-Jun-21	16.2	17-Jun-21	6.30
				2021	20-Sep-21	43.3	20-Sep-21	6.20

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOUKI	FR_FR2	2021	20-Sep-21	43.3	20-Sep-21	5.50
				2021	20-Sep-21	43.3	20-Sep-21	7.00
				2021	20-Sep-21	43.3	20-Sep-21	4.50
				2021	20-Sep-21	43.3	20-Sep-21	4.90
				2021	14-Dec-21	67.9	14-Dec-21	2.50
				2021	14-Dec-21	67.9	14-Dec-21	4.00
				2021	14-Dec-21	67.9	14-Dec-21	2.50
				2021	14-Dec-21	67.9	14-Dec-21	5.50
				2021	14-Dec-21	67.9	14-Dec-21	3.10
		RG_FOBKS	FR_FR3	2012	14-Sep-12	31.9	14-Sep-12	8.84
				2015	16-Sep-15	23.9	16-Sep-15	6.00
				2017	13-Sep-17	44.9	13-Sep-17	5.80
				2017	13-Sep-17	44.9	13-Sep-17	8.20
				2017	13-Sep-17	44.9	13-Sep-17	5.90
				2018	12-Mar-18	52.9	12-Mar-18	5.80
				2018	12-Mar-18	52.9	12-Mar-18	5.10
				2018	12-Mar-18	52.9	12-Mar-18	6.20
				2018	08-Sep-18	36.2	08-Sep-18	11.0
				2018	08-Sep-18	36.2	08-Sep-18	10.0
				2018	08-Sep-18	36.2	08-Sep-18	9.90
				2018	05-Dec-18	49.4	04-Dec-18	3.80
				2018	05-Dec-18	49.4	04-Dec-18	3.80
				2018	05-Dec-18	49.4	04-Dec-18	6.60
				2019	12-Feb-19	47.1	12-Feb-19	13.0
				2019	17-Jun-19	10.2	17-Jun-19	5.00
				2019	17-Jun-19	10.2	17-Jun-19	3.80
				2019	17-Jun-19	10.2	17-Jun-19	4.00
				2019	09-Sep-19	34.8	09-Sep-19	7.50
				2019	09-Sep-19	34.8	09-Sep-19	7.90
				2019	09-Sep-19	34.8	09-Sep-19	9.50
				2019	10-Dec-19	53.0	10-Dec-19	8.20
				2019	10-Dec-19	53.0	10-Dec-19	7.50
				2019	10-Dec-19	53.0	10-Dec-19	6.20
				2020	16-Jun-20	14.6	16-Jun-20	6.00
				2020	16-Jun-20	14.6	16-Jun-20	4.40
				2020	16-Jun-20	14.6	16-Jun-20	6.60
				2020	16-Jun-20	14.6	16-Jun-20	6.00
				2020	16-Jun-20	14.6	16-Jun-20	5.90
				2020	10-Sep-20	47.2	10-Sep-20	6.60
				2020	10-Sep-20	47.2	10-Sep-20	13.0
				2020	10-Sep-20	47.2	10-Sep-20	11.0
				2020	10-Sep-20	47.2	10-Sep-20	11.0
				2020	10-Sep-20	47.2	10-Sep-20	7.80
				2020	23-Nov-20	49.6	23-Nov-20	5.90
				2020	23-Nov-20	49.6	23-Nov-20	4.90
				2020	23-Nov-20	49.6	23-Nov-20	5.90
				2020	23-Nov-20	49.6	23-Nov-20	6.40
				2020	23-Nov-20	49.6	23-Nov-20	5.00
				2020	07-Dec-20	63.4	07-Dec-20	7.00
				2020	07-Dec-20	63.4	07-Dec-20	8.00
				2020	07-Dec-20	63.4	07-Dec-20	5.80
				2020	07-Dec-20	63.4	07-Dec-20	7.60
				2020	07-Dec-20	63.4	07-Dec-20	8.00
				2021	16-Jun-21	14.2	16-Jun-21	5.70
				2021	16-Jun-21	14.2	16-Jun-21	5.70
				2021	16-Jun-21	14.2	16-Jun-21	5.70
				2021	16-Jun-21	14.2	16-Jun-21	6.00
				2021	16-Jun-21	14.2	16-Jun-21	5.70
				2021	09-Sep-21	45.5	09-Sep-21	6.90
				2021	09-Sep-21	45.5	09-Sep-21	7.80
				2021	09-Sep-21	45.5	09-Sep-21	7.60
				2021	09-Sep-21	45.5	09-Sep-21	7.20

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOBKS	FR_FR3	2021	09-Sep-21	45.5	09-Sep-21	7.80
				2021	14-Dec-21	71.8	14-Dec-21	8.90
				2021	14-Dec-21	71.8	14-Dec-21	5.30
				2021	14-Dec-21	71.8	14-Dec-21	5.90
				2021	14-Dec-21	71.8	14-Dec-21	6.00
				2021	14-Dec-21	71.8	14-Dec-21	4.80
		RG_SCOUTDS	FR_SCOUTDS	2019	12-Sep-19	32.9	12-Sep-19	13.7
				2019	12-Sep-19	32.9	12-Sep-19	13.7
				2019	12-Sep-19	32.9	12-Sep-19	10.2
				2019	10-Dec-19	129	10-Dec-19	6.70
				2019	10-Dec-19	129	10-Dec-19	6.80
				2019	10-Dec-19	129	10-Dec-19	7.50
				2020	16-Jun-20	20.8	16-Jun-20	5.20
				2020	16-Jun-20	20.8	16-Jun-20	5.30
				2020	16-Jun-20	20.8	16-Jun-20	4.90
				2020	16-Jun-20	20.8	16-Jun-20	7.20
				2020	16-Jun-20	20.8	16-Jun-20	7.50
				2020	17-Sep-20	123	17-Sep-20	8.50
				2020	17-Sep-20	123	17-Sep-20	8.50
				2020	17-Sep-20	123	17-Sep-20	7.60
				2020	17-Sep-20	123	17-Sep-20	7.10
				2020	17-Sep-20	123	17-Sep-20	8.00
				2020	23-Nov-20	106	23-Nov-20	8.60
				2020	23-Nov-20	106	23-Nov-20	8.70
				2020	23-Nov-20	106	23-Nov-20	9.50
				2020	23-Nov-20	106	23-Nov-20	11.0
				2020	23-Nov-20	106	23-Nov-20	10.0
				2020	07-Dec-20	119	07-Dec-20	4.30
				2020	07-Dec-20	119	07-Dec-20	7.60
				2020	07-Dec-20	119	07-Dec-20	5.30
				2020	07-Dec-20	119	07-Dec-20	5.70
				2020	07-Dec-20	119	07-Dec-20	5.90
				2021	16-Jun-21	18.7	16-Jun-21	6.80
				2021	16-Jun-21	18.7	16-Jun-21	5.80
				2021	16-Jun-21	18.7	16-Jun-21	5.20
				2021	16-Jun-21	18.7	16-Jun-21	6.70
				2021	16-Jun-21	18.7	16-Jun-21	6.50
				2021	14-Sep-21	77.8	14-Sep-21	9.80
				2021	14-Sep-21	77.8	14-Sep-21	10.0
				2021	14-Sep-21	77.8	14-Sep-21	7.70
				2021	14-Sep-21	77.8	14-Sep-21	8.10
				2021	14-Sep-21	77.8	14-Sep-21	11.0
				2021	09-Dec-21	107	09-Dec-21	6.30
				2021	09-Dec-21	107	09-Dec-21	11.0
				2021	09-Dec-21	107	09-Dec-21	8.60
				2021	09-Dec-21	107	09-Dec-21	4.80
				2021	09-Dec-21	107	09-Dec-21	3.70
		RG_FOBSC	FR_FR4	2012	15-Sep-12	53.8	15-Sep-12	8.40
				2015	17-Sep-15	33.9	17-Sep-15	7.51
				2017	15-Sep-17	72.9	15-Sep-17	5.00
				2018	10-Sep-18	61.3	10-Sep-18	9.00
				2018	10-Sep-18	61.3	10-Sep-18	9.00
				2018	10-Sep-18	61.3	10-Sep-18	8.20
				2018	04-Dec-18	49.1	04-Dec-18	8.00
				2018	04-Dec-18	49.1	04-Dec-18	9.20
				2018	04-Dec-18	49.1	04-Dec-18	7.60
				2019	18-Jun-19	14.2	18-Jun-19	5.30
				2019	18-Jun-19	14.2	18-Jun-19	5.10
				2019	18-Jun-19	14.2	18-Jun-19	5.70
				2019	13-Sep-19	51.8	13-Sep-19	12.5
				2019	13-Sep-19	51.8	13-Sep-19	11.9
				2019	13-Sep-19	51.8	13-Sep-19	12.6

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOBSC	FR_FR4	2019	10-Dec-19	135	10-Dec-19	9.30
				2019	10-Dec-19	135	10-Dec-19	5.90
				2019	10-Dec-19	135	10-Dec-19	5.60
				2020	18-Jun-20	70.7	18-Jun-20	5.00
				2020	18-Jun-20	70.7	18-Jun-20	5.60
				2020	18-Jun-20	70.7	18-Jun-20	4.90
				2020	18-Jun-20	70.7	18-Jun-20	7.40
				2020	18-Jun-20	70.7	18-Jun-20	4.20
				2020	18-Sep-20	107	18-Sep-20	10.0
				2020	18-Sep-20	107	18-Sep-20	12.0
				2020	18-Sep-20	107	18-Sep-20	8.20
				2020	18-Sep-20	107	18-Sep-20	11.0
				2020	18-Sep-20	107	18-Sep-20	12.0
				2020	23-Nov-20	113	23-Nov-20	8.40
				2020	23-Nov-20	113	23-Nov-20	10.0
				2020	23-Nov-20	113	23-Nov-20	8.30
				2020	23-Nov-20	113	23-Nov-20	7.90
				2020	23-Nov-20	113	23-Nov-20	8.70
				2020	07-Dec-20	115	07-Dec-20	7.30
				2020	07-Dec-20	115	07-Dec-20	8.60
				2020	07-Dec-20	115	07-Dec-20	6.10
				2020	07-Dec-20	115	07-Dec-20	8.10
				2020	07-Dec-20	115	07-Dec-20	9.40
				2021	17-Jun-21	52.2	17-Jun-21	6.70
				2021	17-Jun-21	52.2	17-Jun-21	6.30
				2021	17-Jun-21	52.2	17-Jun-21	6.50
				2021	17-Jun-21	52.2	17-Jun-21	5.60
				2021	17-Jun-21	52.2	17-Jun-21	6.80
				2021	13-Sep-21	74.4	13-Sep-21	15.0
				2021	13-Sep-21	74.4	13-Sep-21	16.0
				2021	13-Sep-21	74.4	13-Sep-21	14.0
				2021	13-Sep-21	74.4	13-Sep-21	13.0
				2021	13-Sep-21	74.4	13-Sep-21	10.0
				2021	09-Dec-21	102	09-Dec-21	6.30
				2021	09-Dec-21	102	09-Dec-21	7.30
				2021	09-Dec-21	102	09-Dec-21	8.50
				2021	09-Dec-21	102	09-Dec-21	9.90
				2021	09-Dec-21	102	09-Dec-21	11.0
		RG_FOBCP	FR_FRCP1	2012	15-Sep-12	117	15-Sep-12	7.95
				2015	17-Sep-15	63.8	17-Sep-15	7.68
				2016	12-Sep-16	73.2	12-Sep-16	9.72
				2017	14-Sep-17	128	14-Sep-17	6.40
				2018	09-Sep-18	200	09-Sep-18	9.40
				2018	09-Sep-18	200	09-Sep-18	8.00
				2018	09-Sep-18	200	09-Sep-18	10.0
				2018	09-Sep-18	200	09-Sep-18	8.00
				2018	09-Sep-18	200	09-Sep-18	7.90
				2018	03-Dec-18	603	03-Dec-18	39.0
				2018	03-Dec-18	603	03-Dec-18	8.40
				2018	03-Dec-18	603	03-Dec-18	7.00
				2019	-	-	11-Feb-19	9.40
				2019	-	-	11-Feb-19	10.0
				2019	-	-	11-Feb-19	8.60
				2019	18-Jun-19	28.3	18-Jun-19	2.80
				2019	18-Jun-19	28.3	18-Jun-19	5.30
				2019	18-Jun-19	28.3	18-Jun-19	4.40
				2019	06-Sep-19	57.5	06-Sep-19	9.10
				2019	06-Sep-19	57.5	06-Sep-19	8.40
				2019	06-Sep-19	57.5	06-Sep-19	6.30
				2019	06-Sep-19	57.5	06-Sep-19	7.60
				2019	06-Sep-19	57.5	06-Sep-19	7.30
				2020	17-Jun-20	43.9	17-Jun-20	5.30

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOBCP	FR_FRCP1	2020	17-Jun-20	43.9	17-Jun-20	6.40
				2020	17-Jun-20	43.9	17-Jun-20	5.30
				2020	17-Jun-20	43.9	17-Jun-20	4.90
				2020	17-Jun-20	43.9	17-Jun-20	4.30
				2020	16-Sep-20	116	16-Sep-20	11.0
				2020	16-Sep-20	116	16-Sep-20	9.90
				2020	16-Sep-20	116	16-Sep-20	9.90
				2020	16-Sep-20	116	16-Sep-20	11.0
				2020	16-Sep-20	116	16-Sep-20	11.0
				2020	07-Dec-20	127	07-Dec-20	8.90
				2020	07-Dec-20	127	07-Dec-20	6.50
				2020	07-Dec-20	127	07-Dec-20	6.90
				2020	07-Dec-20	127	07-Dec-20	5.80
				2020	07-Dec-20	127	07-Dec-20	4.40
				2021	17-Jun-21	38.4	17-Jun-21	6.00
				2021	17-Jun-21	38.4	17-Jun-21	6.20
				2021	17-Jun-21	38.4	17-Jun-21	6.80
				2021	17-Jun-21	38.4	17-Jun-21	6.10
				2021	17-Jun-21	38.4	17-Jun-21	7.70
				2021	13-Sep-21	75.4	13-Sep-21	4.70
				2021	13-Sep-21	75.4	13-Sep-21	8.70
				2021	13-Sep-21	75.4	13-Sep-21	12.0
				2021	13-Sep-21	75.4	13-Sep-21	8.10
				2021	13-Sep-21	75.4	13-Sep-21	10.0
				2021	14-Dec-21	109	14-Dec-21	7.30
				2021	14-Dec-21	109	14-Dec-21	7.50
				2021	14-Dec-21	109	14-Dec-21	8.50
				2021	14-Dec-21	109	14-Dec-21	5.50
				2021	14-Dec-21	109	14-Dec-21	6.70
		RG_FRCP1SW	FR_FRCP1SW	2017	14-Sep-17	131	14-Sep-17	6.90
				2019	19-Jun-19	30.9	19-Jun-19	48.0
				2019	19-Jun-19	30.9	19-Jun-19	5.70
				2019	19-Jun-19	30.9	19-Jun-19	6.50
				2019	13-Sep-19	54.2	13-Sep-19	7.70
				2019	13-Sep-19	54.2	13-Sep-19	7.70
				2019	13-Sep-19	54.2	13-Sep-19	7.70
				2020	18-Jun-20	42.3	18-Jun-20	39.0
				2020	18-Jun-20	42.3	18-Jun-20	29.0
				2020	18-Jun-20	42.3	18-Jun-20	103
				2020	18-Jun-20	42.3	18-Jun-20	6.70
				2020	18-Jun-20	42.3	18-Jun-20	5.20
				2020	22-Sep-20	112	22-Sep-20	13.0
				2020	22-Sep-20	112	22-Sep-20	16.0
				2020	22-Sep-20	112	22-Sep-20	14.0
				2020	22-Sep-20	112	22-Sep-20	8.20
				2020	22-Sep-20	112	22-Sep-20	7.40
				2021	17-Jun-21	38.7	17-Jun-21	6.80
				2021	17-Jun-21	38.7	17-Jun-21	5.80
				2021	17-Jun-21	38.7	17-Jun-21	9.90
				2021	17-Jun-21	38.7	17-Jun-21	7.50
				2021	17-Jun-21	38.7	17-Jun-21	6.70
				2021	15-Sep-21	78.9	14-Sep-21	7.70
				2021	15-Sep-21	78.9	14-Sep-21	8.00
				2021	15-Sep-21	78.9	14-Sep-21	4.90
				2021	15-Sep-21	78.9	14-Sep-21	6.10
				2021	15-Sep-21	78.9	14-Sep-21	6.90
		RG_FRUPO	FR_FRRD	2017	15-Sep-17	98.9	15-Sep-17	7.40
				2018	07-Mar-18	110	07-Mar-18	6.80
				2018	09-Sep-18	82.0	09-Sep-18	7.50
				2018	09-Sep-18	82.0	09-Sep-18	9.70
				2018	09-Sep-18	82.0	09-Sep-18	8.70
				2018	04-Dec-18	68.7	04-Dec-18	5.30

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FRUPO	FR_FRRD	2018	04-Dec-18	68.7	04-Dec-18	5.10
				2018	04-Dec-18	68.7	04-Dec-18	5.00
				2019	11-Feb-19	91.1	11-Feb-19	5.10
				2019	11-Feb-19	91.1	11-Feb-19	8.00
				2019	11-Feb-19	91.1	11-Feb-19	6.20
				2019	19-Jun-19	39.1	19-Jun-19	8.10
				2019	19-Jun-19	39.1	19-Jun-19	7.60
				2019	19-Jun-19	39.1	19-Jun-19	5.00
				2019	07-Sep-19	66.2	07-Sep-19	6.10
				2019	07-Sep-19	66.2	07-Sep-19	8.10
				2019	07-Sep-19	66.2	07-Sep-19	6.80
				2019	11-Dec-19	100	11-Dec-19	4.60
				2019	11-Dec-19	100	11-Dec-19	3.90
				2019	11-Dec-19	100	11-Dec-19	4.50
				2020	19-Jun-20	47.2	19-Jun-20	4.50
				2020	19-Jun-20	47.2	19-Jun-20	5.70
				2020	19-Jun-20	47.2	19-Jun-20	4.20
				2020	19-Jun-20	47.2	19-Jun-20	7.70
				2020	19-Jun-20	47.2	19-Jun-20	7.40
				2020	12-Sep-20	94.9	12-Sep-20	9.50
				2020	12-Sep-20	94.9	12-Sep-20	9.10
				2020	12-Sep-20	94.9	12-Sep-20	10.0
				2020	12-Sep-20	94.9	12-Sep-20	9.40
				2020	12-Sep-20	94.9	12-Sep-20	10.0
				2020	10-Dec-20	114	10-Dec-20	5.10
				2020	10-Dec-20	114	10-Dec-20	3.60
				2020	10-Dec-20	114	10-Dec-20	5.00
				2020	10-Dec-20	114	10-Dec-20	5.00
				2020	10-Dec-20	114	10-Dec-20	4.90
				2021	18-Jun-21	59.4	18-Jun-21	8.10
				2021	18-Jun-21	59.4	18-Jun-21	6.70
				2021	18-Jun-21	59.4	18-Jun-21	6.30
				2021	18-Jun-21	59.4	18-Jun-21	7.10
				2021	18-Jun-21	59.4	18-Jun-21	6.60
				2021	19-Sep-21	104	19-Sep-21	9.30
				2021	19-Sep-21	104	19-Sep-21	5.10
				2021	19-Sep-21	104	19-Sep-21	5.90
				2021	19-Sep-21	104	19-Sep-21	5.70
				2021	19-Sep-21	104	19-Sep-21	6.30
				2021	13-Dec-21	102	13-Dec-21	6.10
				2021	13-Dec-21	102	13-Dec-21	5.20
				2021	13-Dec-21	102	13-Dec-21	4.60
				2021	13-Dec-21	102	13-Dec-21	6.20
				2021	13-Dec-21	102	13-Dec-21	4.60
		RG_FODPO	GH_PC2	2012	17-Sep-12	76.3	17-Sep-12	6.18
				2015	15-Sep-15	68.2	15-Sep-15	6.92
				2016	-	-	12-Sep-16	3.80
				2017	13-Sep-17	89.6	13-Sep-17	5.20
				2018	07-Mar-18	105	07-Mar-18	3.50
				2018	13-Sep-18	81.7	13-Sep-18	4.30
				2018	13-Sep-18	81.7	13-Sep-18	8.00
				2018	13-Sep-18	81.7	13-Sep-18	5.00
				2018	04-Dec-18	106	04-Dec-18	0.330
				2018	04-Dec-18	106	04-Dec-18	4.40
				2018	04-Dec-18	106	04-Dec-18	5.40
				2019	14-Feb-19	108	14-Feb-19	3.60
				2019	14-Feb-19	108	14-Feb-19	5.00
				2019	14-Feb-19	108	14-Feb-19	8.40
				2019	21-Jun-19	48.4	21-Jun-19	4.70
				2019	21-Jun-19	48.4	21-Jun-19	5.00
				2019	21-Jun-19	48.4	21-Jun-19	5.70
				2019	07-Sep-19	69.7	07-Sep-19	5.40

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FODPO	GH_PC2	2019	07-Sep-19	69.7	07-Sep-19	7.30
				2019	07-Sep-19	69.7	07-Sep-19	5.60
				2019	12-Dec-19	122	12-Dec-19	4.00
				2019	12-Dec-19	122	12-Dec-19	4.00
				2019	12-Dec-19	122	12-Dec-19	3.70
				2020	19-Jun-20	42.4	19-Jun-20	6.20
				2020	19-Jun-20	42.4	19-Jun-20	6.90
				2020	19-Jun-20	42.4	19-Jun-20	5.50
				2020	19-Jun-20	42.4	19-Jun-20	6.70
				2020	19-Jun-20	42.4	19-Jun-20	5.50
				2020	11-Sep-20	84.9	11-Sep-20	9.30
				2020	11-Sep-20	84.9	11-Sep-20	6.70
				2020	11-Sep-20	84.9	11-Sep-20	7.20
				2020	11-Sep-20	84.9	11-Sep-20	7.10
				2020	11-Sep-20	84.9	11-Sep-20	10.0
				2020	09-Dec-20	95.4	09-Dec-20	3.80
				2020	09-Dec-20	95.4	09-Dec-20	3.30
				2020	09-Dec-20	95.4	09-Dec-20	3.10
				2020	09-Dec-20	95.4	09-Dec-20	4.50
				2020	09-Dec-20	95.4	09-Dec-20	4.10
				2021	17-Jun-21	52.0	17-Jun-21	6.00
				2021	17-Jun-21	52.0	17-Jun-21	7.50
				2021	17-Jun-21	52.0	17-Jun-21	6.40
				2021	17-Jun-21	52.0	17-Jun-21	6.20
				2021	17-Jun-21	52.0	17-Jun-21	6.80
				2021	11-Sep-21	82.7	11-Sep-21	4.90
				2021	11-Sep-21	82.7	11-Sep-21	4.60
				2021	11-Sep-21	82.7	11-Sep-21	7.50
				2021	11-Sep-21	82.7	11-Sep-21	6.80
				2021	11-Sep-21	82.7	11-Sep-21	6.10
				2021	14-Dec-21	94.6	14-Dec-21	4.70
				2021	14-Dec-21	94.6	14-Dec-21	4.40
				2021	14-Dec-21	94.6	14-Dec-21	4.90
				2021	14-Dec-21	94.6	14-Dec-21	5.40
				2021	14-Dec-21	94.6	14-Dec-21	5.40
		RG_FO22	FR_FRABCH	2012	16-Sep-12	71.1	16-Sep-12	12.4
				2015	12-Sep-15	68.0	17-Sep-15	7.08
				2017	14-Sep-17	83.3	14-Sep-17	5.40
				2018	12-Mar-18	100	12-Mar-18	6.90
				2018	08-Sep-18	77.7	08-Sep-18	7.00
				2018	08-Sep-18	77.7	08-Sep-18	9.20
				2018	08-Sep-18	77.7	08-Sep-18	7.00
				2018	08-Sep-18	77.7	08-Sep-18	8.90
				2018	08-Sep-18	77.7	08-Sep-18	7.60
				2018	05-Dec-18	94.4	05-Dec-18	3.40
				2018	05-Dec-18	94.4	05-Dec-18	3.90
				2018	05-Dec-18	94.4	05-Dec-18	5.60
				2019	14-Feb-19	99.0	14-Feb-19	4.90
				2019	14-Feb-19	99.0	14-Feb-19	5.80
				2019	14-Feb-19	99.0	14-Feb-19	5.40
				2019	21-Jun-19	52.1	21-Jun-19	7.50
				2019	21-Jun-19	52.1	21-Jun-19	6.80
				2019	21-Jun-19	52.1	21-Jun-19	10.0
				2019	16-Sep-19	70.4	16-Sep-19	7.10
				2019	16-Sep-19	70.4	16-Sep-19	7.80
				2019	16-Sep-19	70.4	16-Sep-19	7.30
				2019	16-Sep-19	70.4	16-Sep-19	6.70
				2019	16-Sep-19	70.4	16-Sep-19	6.60
				2019	11-Dec-19	87.7	11-Dec-19	4.40
				2019	11-Dec-19	87.7	11-Dec-19	5.40
				2019	11-Dec-19	87.7	11-Dec-19	4.90
				2020	19-Jun-20	43.1	19-Jun-20	6.70

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FO22	FR_FRABCH	2020	19-Jun-20	43.1	19-Jun-20	5.50
				2020	19-Jun-20	43.1	19-Jun-20	8.20
				2020	11-Sep-20	82.4	11-Sep-20	9.10
				2020	11-Sep-20	82.4	11-Sep-20	8.40
				2020	11-Sep-20	82.4	11-Sep-20	11.0
				2020	11-Sep-20	82.4	11-Sep-20	8.90
				2020	11-Sep-20	82.4	11-Sep-20	10.0
				2020	09-Dec-20	96.2	09-Dec-20	6.10
				2020	09-Dec-20	96.2	09-Dec-20	6.10
				2020	09-Dec-20	96.2	09-Dec-20	7.20
				2020	09-Dec-20	96.2	09-Dec-20	4.00
				2020	09-Dec-20	96.2	09-Dec-20	4.70
				2021	18-Jun-21	50.0	18-Jun-21	9.60
				2021	18-Jun-21	50.0	18-Jun-21	9.60
				2021	18-Jun-21	50.0	18-Jun-21	8.50
				2021	18-Jun-21	50.0	18-Jun-21	6.90
				2021	18-Jun-21	50.0	18-Jun-21	12.0
				2021	12-Sep-21	85.0	12-Sep-21	8.70
				2021	12-Sep-21	85.0	12-Sep-21	9.20
				2021	12-Sep-21	85.0	12-Sep-21	8.60
				2021	12-Sep-21	85.0	12-Sep-21	8.90
				2021	12-Sep-21	85.0	12-Sep-21	8.30
				2021	13-Dec-21	94.5	13-Dec-21	7.40
				2021	13-Dec-21	94.5	13-Dec-21	9.30
				2021	13-Dec-21	94.5	13-Dec-21	8.10
				2021	13-Dec-21	94.5	13-Dec-21	5.60
				2021	13-Dec-21	94.5	13-Dec-21	6.50
		RG_FOUEW	-	2012	16-Sep-12	58.6	16-Sep-12	8.28
				2015	13-Sep-15	58.8	13-Sep-15	6.05
				2017	13-Sep-17	77.9	13-Sep-17	6.60
				2018	06-Sep-18	70.9	06-Sep-18	7.60
				2018	06-Sep-18	70.9	06-Sep-18	7.00
				2018	06-Sep-18	70.9	06-Sep-18	5.00
				2018	05-Dec-18	86.6	05-Dec-18	4.80
				2018	05-Dec-18	86.6	05-Dec-18	5.50
				2018	05-Dec-18	86.6	05-Dec-18	4.70
				2019	13-Feb-19	94.7	13-Feb-19	4.40
				2019	13-Feb-19	94.7	13-Feb-19	6.00
				2019	13-Feb-19	94.7	13-Feb-19	4.40
				2019	-	-	20-Jun-19	5.60
				2019	-	-	20-Jun-19	6.40
				2019	-	-	20-Jun-19	6.60
				2019	04-Sep-19	61.0	04-Sep-19	7.30
				2019	04-Sep-19	61.0	04-Sep-19	6.90
				2019	04-Sep-19	61.0	04-Sep-19	6.00
				2019	11-Dec-19	73.3	11-Dec-19	4.80
				2019	11-Dec-19	73.3	11-Dec-19	4.40
				2019	11-Dec-19	73.3	11-Dec-19	5.50
				2020	19-Jun-20	36.4	19-Jun-20	6.10
				2020	19-Jun-20	36.4	19-Jun-20	4.50
				2020	19-Jun-20	36.4	19-Jun-20	5.00
				2020	19-Jun-20	36.4	19-Jun-20	5.30
				2020	19-Jun-20	36.4	19-Jun-20	6.70
				2020	11-Sep-20	77.1	11-Sep-20	7.50
				2020	11-Sep-20	77.1	11-Sep-20	7.10
				2020	11-Sep-20	77.1	11-Sep-20	9.70
				2020	11-Sep-20	77.1	11-Sep-20	9.10
				2020	11-Sep-20	77.1	11-Sep-20	9.90
				2020	10-Dec-20	96.3	10-Dec-20	5.80
				2020	10-Dec-20	96.3	10-Dec-20	7.30
				2020	10-Dec-20	96.3	10-Dec-20	4.90
				2020	10-Dec-20	96.3	10-Dec-20	9.10

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.2: **Paired Benthic Invertebrate Tissue and Water Selenium Concentrations for the FRO LAEMP, 2012 to 2021**

Watershed	Exposure Status	Minnow Biological Monitoring Area	Associated Teck Water Monitoring Station Code	Year	Total Selenium in Water		Selenium in Tissue	
					Sample Date	µg/L	Sample Date	mg/kg dw
Fording River	Mine-Exposed	RG_FOUEW	-	2020	10-Dec-20	96.3	10-Dec-20	9.50
				2021	18-Jun-21	43.2	18-Jun-21	7.00
				2021	18-Jun-21	43.2	18-Jun-21	7.30
				2021	18-Jun-21	43.2	18-Jun-21	6.50
				2021	18-Jun-21	43.2	18-Jun-21	7.30
				2021	18-Jun-21	43.2	18-Jun-21	7.30
				2021	11-Sep-21	76.5	11-Sep-21	8.90
				2021	11-Sep-21	76.5	11-Sep-21	11.0
				2021	11-Sep-21	76.5	11-Sep-21	6.20
				2021	11-Sep-21	76.5	11-Sep-21	7.90
				2021	11-Sep-21	76.5	11-Sep-21	8.50
				2021	13-Dec-21	85.3	13-Dec-21	5.70
				2021	13-Dec-21	85.3	13-Dec-21	5.00
				2021	13-Dec-21	85.3	13-Dec-21	6.60
				2021	13-Dec-21	85.3	13-Dec-21	7.10
				2021	13-Dec-21	85.3	13-Dec-21	5.40

Notes: No concurrent water selenium data were available for 2016 tissue samples, so concentrations from the closest sample date from each associated Teck WQ monitoring station was used. No selenium water data was available for MP1 in 2012, so the corresponding data from FR_MULTIPLATE was used for that data point only in 2012. "-" indicates stations where benthic tissue samples were not taken because of frozen conditions. June 2019 water quality data were not available for RG_HENUP and RG_FOUEW.

Table E.3: Selenium Species Bioaccumulation Tool[a] Predicted Benthic Invertebrate Tissue Selenium Concentrations Compared with Field Measurements, FRO LAEMP, 2021

Area	B-tool Prediction		Field Measurements	
	Date	Predicted Benthic Invertebrate Tissue Selenium Concentration	Date	Mean Benthic Invertebrate Tissue Selenium Concentration
		µg/g dw		µg/g dw
RG_HENUP	16-Jun-21	5.96	16-Jun-21	5.03
RG_HENUP	16-Sep-21	4.52	16-Sep-21	5.60
RG_FO26	14-Jun-21	5.91	14-Jun-21	4.33
RG_FO26	15-Sep-21	3.94	15-Sep-21	3.68
RG_UFR1	15-Jun-21	6.07	15-Jun-21	3.64
RG_UFR1	20-Sep-21	4.52	20-Sep-21	4.92
RG_UFR1	16-Dec-21	4.98	16-Dec-21	3.28
RG_FRSCH2	15-Sep-21	6.59	14-Sep-21	6.76
RG_FRSCH2	14-Dec-21	6.49	14-Dec-21	5.60
RG_FRGHSC	19-Sep-21	7.12	19-Sep-21	16.7
RG_FRGHSC	13-Dec-21	6.76	13-Dec-21	11.2
RG_FODHE	14-Jun-21	6.67	14-Jun-21	4.23
RG_FODHE	13-Sep-21	6.61	13-Sep-21	9.10
RG_FODHE	15-Dec-21	6.37	15-Dec-21	7.00
RG_FOUCL	14-Jun-21	7.95	14-Jun-21	6.73
RG_FOUCL	13-Sep-21	6.79	13-Sep-21	10.3
RG_FOUCL	15-Dec-21	5.23	15-Dec-21	7.83
RG_FOUNGD	15-Jun-21	7.44	15-Jun-21	5.90
RG_FOUNGD	16-Sep-21	6.93	17-Sep-21	8.00
RG_FOUNGD	15-Dec-21	6.61	15-Dec-21	3.70
RG_FODNGD	16-Jun-21	7.46	16-Jun-21	5.47
RG_FODNGD	16-Sep-21	6.90	17-Sep-21	8.90
RG_FODNGD	15-Dec-21	7.09	15-Dec-21	5.07
RG_MP1	14-Jun-21	7.66	14-Jun-21	9.63
RG_MP1	15-Sep-21	7.14	14-Sep-21	7.30
RG_MP1	15-Dec-21	6.73	15-Dec-21	4.87
RG_FOUSH	15-Jun-21	7.57	15-Jun-21	5.30
RG_FOUSH	16-Sep-21	7.12	16-Sep-21	6.83
RG_FOUSH	15-Dec-21	6.87	15-Dec-21	3.77
RG_FOUKI	17-Jun-21	7.38	17-Jun-21	5.52
RG_FOUKI	20-Sep-21	7.09	20-Sep-21	5.62
RG_FOUKI	14-Dec-21	6.85	14-Dec-21	3.52
RG_FOBKS	16-Jun-21	7.45	16-Jun-21	5.76
RG_FOBKS	09-Sep-21	7.01	9-Sep-21	7.46
RG_FOBKS	14-Dec-21	6.84	14-Dec-21	6.18
RG_SCOUTDS	16-Jun-21	7.44	16-Jun-21	6.20
RG_SCOUTDS	14-Sep-21	7.91	14-Sep-21	9.32
RG_SCOUTDS	09-Dec-21	6.80	9-Dec-21	6.88
RG_FOBSC	17-Jun-21	7.57	17-Jun-21	6.38
RG_FOBSC	13-Sep-21	8.42	13-Sep-21	13.6
RG_FOBSC	09-Dec-21	6.89	9-Dec-21	8.60
RG_FOBCP	17-Jun-21	7.58	17-Jun-21	6.56
RG_FOBCP	13-Sep-21	8.31	13-Sep-21	8.70
RG_FOBCP	14-Dec-21	7.04	14-Dec-21	7.10
RG_FRCP1SW	17-Jun-21	7.57	17-Jun-21	7.34
RG_FRCP1SW	15-Sep-21	8.14	14-Sep-21	6.72
RG_FRUPO	18-Jun-21	7.57	18-Jun-21	6.96
RG_FRUPO	19-Sep-21	7.46	19-Sep-21	6.46
RG_FRUPO	13-Dec-21	6.72	13-Dec-21	5.34
RG_FODPO	17-Jun-21	7.39	17-Jun-21	6.58
RG_FODPO	11-Sep-21	6.91	11-Sep-21	5.98
RG_FODPO	14-Dec-21	6.59	14-Dec-21	4.96
RG_FO22	18-Jun-21	7.52	18-Jun-21	9.32
RG_FO22	12-Sep-21	8.00	12-Sep-21	8.74
RG_FO22	13-Dec-21	7.09	13-Dec-21	7.38
RG_FOUEW	18-Jun-21	7.56	18-Jun-21	7.08
RG_FOUEW	11-Sep-21	7.25	11-Sep-21	8.50
RG_FOUEW	13-Dec-21	7.15	13-Dec-21	5.96

Note: "-" = no data.

[a] Values derived from Bruyn and Luoma (2021) using selenium speciation data and sulphate concentrations for each area on each date to predict benthic invertebrate tissue selenium concentrations.

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2012	Reference	RG_HENUP	0.0936	0.649
		RG_FO26	-0.203	0.591
	Mine-Exposed	RG_FODHE	-0.672	0.658
		RG_FOUNGD	-0.196	0.223
		RG_MP1	-0.819	0.434
		RG_FOUSH	0.0197	0.703
			-0.713	0.220
			0.0241	0.525
		RG_FOUKI	-0.0387	0.347
		RG_FOBKS	0.0278	0.340
		RG_FOBSC	-0.529	0.237
		RG_FOBCP	-0.533	-0.0142
		RG_FODPO	0.346	-0.0968
		RG_FO22	0.890	0.616
		RG_FOUEW	0.560	-0.204
2013	Reference	RG_HENUP	-0.351	0.834
		RG_FO26	-0.199	0.884
	Mine-Exposed	RG_MP1	-0.516	0.505
		RG_FODPO	0.590	0.191
2015	Reference	RG_HENUP	-0.486	0.222
		RG_FO26	-0.422	0.337
	Mine-Exposed	RG_FODHE	-0.437	-0.0227
		RG_FOUNGD	-0.505	0.555
		RG_FODNGD	0.173	-0.0594
		RG_MP1	0.193	0.281
		RG_FOUSH	-0.261	0.0619
		RG_FOUKI	0.167	-0.136
		RG_FOBKS	-0.138	-0.241
		RG_FOBSC	-0.171	-0.229
		RG_FOBCP	-0.346	-0.892
		RG_FODPO	0.846	0.234
		RG_FO22	0.807	0.157
		RG_FOUEW	0.486	-0.0139
2016	Reference	RG_HENUP	-0.420	0.653
		RG_FO26	-0.555	0.617
	Mine-Exposed	RG_FODHE	-0.732	-0.0160
		RG_FOUKI	0.0666	-0.146
		RG_FOBKS	-0.463	-0.494
		RG_FOBSC	-0.197	-0.619
		RG_FOBCP	-0.585	-0.453
		RG_FODPO	0.697	0.0672
		RG_FOUEW	0.308	0.222

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2017	Reference	RG_HENUP	-0.225	0.602
		RG_FO26	-0.287	1.09
	Mine-Exposed	RG_FODHE	-0.427	0.203
		RG_FOUNGD	-0.305	0.501
		RG_FODNGD	0.0735	0.153
		RG_MP1	0.0147	0.223
		RG_FOUSH	0.0793	0.441
		RG_FOUKI	-0.350	-0.590
			-0.445	0.481
		RG_FOBKS	-0.128	-0.253
			-0.0905	-0.226
			-0.365	-0.513
		RG_FOBSC	-0.408	-0.529
		RG_FOBCP	-0.174	-0.922
		RG_FRCP1SW	0.140	-0.738
		RG_FRUPO	0.440	-0.365
		RG_FODPO	1.03	0.257
		RG_FO22	1.05	0.107
		RG_FOUEW	0.451	0.287
2018	Reference	RG_HENUP	-0.321	0.625
			-0.406	0.762
			-0.144	1.03
		RG_FO26	-0.312	0.997
			-0.288	1.01
			0.0868	0.901
	Mine-Exposed	RG_FODHE	-0.524	0.180
			-0.670	0.245
			-0.491	0.392
		RG_FOUNGD	-0.176	0.282
			-0.364	0.411
			-0.444	0.166
		RG_FODNGD	-0.412	0.462
			-0.191	0.278
			-0.135	0.626
		RG_MP1	-0.552	0.0830
			-0.619	0.220
			-0.226	-0.321
		RG_FOUSH	-0.565	-0.221
			-0.634	-0.0554
			-0.597	-0.397
		RG_FOUKI	-0.516	-0.000182
			-0.519	0.170
			-0.375	-0.223

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2018	Mine-Exposed	RG_FOBKS	-0.408	-0.287
			-0.755	-0.285
			-0.250	-0.260
		RG_FOBSC	-0.444	-0.677
			-0.171	-0.314
			-0.587	-0.0352
		RG_FOBCP	-0.384	0.0574
			-0.334	-0.624
			-0.552	-0.132
			-0.393	-0.517
			-0.343	-0.630
		RG_FRUPO	0.504	0.0243
			0.493	-0.162
			0.213	-0.181
		RG_FODPO	0.957	0.0512
			0.754	-0.423
			0.439	-0.457
		RG_FO22	1.15	-0.0547
			1.30	0.360
			1.11	0.718
			1.55	0.229
			1.24	0.386
		RG_FOUEW	0.881	0.263
			0.678	0.201
			0.540	0.217
2019	Reference	RG_HENUP	-0.218	0.778
			-0.438	0.808
			-0.297	0.742
		RG_FO26	-0.0861	0.606
			-0.698	0.636
			-0.424	0.707
	Mine-Exposed	RG_FODHE	-0.585	0.00620
			-0.257	0.0633
			-0.361	0.0888
		RG_FOUCL	-0.435	0.181
			-0.0841	0.807
			-0.547	0.455
		RG_FOUNGD	-0.696	0.294
			-0.361	0.146
			-0.273	-0.340
		RG_FODNGD	-0.227	-0.187
			0.0571	-0.169
			-0.486	0.0948

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2019	Mine-Exposed	RG_MP1	0.0570	0.0112
			-0.332	-0.102
			-0.267	-0.299
		RG_FOUSH	-0.0780	-0.727
			-0.306	-0.659
			-0.623	-0.257
		RG_FOUKI	-0.202	-0.223
			-0.203	-0.524
			-0.451	-0.357
		RG_FOBKS	-0.381	-0.490
			-0.0731	-0.360
			-0.116	-0.278
		RG_SCOUTDS	-0.0163	-0.684
			0.0709	0.0152
			0.173	0.201
		RG_FOBSC	-0.204	-0.141
			-0.526	-0.0371
			-0.206	-0.162
		RG_FOBCP	-0.464	-0.636
			-0.120	-0.313
			-0.545	-0.610
			-0.463	-0.693
			-0.333	0.00384
		RG_FRCP1SW	-0.0407	-0.730
			-0.128	-0.738
			0.0778	-0.234
		RG_FRUPO	0.473	-0.309
			0.405	-0.121
			-0.0129	0.0484
		RG_FODPO	0.831	0.0231
			0.992	0.0902
			0.388	-0.0120
		RG_FO22	1.28	-0.218
			1.28	0.241
			1.42	0.118
			1.41	0.246
			1.04	0.294
		RG_FOUEW	0.663	0.453
			0.593	0.228
			0.565	-0.00625
2020	Reference	RG_HENUP	-0.431	0.453
			-0.0132	0.751
			-0.448	0.724

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2020	Reference	RG_FO26	-0.393	0.571
			-0.133	0.373
			-0.385	0.606
		RG_UFR1	-0.441	0.640
			-0.220	0.781
			-0.492	0.509
	Mine-Exposed	RG_FODHE	-0.453	0.257
			-0.0851	0.505
			-0.313	0.0485
		RG_FOUCL	-0.110	0.215
			-0.00874	0.0248
			-0.0427	0.190
		RG_FOUNGD	-0.131	-0.273
			-0.416	-0.191
			0.124	0.449
		RG_FODNGD	-0.495	-0.256
			0.0742	0.486
			-0.319	0.0584
		RG_MP1	-0.203	0.284
			-0.0767	0.208
			-0.561	0.369
		RG_FOUSH	-0.235	-0.246
			-0.502	-0.406
			-0.312	-0.0944
		RG_FOUKI	-0.128	-0.227
			-0.482	-0.363
			-0.0933	-0.517
		RG_FOBKS	-0.232	-0.545
			0.169	-0.604
			-0.316	-0.418
		RG_SCOUTDS	-0.549	-0.660
			0.00428	-0.448
			-0.137	-0.439
		RG_FOBSC	-0.185	-0.600
			-0.428	-0.801
			-0.168	-0.706
		RG_FOBCP	-0.0904	-0.436
			-0.151	-0.360
			-0.226	-0.949
			-0.364	-0.721
			-0.386	-0.843
		RG_FRCP1SW	-0.147	-0.812
			0.280	-0.852
			0.106	-0.384

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2020	Mine-Exposed	RG_FRUPO	0.498	-0.286
			-0.0525	-0.302
			0.0876	-0.470
		RG_FODPO	0.667	-0.305
			0.580	-0.393
			0.746	-0.341
		RG_FO22	1.33	0.269
			1.10	-0.289
			1.41	0.246
			1.05	-0.0111
			1.49	0.153
		RG_FOUEW	0.481	-0.416
			0.540	-0.330
			0.408	0.0650
2021	Reference	RG_HENUP	-0.173	0.636
			-0.398	0.449
			-0.214	0.568
		RG_FO26	-0.438	0.759
			-0.441	1.18
			-0.322	1.14
	Mine-Exposed	RG_FODHE	-0.618	0.195
			-0.671	0.449
			-0.233	0.631
		RG_FOUCL	-0.330	0.539
			-0.109	0.590
			-0.458	0.0452
		RG_FOUNGD	-0.367	0.625
			-0.476	0.495
			-0.371	0.188
		RG_FODNGD	0.0926	0.895
			-0.308	0.323
			-0.224	0.415
		RG_MP1	-0.260	0.629
			0.00337	0.503
			0.140	0.904
		RG_FOUSH	-0.604	0.392
			-0.203	0.0729
			-0.146	0.169
		RG_FOUKI	-0.107	-0.292
			-0.378	0.134
			-0.401	-1.02
		RG_FOBKS	-0.471	-0.779
			-0.0642	-0.711
			-0.232	-0.380

Table E.4: Biological Monitoring Area Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Year	Status	Area	CA1 (20.4%)	CA2 (13.5%)
2021	Mine-Exposed	RG_SCOUTDS	-0.435	-0.903
			-0.303	-0.750
			-0.0523	-0.949
		RG_FOBSC	-0.228	-0.805
			-0.213	-0.866
			0.0640	-0.827
		RG_FOBCP	-0.566	-0.851
			-0.0987	-0.773
			0.00113	-0.583
			0.0987	-0.619
			-0.132	-0.217
		RG_FRCP1SW	0.0537	-0.653
			-0.186	-0.591
			-0.0370	-0.351
2021	Mine-Exposed	RG_FRUPO	0.790	-0.0101
			0.0437	-0.0260
			0.353	-0.352
		RG_FODPO	0.779	-0.277
			0.814	-0.354
			0.405	-0.442
		RG_FO22	1.26	0.0920
			1.41	-0.00852
			1.03	0.0147
			1.26	0.104
			1.21	0.122
		RG_FOUEW	0.165	-0.156
			0.648	-0.00870
			0.533	0.190

Table E.5: Taxa Scores from Correspondence Analysis on Family Level Benthic Invertebrate Communities from the FRO LAEMP, September 2012 to September 2021

Order or Higher	Family	CA1 (20.4%)	CA2 (13.5%)
Coleoptera	Elmidae	2.21	0.0961
Diptera	Ceratopogonidae	-0.376	-0.167
	Chironomidae	-0.0900	0.104
	Empididae	0.313	-0.122
	Psychodidae	-0.363	-0.157
	Simuliidae	-0.0464	-0.649
	Tipulidae	0.445	-0.0786
Ephemeroptera	Ameletidae	-0.846	0.903
	Baetidae	-0.0710	0.0931
	Ephemerellidae	-0.207	0.236
	Heptageniidae	-0.254	0.162
Oligochaeta	Enchytraeidae	-0.197	-1.44
Plecoptera	Capniidae	0.767	-0.760
	Chloroperlidae	-0.0141	0.648
	Nemouridae	0.0524	0.0226
	Perlidae	-0.191	-1.52
	Perlodidae	0.0755	-0.0423
	Taeniopterygidae	-0.0723	0.0251
Trichoptera	Apataniidae	0.933	-0.617
	Brachycentridae	-0.725	-1.41
	Glossosomatidae	0.933	0.125
	Hydropsychidae	-0.672	0.0577
	Limnephilidae	1.81	0.977
	Rhyacophilidae	-0.0442	0.0593
	Uenoidae	-0.428	1.71
Trombidiformes	Lebertiidae	0.0567	-0.0816
	Sperchontidae	-0.593	0.508

Table E.6: Temporal Changes in Benthic Invertebrate Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.397	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-2.3	-	-0.42	1.4	1.0	2.4	2.2	3.6	3.0	abc	c	-	bc	abc	abc	ab	ab	a	ab	ns	ns
Mine-exposed	RG_FODHE	0.032	base year	-	-	0.24	-1.4	-0.71	0.019	2.1	2.4	0.033	ab	-	-	ab	b	ab	ab	ab	a	ab	ns	ns
	RG_FOUCL	0.921	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.076	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODNGD	0.903	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	0.132	ns	ns	-	ns	-	ns	ns	ns	ns	ns	ns	ns	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUSH	0.295	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUKI	0.003	base year	-	-	-3.1	**-4.8**	-2.3	-2.2	-2.7	-0.13	-0.47	a	-	-	ab	b	ab	ab	ab	a	a	ns	ns
	RG_FOBKS	0.259	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	0.913	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.119	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBCP	0.001	base year	-	-	-1.3	-2.7	-0.85	-1.2	-1.2	1.5	0.50	ab	-	-	ab	b	ab	b	b	a	ab	ns	ns
	RG_FRCP1SW	0.033	-	-	-	-	-	base year	-	2.2	3.6	**3.8**	-	-	-	-	-	b	ns	ab	ab	a	ns	ns
	RG_FRUPO	0.030	-	-	-	-	-	base year	-2.4	**-3.8**	-1.4	-1.7	-	-	-	-	-	a	ab	b	ab	ab	ns	ns
	RG_FODPO	<0.001	base year	1.3	-	-1.3	-0.93	-0.044	**3.7**	-0.78	0.56	0.38	b	ab	-	b	b	b	a	b	b	b	ns	ns
	RG_FO22	0.023	base year	-	-	3.4	-	3.8	1.9	0.44	2.6	0.49	ab	-	-	ab	-	ab	ab	b	a	b	ns	↓
	RG_FOUEW	0.769	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ – $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.7: Temporal Changes in Benthic Invertebrate Richness for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.574	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	0.019	base year	-3.0	-	-2.4	-1.2	-1.2	1.0	-0.53	-0.41	-1.1	ab	b	-	ab	ab	ab	a	ab	ab	ab	ns	ns
Mine-exposed	RG_FODHE	0.016	base year	-	-	1.3	-0.36	1.6	2.0	**3.7**	3.4	2.6	bc	-	-	abc	c	abc	abc	a	ab	abc	ns	ns
	RG_FOUCL	1.000	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.016	base year	-	-	-1.9	-	-1.9	2.1	0.67	1.2	0.37	ab	-	-	b	-	b	a	ab	ab	ab	ns	ns
	RG_FODNGD	0.025	-	-	-	base year	-	1.0	**3.9**	3.0	2.8	1.5	-	-	-	b	-	ab	a	ab	ab	ab	ns	ns
	RG_MP1	<0.001	base year	0.81	-	3.8	-	3.5	**5.0**	2.9	3.0	**4.1**	c	bc	-	abc	-	abc	a	abc	abc	ab	ns	ns
	RG_FOUSH	<0.001	base year	-	-	0.26	-	2.8	**3.4**	2.3	**3.5**	1.8	b	-	-	ab	-	ab	a	ab	a	ab	ns	ns
	RG_FOUKI	0.042	base year	-	-	2.7	3.8	3.0	2.4	3.4	**3.7**	3.3	b	-	-	ab	ab	ab	ab	ab	a	ab	ns	ns
	RG_FOBKS	<0.001	base year	-	-	3.1	3.5	**4.6**	**5.0**	**5.2**	**5.1**	**5.1**	b	-	-	ab	ab	a	a	a	a	a	ns	ns
	RG_SCOUTDS	0.942	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.044	base year	-	-	2.1	3.0	**4.5**	2.7	2.4	3.1	3.5	b	-	-	ab	ab	a	ab	ab	ab	ab	ns	ns
	RG_FOBCP	0.137	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FRCP1SW	0.422	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.149	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	-4.3	-	-3.5	-0.55	-1.7	2.1	-0.034	2.9	1.2	abcde	e	-	de	abcde	cde	ab	bcd	a	abc	ns	ns
	RG_FO22	0.013	base year	-	-	1.6	-	3.2	1.2	1.3	**3.5**	1.9	b	-	-	ab	-	ab	b	b	a	ab	ns	ns
	RG_FOUEW	0.053	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ − $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.8: Temporal Changes in Benthic Invertebrate Percent EPT for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.822	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	0.582	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FODHE	0.003	base year	-	-	-2.6	-1.0	-0.16	-2.2	**-3.9**	**-4.5**	-1.2	a	-	-	ab	ab	a	ab	b	b	a	ns	↑
	RG_FOUCL	0.001	-	-	-	-	-	-	-	base year	1.0	**3.4**	-	-	-	-	-	-	-	b	ab	a	ns	ns
	RG_FOUNGD	0.058	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODNGD	0.051	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	<0.001	base year	-2.5	-	0.91	-	3.3	1.1	**-5.1**	0.94	2.2	ab	bc	-	ab	-	a	ab	c	ab	a	ns	ns
	RG_FOUSH	<0.001	base year	-	-	2.0	-	1.0	-0.60	**-3.2**	**-3.8**	-1.2	a	-	-	a	-	a	ab	bc	c	ab	ns	↑
	RG_FOUKI	<0.001	base year	-	-	-1.4	**-4.9**	-2.9	**-3.7**	**-4.6**	**-4.4**	**-5.9**	a	-	-	ab	bc	ab	bc	bc	bc	c	ns	ns
	RG_FOBKS	0.208	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	0.310	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.026	base year	-	-	-0.19	-2.0	-0.97	-1.2	0.29	-0.93	-2.5	ab	-	-	ab	ab	ab	ab	a	ab	b	ns	ns
	RG_FOBCP	0.001	base year	-	-	-0.98	-2.6	-3.3	-2.4	**-4.6**	-2.1	-3.3	a	-	-	a	ab	ab	a	b	a	ab	ns	ns
	RG_FRCP1SW	0.067	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.274	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	3.9	-	2.6	0.59	-2.6	1.3	-1.3	-0.99	1.1	abcd	a	-	ab	abcd	d	ab	cd	bcd	abc	ns	ns
	RG_FO22	0.140	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.002	base year	-	-	-1.4	-3.0	-1.8	-2.6	**-4.4**	-3.0	-1.1	a	-	-	ab	ab	ab	ab	b	ab	a	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.9: Temporal Changes in Benthic Invertebrate Percent Ephemeroptera for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.212	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	0.101	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	-2.8	-0.56	0.23	-1.5	-3.0	**-4.4**	-0.90	a	-	-	ab	a	a	a	ab	b	a	ns	↑
	RG_FOUCL	0.003	-	-	-	-	-	-	-	base yea	0.47	**3.3**	-	-	-	-	-	-	-	b	b	a	↑	↑
	RG_FOUNGD	<0.001	base year	-	-	2.1	-	-2.5	-0.45	2.5	-0.52	2.3	abc	-	-	ab	-	c	bc	a	bc	a	ns	↑
	RG_FODNGD	0.007	-	-	-	base year	-	-2.8	-3.1	-2.6	**-4.4**	-1.5	-	-	-	a	-	ab	ab	ab	b	a	ns	↑
	RG_MP1	<0.001	base year	-3.9	-	-1.0	-	1.0	-0.80	-7.4	-1.4	0.72	ab	bc	-	ab	-	a	ab	c	ab	a	ns	ns
	RG_FOUSH	<0.001	base year	-	-	1.3	-	-0.44	**-3.1**	**-4.6**	**-5.8**	**-3.2**	a	-	-	a	-	ab	bc	cd	d	bc	ns	↑
	RG_FOUKI	<0.001	base year	-	-	-1.4	**-6.4**	**-4.7**	-3.5	**-4.7**	**-5.4**	**-7.0**	a	-	-	ab	cd	bcd	abc	bcd	cd	d	ns	ns
	RG_FOBKS	0.001	base year	-	-	-3.5	**-5.0**	**-4.9**	**-4.0**	**-4.4**	**-4.6**	**-4.4**	a	-	-	ab	b	b	b	b	b	b	ns	ns
	RG_SCOUTDS	0.073	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.003	base year	-	-	-1.7	**-5.5**	-4.0	-2.0	-1.7	**-4.2**	**-4.7**	a	-	-	abcd	cd	abcd	abc	ab	bcd	d	ns	ns
	RG_FOBCP	<0.001	base year	-	-	**-11**	**-9.9**	**-12**	**-5.6**	**-7.9**	**-7.5**	**-9.8**	a	-	-	cde	cde	e	b	cd	bc	de	ns	↓
	RG_FRCP1SW	0.015	-	-	-	-	-	base yea	-	1.9	**3.7**	0.82	-	-	-	-	-	b	ns	ab	a	b	ns	↓
	RG_FRUPO	<0.001	-	-	-	-	-	base yea	2.0	0.97	3.2	-1.9	-	-	-	-	-	ab	a	a	a	b	ns	↓
	RG_FODPO	<0.001	base year	-3.6	-	**-7.3**	**-4.9**	**-9.7**	**-6.8**	**-4.7**	**-4.5**	**-7.2**	a	abc	-	bcd	bc	d	bcd	bc	b	cd	ns	↓
	RG_FO22	<0.001	base year	-	-	**-4.5**	-	**-8.4**	**-5.3**	**-4.2**	**-5.7**	**-6.0**	a	-	-	bc	-	c	bc	b	bc	bc	ns	ns
	RG_FOUEW	<0.001	base year	-	-	**-5.2**	**-7.6**	**-8.0**	**-6.4**	**-5.5**	**-8.5**	**-7.4**	a	-	-	bc	bc	bc	bc	b	c	bc	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ – $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.10: **Temporal Changes in Benthic Invertebrate Percent Plecoptera for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021**

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.006	base year	-1.5	-	1.6	-1.8	2.0	-2.2	-0.31	-0.96	0.93	ab	ab	-	a	ab	a	b	ab	ab	a	ns	ns
	RG_FO26	<0.001	base year	0.19	-	-1.6	-1.2	-1.4	-3.2	**-4.1**	-0.55	-1.2	ab	ab	-	abc	abc	abc	bc	c	a	ab	ns	ns
Mine-exposed	RG_FODHE	0.117	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOUCL	0.412	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.008	base year	-	-	0.73	-	0.95	0.23	-2.2	0.81	-1.7	ab	-	-	ab	-	ab	ab	b	a	ab	ns	ns
	RG_FODNGD	0.598	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	<0.001	base year	3.4	-	**5.0**	-	**5.2**	**4.7**	0.67	**3.9**	0.51	b	ab	-	a	-	a	a	b	a	b	ns	↓
	RG_FOUSH	<0.001	base year	-	-	2.4	-	3.4	**4.6**	2.0	2.3	2.4	b	-	-	ab	-	ab	a	b	ab	ab	ns	ns
	RG_FOUKI	0.019	base year	-	-	1.2	1.9	3.0	0.15	-0.19	1.8	0.59	ab	-	-	ab	ab	a	ab	b	ab	ab	ns	ns
	RG_FOBKS	0.002	base year	-	-	3.9	3.8	2.5	2.1	**4.7**	2.4	1.6	b	-	-	ab	ab	ab	b	a	ab	b	ns	ns
	RG_SCOUTDS	0.995	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.004	base year	-	-	3.1	2.8	2.2	0.81	**4.0**	**3.9**	2.5	b	-	-	ab	ab	ab	b	a	a	ab	ns	ns
	RG_FOBCP	<0.001	base year	-	-	**7.0**	**4.7**	**5.4**	**3.7**	**3.5**	**5.2**	**5.2**	c	-	-	a	ab	ab	ab	b	ab	ab	ns	ns
	RG_FRCP1SW	0.983	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.832	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	0.345	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO22	0.385	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.027	base year	-	-	1.4	1.2	2.2	1.6	-0.00092	1.8	2.7	ab	-	-	ab	ab	ab	ab	b	ab	a	ns	ns

P-value < 0.05.
> 2 SD Increase.
> 3 SD Increase.
> 4 SD Increase.
> 5 SD Increase.
> 2 SD Decrease.
> 3 SD Decrease.
> 4 SD Decrease.
> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ − $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.11: Temporal Changes in Benthic Invertebrate Percent Tricoptera for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.059	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-2.7	-	-4.0	-1.5	3.6	-1.3	-0.90	-0.85	-0.74	ab	b	-	b	b	a	b	b	b	b	ns	ns
Mine-exposed	RG_FODHE	0.003	base year	-	-	**-4.5**	**-5.6**	-2.5	-2.2	-2.9	-1.3	-1.8	a	-	-	bc	c	abc	abc	abc	ab	ab	ns	ns
	RG_FOUCL	0.928	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.003	base year	-	-	-1.9	-	-0.58	-0.15	-1.5	1.8	-0.40	ab	-	-	b	-	ab	ab	b	a	ab	ns	ns
	RG_FODNGD	0.163	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	0.021	base year	0.14	-	1.4	-	2.6	1.9	1.8	**4.0**	**3.8**	b	b	-	ab	-	ab	ab	ab	a	a	ns	ns
	RG_FOUSH	0.003	base year	-	-	-0.78	-	0.83	0.80	1.5	1.7	**3.3**	b	-	-	b	-	ab	ab	ab	ab	a	ns	ns
	RG_FOUKI	0.040	base year	-	-	-1.5	1.5	1.7	-1.3	-0.52	0.31	0.64	ab	-	-	ab	ab	a	b	ab	ab	ab	ns	ns
	RG_FOBKS	0.037	base year	-	-	0.98	3.2	**3.7**	1.3	1.3	3.3	2.3	b	-	-	ab	ab	a	ab	ab	ab	ab	ns	ns
	RG_SCOUTDS	0.829	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.003	base year	-	-	-0.63	1.9	2.8	0.41	-1.8	0.34	-0.0070	ab	-	-	ab	a	a	ab	b	ab	ab	ns	ns
	RG_FOBCP	<0.001	base year	-	-	2.6	**6.1**	**5.0**	1.8	-0.23	1.8	3.0	cd	-	-	abcd	a	ab	bc	d	bc	abc	ns	ns
	RG_FRCP1SW	0.763	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.653	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	-0.13	-	**5.6**	**6.6**	4.0	-0.87	2.1	1.3	3.0	cd	cd	-	ab	a	abc	d	bc	cd	abc	ns	ns
	RG_FO22	<0.001	base year	-	-	2.7	-	3.7	0.72	**4.3**	2.8	**4.6**	bc	-	-	abc	-	abc	c	a	ab	a	ns	ns
	RG_FOUEW	0.025	base year	-	-	2.7	2.9	2.8	0.89	-0.77	2.0	1.8	ab	-	-	ab	ab	ab	ab	b	a	a	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.12: Temporal Changes in Benthic Invertebrate Percent Chironomidae for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.404	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-2.3	-	-0.71	0.73	-2.1	-1.1	0.82	-1.2	-2.8	ab	ab	-	ab	ab	ab	ab	a	ab	b	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	**4.9**	1.8	0.74	1.9	**6.2**	**6.6**	1.2	c	-	-	ab	bc	bc	bc	a	a	c	ns	↓
	RG_FOUCL	<0.001	-	-	-	-	-	-	-	base year	**-2.9**	**-6.0**	-	-	-	-	-	-	-	a	b	c	↓	↓
	RG_FOUNGD	<0.001	base year	-	-	-0.44	-	**4.5**	0.035	0.52	-0.55	-0.65	b	-	-	b	-	a	b	b	b	b	ns	ns
	RG_FODNGD	0.011	-	-	-	base year	-	2.8	1.1	2.7	3.1	0.095	-	-	-	ab	-	ab	ab	a	a	b	ns	↓
	RG_MP1	<0.001	base year	2.2	-	-0.020	-	-4.3	-2.7	**7.8**	-3.3	**-5.6**	bc	b	-	bc	-	cd	c	a	cd	d	ns	ns
	RG_FOUSH	<0.001	base year	-	-	-0.26	-	1.9	**2.6**	**7.2**	**4.9**	-1.2	d	-	-	cd	-	bcd	bc	a	ab	d	ns	↓
	RG_FOUKI	<0.001	base year	-	-	1.4	**7.8**	**3.9**	1.2	**6.4**	**4.2**	1.1	d	-	-	bcd	a	abc	cd	a	ab	cd	ns	↓
	RG_FOBKS	0.001	base year	-	-	1.2	**5.2**	2.8	0.72	1.6	0.84	0.28	b	-	-	ab	a	ab	b	ab	b	b	ns	ns
	RG_SCOUTDS	0.144	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	<0.001	base year	-	-	0.51	**6.0**	**4.6**	0.094	3.1	1.6	-0.36	cd	-	-	bcd	a	ab	d	abc	bcd	d	ns	ns
	RG_FOBCP	<0.001	base year	-	-	3.4	**5.2**	**4.8**	0.38	**6.3**	1.5	0.22	c	-	-	abc	a	ab	c	a	bc	c	ns	ns
	RG_FRCP1SW	0.159	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.139	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	-4.0	-	-1.8	0.30	**5.1**	-0.71	2.1	1.8	-2.0	bcd	d	-	cd	bcd	a	cd	ab	abc	d	ns	↓
	RG_FO22	<0.001	base year	-	-	-1.2	-	-3.6	**-5.0**	**-4.2**	-2.6	**-5.5**	a	-	-	ab	-	abc	c	bc	ab	c	ns	↓
	RG_FOUEW	0.001	base year	-	-	3.7	**4.6**	0.21	1.2	3.3	3.1	-0.16	bc	-	-	ab	a	abc	abc	ab	ab	c	ns	↓

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.13: **Temporal Changes in Benthic Invertebrate EPT Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021**

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.479	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-1.8	-	-0.097	1.4	1.4	2.3	2.0	3.5	3.1	ab	b	-	ab	ab	ab	a	a	a	a	ns	ns
Mine-exposed	RG_FODHE	0.380	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOUCL	0.763	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.038	base year	-	-	-1.3	-	-2.1	1.5	1.6	0.95	0.97	ab	-	-	ab	-	b	ab	a	ab	ab	ns	ns
	RG_FODNGD	0.963	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	0.003	base year	-3.8	-	-2.7	-	-0.11	-0.74	-3.1	-1.4	0.21	ab	b	-	ab	-	ab	ab	b	ab	a	ns	ns
	RG_FOUSH	0.242	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUKI	0.008	base year	-	-	-3.1	**-5.3**	-2.7	-2.8	-3.4	-1.2	-2.0	a	-	-	ab	b	ab	ab	ab	a	ab	ns	ns
	RG_FOBKS	0.432	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	0.999	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.189	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBCP	<0.001	base year	-	-	-1.4	-3.0	-1.5	-1.6	-2.0	0.92	-0.27	ab	-	-	ab	b	ab	b	b	a	ab	ns	ns
	RG_FRCP1SW	0.020	-	-	-	-	-	base year	-	2.5	**4.0**	**3.7**	-	-	-	-	-	b	ns	ab	a	a	ns	ns
	RG_FRUPO	0.020	-	-	-	-	-	base year	-2.7	**-4.0**	-2.0	-2.2	-	-	-	-	-	a	ab	b	ab	ab	ns	ns
	RG_FODPO	<0.001	base year	2.2	-	-0.59	-0.71	-0.78	**3.8**	-1.0	0.23	0.62	b	ab	-	b	b	b	a	b	b	b	ns	ns
	RG_FO22	0.143	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.447	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

- P-value < 0.05.
- \> 2 SD Increase.
- \> 3 SD Increase.
- \> 4 SD Increase.
- \> 5 SD Increase.
- \> 2 SD Decrease.
- \> 3 SD Decrease.
- \> 4 SD Decrease.
- \> 5 SD Decrease.
- **bold** Significant increase or decrease from base year.
- Significantly > than all historical years (or 2020).
- Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$\text{Mean}_{\text{given year}}$ − $\text{Mean}_{\text{base year}}$] /$\text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.14: Temporal Changes in Benthic Invertebrate Ephemeroptera Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.380	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-1.5	-	0.97	2.3	1.4	**3.9**	3.5	**4.5**	**4.3**	bc	c	-	abc	abc	abc	a	ab	a	a	ns	ns
Mine-exposed	RG_FODHE	0.158	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOUCL	0.239	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	<0.001	base year	-	-	-1.4	-	-2.9	1.7	2.6	0.69	1.6	abc	-	-	bc	-	c	ab	a	abc	ab	ns	ns
	RG_FODNGD	0.902	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	<0.001	base year	**-5.2**	-	-3.9	-	-0.78	-1.6	**-4.6**	-2.5	-0.16	ab	cd	-	bcd	-	abc	abc	d	abcd	a	ns	ns
	RG_FOUSH	0.004	base year	-	-	-1.2	-	-3.2	-2.3	**-3.1**	-2.5	**-3.2**	a	-	-	ab	-	ab	ab	b	ab	b	ns	ns
	RG_FOUKI	<0.001	base year	-	-	-4.0	**-7.1**	**-4.1**	-3.6	**-4.5**	-2.1	-3.1	a	-	-	abc	c	bc	abc	bc	ab	ab	ns	ns
	RG_FOBKS	0.102	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	1.000	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.085	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBCP	0.001	base year	-	-	**-4.9**	**-5.8**	**-5.0**	-3.1	**-3.8**	-1.1	-3.0	a	-	-	b	b	b	ab	b	a	ab	ns	ns
	RG_FRCP1SW	0.009	-	-	-	-	-	base year	-	2.5	**4.3**	3.2	-	-	-	-	-	b	ns	ab	a	ab	ns	ns
	RG_FRUPO	0.003	-	-	-	-	-	base year	-0.62	-2.2	0.84	-2.4	-	-	-	-	-	ab	ab	b	a	b	ns	↓
	RG_FODPO	0.004	base year	-0.62	-	**-4.6**	-3.1	**-5.5**	-0.95	-2.9	-1.8	-3.5	a	ab	-	bc	abc	c	a	abc	ab	abc	ns	ns
	RG_FO22	0.139	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.626	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

- P-value < 0.05.
- > 2 SD Increase.
- > 3 SD Increase.
- > 4 SD Increase.
- > 5 SD Increase.
- > 2 SD Decrease.
- > 3 SD Decrease.
- > 4 SD Decrease.
- > 5 SD Decrease.
- **bold** Significant increase or decrease from base year.
- Significantly > than all historical years (or 2020).
- Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$\text{Mean}_{\text{given year}}$ – $\text{Mean}_{\text{base year}}$] /$\text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.15: Temporal Changes in Benthic Invertebrate Plecoptera Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.057	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	0.042	base year	-1.7	-	-1.1	0.30	-0.015	-0.16	-0.73	1.9	1.2	ab	ab	-	ab	ab	ab	ab	b	a	ab	ns	ns
Mine-exposed	RG_FODHE	0.096	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOUCL	1.000	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.531	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODNGD	0.814	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	0.118	ns	ns	-	ns	-	ns	ns	ns	ns	ns	ns	ns	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUSH	0.407	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUKI	0.009	base year	-	-	-1.8	-3.2	-0.18	-1.6	-2.2	0.84	-0.026	ab	-	-	ab	b	ab	ab	b	a	ab	ns	ns
	RG_FOBKS	0.310	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	0.998	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.012	base year	-	-	0.036	-0.78	0.12	-0.32	1.1	2.6	1.6	ab	-	-	ab	ab	ab	b	ab	a	ab	ns	ns
	RG_FOBCP	<0.001	base year	-	-	2.5	0.079	2.1	0.87	0.81	**3.7**	3.1	bc	-	-	abc	bc	abc	c	c	a	ab	ns	ns
	RG_FRCP1SW	0.058	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.171	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	2.3	-	0.36	-0.32	0.30	3.4	-0.16	0.78	1.4	ab	ab	-	ab	b	ab	a	b	b	ab	ns	ns
	RG_FO22	0.135	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.172	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

- P-value < 0.05.
- > 2 SD Increase.
- > 3 SD Increase.
- > 4 SD Increase.
- > 5 SD Increase.
- > 2 SD Decrease.
- > 3 SD Decrease.
- > 4 SD Decrease.
- > 5 SD Decrease.
- **bold** Significant increase or decrease from base year.
- Significantly > than all historical years (or 2020).
- Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.16: Temporal Changes in Benthic Invertebrate Tricoptera Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.121	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
Reference	RG_FO26	<0.001	base year	-3.7	-	-3.3	-0.045	3.9	0.86	1.1	2.3	1.8	ab	b	-	b	ab	a	a	a	a	a	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	-3.6	**-5.1**	-2.5	-1.8	-1.3	0.34	-1.5	ab	-	-	bc	c	abc	abc	ab	a	ab	ns	ns
Mine-exposed	RG_FOUCL	0.864	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
Mine-exposed	RG_FOUNGD	0.002	base year	-	-	-2.7	-	-1.8	1.1	-0.27	2.1	0.16	abc	-	-	c	-	bc	ab	abc	a	abc	ns	ns
Mine-exposed	RG_FODNGD	0.111	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_MP1	0.001	base year	-2.1	-	-1.1	-	1.4	0.77	0.45	1.8	2.8	abc	c	-	bc	-	abc	abc	abc	ab	a	ns	ns
Mine-exposed	RG_FOUSH	0.380	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FOUKI	0.087	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FOBKS	0.061	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_SCOUTDS	0.525	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
Mine-exposed	RG_FOBSC	0.026	base year	-	-	-1.7	-0.94	0.71	-0.37	-1.9	0.82	0.33	ab	-	-	ab	ab	ab	ab	b	a	ab	ns	ns
Mine-exposed	RG_FOBCP	<0.001	base year	-	-	0.84	1.6	2.7	0.42	-0.78	2.3	2.4	abc	-	-	abc	abc	ab	bc	c	ab	a	ns	ns
Mine-exposed	RG_FRCP1SW	0.359	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FRUPO	0.127	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
Mine-exposed	RG_FODPO	0.045	base year	0.64	-	3.4	**4.5**	3.3	1.3	1.1	1.4	2.7	b	ab	-	ab	a	ab	ab	ab	ab	ab	ns	ns
Mine-exposed	RG_FO22	0.002	base year	-	-	**4.6**	-	**5.8**	1.8	3.3	**4.0**	**3.6**	c	-	-	ab	-	a	bc	abc	a	ab	ns	ns
Mine-exposed	RG_FOUEW	0.032	base year	-	-	2.5	2.3	2.7	1.1	0.11	2.3	2.8	ab	-	-	ab	ab	ab	ab	b	ab	a	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ – $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.17: Temporal Changes in Benthic Invertebrate Baetidae Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	<0.001	base year	-0.85	-	0.69	-2.5	0.69	-0.63	-1.3	-1.9	1.8	ab	ab	-	ab	b	ab	ab	b	b	a	ns	↑
	RG_FO26	<0.001	base year	0.31	-	4.3	2.8	3.4	2.5	0.94	**7.5**	**7.0**	c	c	-	abc	c	bc	c	c	a	ab	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	**5.7**	3.9	2.0	3.3	1.8	**5.2**	**4.6**	b	-	-	a	ab	ab	ab	b	a	a	ns	ns
	RG_FOUCL	1.000	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.288	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODNGD	0.022	-	-	-	base yea	-	0.71	-1.4	-1.7	-2.5	-3.2	-	-	-	ab	-	a	ab	ab	ab	b	ns	ns
	RG_MP1	<0.001	base year	-1.6	-	-0.58	-	0.88	2.1	-0.48	-0.84	-1.4	ab	b	-	ab	-	ab	a	b	b	b	ns	ns
	RG_FOUSH	<0.001	base year	-	-	**4.5**	-	0.39	1.3	0.28	1.1	-0.79	b	-	-	a	-	ab	ab	b	ab	b	ns	ns
	RG_FOUKI	0.111	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBKS	0.010	base year	-	-	1.6	-0.10	0.65	1.5	-1.5	-0.29	-0.20	ab	-	-	ab	ab	ab	a	b	ab	ab	ns	ns
	RG_SCOUTDS	0.863	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.180	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBCP	<0.001	base year	-	-	1.7	1.4	0.63	-1.9	3.2	**4.6**	-0.44	bcd	-	-	abc	abcd	bcd	d	ab	a	cd	ns	↓
	RG_FRCP1SW	0.040	-	-	-	-	-	base year	-	3.5	**3.7**	1.6	-	-	-	-	-	b	ns	ab	a	ab	ns	ns
	RG_FRUPO	0.005	-	-	-	-	-	base year	1.6	2.0	**4.2**	1.0	-	-	-	-	-	b	b	ab	a	b	ns	↓
	RG_FODPO	<0.001	base year	-0.23	-	**-7.6**	-0.23	-3.0	0.91	0.14	-0.36	-1.1	ab	ab	-	c	ab	b	a	ab	ab	ab	ns	ns
	RG_FO22	0.287	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUEW	0.212	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

- P-value < 0.05.
- > 2 SD Increase.
- > 3 SD Increase.
- > 4 SD Increase.
- > 5 SD Increase.
- > 2 SD Decrease.
- > 3 SD Decrease.
- > 4 SD Decrease.
- > 5 SD Decrease.
- **bold** Significant increase or decrease from base year.
- Significantly > than all historical years (or 2020).
- Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.18: **Temporal Changes in Benthic Invertebrate Ephemerillidae Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021**

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.030	base year	-3.2	-	-0.70	0.46	0.76	0.59	-2.1	-0.26	-1.5	ab	b	-	ab	ab	ab	a	b	ab	ab	ns	ns
	RG_FO26	<0.001	base year	-2.9	-	-0.38	2.5	1.2	3.3	2.3	**4.0**	2.1	bcd	d	-	cd	abc	abcd	ab	abc	a	abc	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	0.64	-0.97	-0.49	-0.41	3.3	3.1	-0.22	ab	-	-	ab	b	b	b	a	a	b	ns	↓
	RG_FOUCL	0.214	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	<0.001	base year	-	-	-0.37	-	0.057	**5.4**	**6.7**	**4.2**	**5.5**	b	-	-	b	-	b	a	a	a	a	ns	ns
	RG_FODNGD	0.056	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	<0.001	base year	**-7.0**	-	-4.3	-	1.9	-1.0	-2.7	-0.90	0.87	ab	c	-	bc	-	a	ab	b	ab	a	ns	ns
	RG_FOUSH	0.187	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FOUKI	0.005	base year	-	-	-0.61	-1.7	-2.0	-0.039	0.69	1.5	1.1	ab	-	-	ab	ab	b	ab	ab	a	a	ns	ns
	RG_FOBKS	0.046	base year	-	-	-0.30	1.4	-0.29	2.3	0.95	1.4	0.49	ab	-	-	ab	ab	b	a	ab	ab	ab	ns	ns
	RG_SCOUTDS	0.775	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.141	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOBCP	<0.001	base year	-	-	**-5.7**	**-5.8**	**-8.1**	**-6.7**	**-5.6**	-3.3	**-4.0**	a	-	-	bcd	bcd	d	d	cd	ab	bc	ns	ns
	RG_FRCP1SW	0.443	-	-	-	-	-	ns	-	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FRUPO	0.050	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	**-4.8**	-	**-6.1**	**-5.9**	**-8.2**	**-4.3**	**-5.7**	**-4.4**	**-5.8**	a	bc	-	bc	bc	c	b	bc	b	bc	ns	ns
	RG_FO22	0.003	base year	-	-	0.56	-	-3.0	-3.0	-1.9	-2.9	**-3.9**	ab	-	-	a	-	abc	bc	abc	abc	c	ns	ns
	RG_FOUEW	0.523	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

P-value < 0.05.
> 2 SD Increase.
> 3 SD Increase.
> 4 SD Increase.
> 5 SD Increase.
> 2 SD Decrease.
> 3 SD Decrease.
> 4 SD Decrease.
> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = [$Mean_{given\ year}$ – $Mean_{base\ year}$] /$SD_{base\ year}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.19: Temporal Changes in Benthic Invertebrate Heptageniidae Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.293	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	0.003	base year	-0.92	-	0.76	1.8	0.81	**3.7**	**3.7**	2.6	**3.7**	b	b	-	ab	ab	ab	a	a	ab	a	ns	ns
Mine-exposed	RG_FODHE	0.732	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FOUCL	0.100	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOUNGD	0.005	base year	-	-	-2.0	-	-4.1	-0.13	0.39	-0.83	-0.42	ab	-	-	ab	-	b	a	a	ab	a	ns	ns
	RG_FODNGD	0.060	-	-	-	ns	-	ns	ns	ns	ns	ns	-	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_MP1	<0.001	base year	**-4.7**	-	-3.7	-	-2.4	-2.6	**-5.4**	-2.9	-0.38	a	bc	-	abc	-	abc	ab	c	abc	a	ns	ns
	RG_FOUSH	<0.001	base year	-	-	-2.4	-	-3.3	-2.5	**-3.6**	**-3.2**	**-3.6**	a	-	-	ab	-	ab	ab	b	b	b	ns	ns
	RG_FOUKI	<0.001	base year	-	-	**-4.9**	**-7.8**	**-5.2**	**-4.5**	**-5.3**	-2.6	**-3.8**	a	-	-	bcd	d	bcd	bcd	cd	ab	bc	ns	ns
	RG_FOBKS	0.019	base year	-	-	-1.8	-1.9	-2.3	0.0029	-1.0	0.54	-0.66	ab	-	-	ab	ab	b	ab	ab	a	ab	ns	ns
	RG_SCOUTDS	1.000	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.001	base year	-	-	-2.7	**-5.3**	-3.0	-1.2	-1.3	-0.42	-0.86	a	-	-	ab	b	ab	a	a	a	a	ns	ns
	RG_FOBCP	<0.001	base year	-	-	-4.2	**-5.5**	-3.5	-1.5	**-3.6**	-0.65	-1.9	ab	-	-	bcd	d	abcd	ab	cd	a	abc	ns	ns
	RG_FRCP1SW	0.016	-	-	-	-	-	base year	-	1.9	**4.1**	3.1	-	-	-	-	-	b	ns	ab	a	ab	ns	ns
	RG_FRUPO	<0.001	-	-	-	-	-	base year	-1.8	**-3.8**	-1.1	**-5.1**	-	-	-	-	-	a	ab	bc	a	c	ns	↓
	RG_FODPO	0.012	base year	1.6	-	-1.9	-2.3	-3.5	0.33	-2.4	-0.12	-2.0	abc	a	-	abc	abc	c	ab	c	abc	bc	ns	ns
	RG_FO22	<0.001	base year	-	-	1.4	-	-0.46	0.76	-0.94	0.12	-2.0	ab	-	-	a	-	ab	a	ab	a	b	ns	↓
	RG_FOUEW	0.430	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

- P-value < 0.05.
- \> 2 SD Increase.
- \> 3 SD Increase.
- \> 4 SD Increase.
- \> 5 SD Increase.
- \> 2 SD Decrease.
- \> 3 SD Decrease.
- \> 4 SD Decrease.
- \> 5 SD Decrease.
- **bold** Significant increase or decrease from base year.
- Significantly > than all historical years (or 2020).
- Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.20: Temporal Changes in Benthic Invertebrate Chironomidae Abundance for Reference and Mine-exposed Areas in the FRO LAEMP, September 2012 to 2021

Status	Area	Year P-value[a]	Q1. Is there a positive or negative change since the base year (b) of monitoring? Magnitude of Difference (MOD)[b] and Significance (bolded) from Base Year (b)[c]										Q2. Is the 2021 September mean greater or less than the September historical means (2012 - 2020) and the previous year (2020)?											
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2012-2020	2020
Reference	RG_HENUP	0.139	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_FO26	<0.001	base year	-3.0	-	-0.72	1.5	-0.92	0.91	2.1	1.6	-0.95	abc	c	-	abc	ab	abc	ab	a	ab	bc	ns	ns
Mine-exposed	RG_FODHE	<0.001	base year	-	-	**4.7**	1.6	0.97	2.6	**6.9**	**7.4**	1.9	c	-	-	ab	bc	bc	bc	a	a	bc	ns	↓
	RG_FOUCL	<0.001	-	-	-	-	-	-	-	base year	**-2.6**	**-6.7**	-	-	-	-	-	-	-	a	b	c	↓	↓
	RG_FOUNGD	0.129	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	-	-	ns	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODNGD	0.001	-	-	-	base year	-	2.7	2.2	3.0	**3.9**	0.43	-	-	-	bc	-	abc	abc	ab	a	c	ns	↓
	RG_MP1	<0.001	base year	-2.2	-	-2.6	-	-3.7	-2.4	1.5	-3.3	**-5.9**	ab	b	-	bc	-	bc	b	a	b	c	ns	↓
	RG_FOUSH	<0.001	base year	-	-	-1.1	-	-0.65	0.88	2.3	2.5	-2.4	ab	-	-	ab	-	ab	a	a	a	b	ns	↓
	RG_FOUKI	0.001	base year	-	-	1.3	2.4	3.2	1.5	**3.9**	**4.9**	2.2	c	-	-	bc	abc	abc	bc	ab	a	bc	ns	↓
	RG_FOBKS	0.065	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns
	RG_SCOUTDS	0.081	-	-	-	-	-	-	-	ns	ns	ns	-	-	-	-	-	-	-	ns	ns	ns	ns	ns
	RG_FOBSC	0.002	base year	-	-	-0.10	2.0	2.6	-0.56	2.0	2.3	-1.0	abc	-	-	abc	abc	abc	bc	ab	a	c	ns	↓
	RG_FOBCP	<0.001	base year	-	-	1.9	1.6	2.9	-0.017	3.1	2.6	0.60	ab	-	-	ab	ab	ab	b	a	a	b	ns	↓
	RG_FRCP1SW	0.016	-	-	-	-	-	base year	-	1.3	-1.3	1.6	-	-	-	-	-	ab	ns	a	b	a	ns	↑
	RG_FRUPO	0.251	-	-	-	-	-	ns	ns	ns	ns	ns	-	-	-	-	-	ns	ns	ns	ns	ns	ns	ns
	RG_FODPO	<0.001	base year	**-7.9**	-	-2.1	-0.51	2.3	2.1	0.45	1.4	-1.4	abc	d	-	bc	abc	ab	a	abc	ab	c	ns	↓
	RG_FO22	<0.001	base year	-	-	2.1	-	0.55	-2.3	-2.1	0.37	**-4.1**	ab	-	-	a	-	ab	bc	b	a	c	ns	↓
	RG_FOUEW	0.377	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	-	-	ns	ns	ns	ns	ns	ns	ns	ns	ns

P-value < 0.05.
\> 2 SD Increase.
\> 3 SD Increase.
\> 4 SD Increase.
\> 5 SD Increase.
\> 2 SD Decrease.
\> 3 SD Decrease.
\> 4 SD Decrease.
\> 5 SD Decrease.
bold Significant increase or decrease from base year.
Significantly > than all historical years (or 2020).
Significantly < than all historical years (or 2020).

Notes: "ns" = not significant; "-" insufficient data for comparison.

[a] *Year* p-value from an ANOVA

[b] Magnitude of Difference (MOD) = $[\text{Mean}_{\text{given year}} - \text{Mean}_{\text{base year}}] / \text{SD}_{\text{base year}}$.

[c] Significance among year determined using all pairwise comparisons using Tukey's honestly significant differences method. Years that share a letter are not significantly different. Letters assigned such that the mean with highest magnitude is assigned "a".

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Moisture	Dry Mass	Wet Mass	Aluminum	Arsenic	Antimony	Barium	Boron
		Units	%	g d.w.	g w.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
June	16-Jun-21	RG_HENUP	84.4	0.3569	2.29	229	0.632	0.012	10	0.223
			82.5	0.2787	1.5929	392	0.772	0.012	16	0.39
			84	0.1493	0.9322	348	<0.471	0.012	8.4	0.335
	14-Jun-21	RG_FO26	73.1	0.3828	1.4239	329	1	0.015	47	0.447
			75.5	0.362	1.4766	343	0.716	0.015	33	0.456
			73.2	0.4155	1.5517	656	1	0.025	52	1.2
	15-Jun-21	RG_UFR1	77.9	0.2868	1.2966	1384	1.7	0.05	66	1.5
			75.7	0.2964	1.22	785	1.4	0.033	58	1
			81.6	0.214	1.1612	1587	1.5	0.041	50	1.7
			79.1	0.306	1.4657	630	1.1	0.033	55	0.868
			77.1	0.2652	1.16	682	1.3	0.028	46	0.822
	14-Jun-21	RG_FODHE	75.3	0.4874	1.9744	403	1.1	0.016	35	0.501
			77.3	0.152	0.6694	445	1	0.016	36	0.49
			79.7	0.2596	1.2776	973	1.1	0.031	56	0.98
	14-Jun-21	RG_FOUCL	76.3	0.0819	0.3451	4297	1.7	0.16	81	3.4
			70	0.1541	0.5141	1640	0.571	0.044	47	1.3
			71.8	0.0927	0.3283	3430	1.3	0.083	67	3
	15-Jun-21	RG_FOUNGD	76.4	0.044	0.1864	4235	0.666	0.11	104	3.9
			70.4	0.2386	0.8069	376	0.547	0.017	17	0.438
			72.6	0.2167	0.7913	237	0.53	0.017	18	0.464
	16-Jun-21	RG_FODNGD	79.8	0.2472	1.2228	793	0.887	0.031	38	0.779
			75.6	0.232	0.9496	311	<0.471	0.022	20	0.294
			80.9	0.2483	1.2991	618	0.764	0.028	18	0.566
	14-Jun-21	RG_MP1	74.1	0.1288	0.4975	1683	1.1	0.06	40	1.6
			72.6	0.1379	0.5035	1287	1.2	0.054	37	1.2
			73.8	0.1482	0.5664	1384	1.1	0.072	97	1.5
	15-Jun-21	RG_FOUSH	78.3	0.3543	1.6348	1551	0.914	0.055	42	1.4
			75.2	0.297	1.1971	1669	0.7	0.066	52	1.5
			77.2	0.5216	2.2846	922	0.632	0.044	33	1
	17-Jun-21	RG_FOUKI	76.9	0.3776	1.6323	934	0.904	0.03	34	0.981
			75.3	0.5742	2.328	933	0.742	0.05	35	1
			77.4	0.4331	1.9195	611	0.648	0.025	22	0.73
			75.9	0.4075	1.688	941	0.641	0.039	33	1.1
			78	0.5971	2.716	1099	0.53	0.047	50	0.953
	16-Jun-21	RG_SCOUTDS	69.2	0.1786	0.5796	526	0.509	0.039	22	0.617
			77.1	0.0871	0.3807	5150	1.5	0.11	81	4.6
			73.3	0.0734	0.2745	1304	0.829	0.047	41	1.4
			76.2	0.0299	0.1257	4345	0.973	0.165	83	4.4
			69.6	0.0851	0.2803	16853	3	0.457	236	17
	16-Jun-21	RG_FOBKS	73.6	0.0525	0.1986	3397	1.2	0.094	46	2.6
			77.7	0.0608	0.2731	15759	2.3	0.369	195	12
			77.1	0.0524	0.2284	5499	1.4	0.099	82	4.3
			77.3	0.0799	0.3525	1967	1.3	0.05	35	1.8
			76.4	0.1148	0.4861	3797	1.1	0.256	61	2.9
	17-Jun-21	RG_FOBSC	76.8	0.1124	0.4854	4313	1.2	0.102	67	4.3
			77.3	0.085	0.3747	1577	1.1	0.052	38	2.1
			80.5	0.0565	0.2896	3198	1.4	0.068	72	3.5
			77.9	0.1205	0.5457	2542	0.935	0.063	42	2.5
			71	0.1652	0.5702	2517	0.855	0.073	50	2.4
	17-Jun-21	RG_FOBCP	72.7	0.0719	0.2637	1131	0.877	0.04	32	1.2
			72.7	0.0902	0.3305	1619	0.933	0.039	20	1.2
			83.5	0.0513	0.3103	1779	1.4	0.099	72	3.3
			79.6	0.0635	0.3107	1658	1.4	0.05	30	1.9
			76.4	0.1083	0.4597	544	0.704	0.033	13	0.667
	17-Jun-21	RG_FRCP1SW	80.7	0.1799	0.9316	2025	0.94	0.05	42	1.9
			81.8	0.0934	0.5134	7219	1.3	0.168	118	6.2
			79	0.0944	0.4488	10694	2.3	0.278	155	8.7
			82.3	0.145	0.8181	2480	1.2	0.058	45	2.3
			82.1	0.1598	0.8936	1509	0.661	0.039	27	1.3
	17-Jun-21	RG_FRCP1SW	71.6	0.1541	0.5417	32772	8.5	0.796	412	26
			66.8	0.3238	0.9744	43242	6.5	1	445	39
	18-Jun-21	RG_FRUPO	76.8	0.0911	0.3929	4714	1.6	0.116	74	4
			81.2	0.167	0.8896	2055	0.678	0.058	43	2
			79	0.1049	0.5002	4745	1.5	0.12	153	5.6
			78.9	0.0972	0.4611	4529	1.2	0.114	91	5.1
			76.9	0.0883	0.3817	2625	1.4	0.114	61	3.3
	17-Jun-21	RG_FODPO	81.8	0.1368	0.7532	1758	0.869	0.055	65	2
			76.4	0.2801	1.1893	5745	1.6	0.146	156	6.9
			77.8	0.2156	0.9714	4854	1.3	0.132	132	5.6
			78	0.2124	0.9641	2299	0.756	0.055	60	2.5
			76.1	0.2077	0.8708	3448	1.2	0.094	77	3.8
	18-Jun-21	RG_FO22	81	0.1111	0.585	7291	1.5	0.145	142	7.6
			81.1	0.0985	0.5215	4757	0.994	0.1	89	4.3
			77.4	0.0805	0.3564	8567	1.8	0.185	150	7.9
			80.9	0.1693	0.8877	6719	1.6	0.14	130	6.3
			75.7	0.188	0.7722	11922	2.5	0.265	222	14
	18-Jun-21	RG_FOUEW	69.8	0.2853	0.9459	8601	1.8	0.13	163	8
			76.8	0.213	0.9192	2608	1.6	0.06	60	2.9
			71.3	0.2058	0.7182	14430	2.6	0.305	191	11
			71.4	0.1594	0.5578	3877	1.7	0.098	75	3.9
			72.6	0.1883	0.6882	1994	1	0.06	43	1.9

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Moisture	Dry Mass	Wet Mass	Aluminum	Arsenic	Antimony	Barium	Boron
		Units	%	g d.w.	g w.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
September	16-Sep-21	RG_HENUP	74.6	0.3146	1.2409	525	1.2	0.029	13	2
			82.2	0.2998	1.6855	236	2	0.02	9.5	1.1
			79.8	0.2265	1.1238	232	1.6	0.025	12	1.7
	15-Sep-21	RG_FO26	79.6	0.3185	1.5644	2134	2.5	0.086	86	3.1
			82.4	0.3924	2.2334	279	1.5	0.018	36	0.726
			82.1	0.7609	4.2563	1352	2.1	0.063	54	2.4
			81	0.4023	2.1119	629	2.2	0.052	50	1.1
			80	0.3566	1.7869	638	2.1	0.034	44	1.1
	20-Sep-21	RG_UFR1	78.7	0.1677	0.7859	1037	1.5	0.067	71	14
			81.4	0.1019	0.5488	1056	1.2	0.051	56	16
			79.3	0.0911	0.4393	1102	0.94	0.058	64	19
			82.5	0.0872	0.4986	664	1.1	0.043	53	10
			78.2	0.1223	0.562	543	1	0.038	39	10
	13-Sep-21	RG_FODHE	80.7	0.1651	0.8548	254	<0.471	0.018	26	1.1
			80.8	0.1005	0.5235	382	0.605	0.032	26	1
			81.3	0.085	0.4546	265	0.714	0.042	24	0.848
	13-Sep-21	RG_FOUCL	78.5	0.086	0.4004	1104	1.1	0.05	110	2.1
			79	0.1054	0.5022	499	0.654	0.026	35	0.876
			84.7	0.0641	0.419	369	0.654	0.027	33	0.537
	17-Sep-21	RG_FOUNGD	81.5	0.132	0.7154	779	1.1	0.05	59	1.8
			79.3	0.1152	0.5555	1554	1.1	0.094	50	2.2
			81.6	0.3413	1.8523	2831	1.6	0.126	105	4.8
	17-Sep-21	RG_FODNGD	79.8	0.0695	0.3434	2692	0.801	0.128	77	3
			82.5	0.1086	0.6212	2862	1.2	0.165	91	2.9
			82	0.1526	0.8461	1796	1.1	0.119	66	2.9
	14-Sep-21	RG_MP1	76	0.0925	0.3855	1420	<0.471	0.043	29	1.4
			79.8	0.1072	0.5306	1142	0.595	0.041	50	1.2
			80.4	0.0768	0.3917	449	<0.471	0.032	19	0.582
	16-Sep-21	RG_FOUSH	76.9	0.082	0.3554	915	0.822	0.086	65	1.2
			81.8	0.1865	1.0224	682	0.723	0.077	44	0.987
			77.4	0.0354	0.1566	2041	1.2	0.164	80	3
	20-Sep-21	RG_FOUKI	77	0.0752	0.3272	837	0.792	0.104	93	1.7
			77.5	0.1965	0.8719	349	0.619	0.089	59	0.871
			76.2	0.1717	0.7205	596	0.589	0.125	56	0.914
			77.4	0.1521	0.672	160	<0.471	0.051	12	0.639
			68.2	0.3097	0.9741	118	<0.471	0.088	12	0.457
	14-Sep-21	RG_SCOUTDS	75.8	0.3465	1.4332	772	0.508	0.092	54	0.944
			74.3	0.1582	0.6166	402	0.535	0.074	30	0.761
			74.5	0.3061	1.1982	192	<0.471	0.048	11	0.624
			76.6	0.2534	1.0826	381	<0.471	0.063	25	0.716
			76.6	0.1186	0.5059	888	0.669	0.108	52	1.6
	9-Sep-21	RG_FOBKS	78.5	0.5595	2.6023	483	0.549	0.134	19	0.712
			78.3	0.243	1.1185	3019	0.898	0.28	74	3
			73.9	0.2403	0.9212	3715	0.873	0.247	127	4.9
			84.3	0.1634	1.0404	329	<0.471	0.116	23	0.626
			76.9	0.3843	1.6626	1201	0.558	0.145	66	1.6
	13-Sep-21	RG_FOBSC	75.6	0.209	0.855	1415	1	0.145	68	1.9
			75.6	0.1637	0.6708	10333	1.7	0.313	227	8.9
			80.2	0.1713	0.8642	4998	1.4	0.25	104	5
			80	0.2021	1.0096	6432	1.2	0.278	225	5.9
			70.2	0.4085	1.372	716	0.589	0.071	45	0.917
	13-Sep-21	RG_FOBCP	73.9	0.3038	1.162	171	<0.471	0.034	8.1	0.517
			74.3	0.1292	0.5026	5417	1.5	0.295	85	6.6
			76.7	0.1297	0.5578	5358	2	0.217	91	6
			78.7	0.4988	2.3406	539	<0.471	0.056	20	1.1
			77	0.2273	0.9868	553	0.534	0.081	30	0.909
	14-Sep-21	RG_FRCP1SW	78.2	0.1386	0.6353	249	<0.471	0.032	11	0.626
			72.6	0.2322	0.847	337	0.487	0.045	16	1
			82.4	0.068	0.3862	398	0.487	0.039	18	1.2
			80.6	0.0653	0.3372	888	0.92	0.055	25	3.3
			82.6	0.06	0.3448	697	0.554	0.045	23	1.8
	19-Sep-21	RG_FRUPO	75.9	0.087	0.3608	200	<0.471	0.025	20	0.658
			85.6	0.0687	0.4787	496	<0.471	0.03	20	1.3
			80.9	0.0709	0.3719	164	<0.471	0.017	10	0.488
			80.2	0.0466	0.2355	807	<0.471	0.037	36	2.1
			80.7	0.04	0.2072	1114	0.871	0.058	38	2.2
	19-Sep-21	RG_FRGHSC	74.3	0.0389	0.1512	9773	2.4	0.208	201	9.3
			76.8	0.0208	0.0896	3339	0.926	0.131	80	3.5
			79.7	0.0291	0.1435	5342	1.9	0.147	161	7.4
			75	0.0494	0.1976	10626	2.5	0.218	217	9.1
			74.3	0.044	0.1715	34624	5.2	0.624	646	31
	11-Sep-21	RG_FODPO	74.9	0.3143	1.2543	2590	0.815	0.131	58	3.4
			77.6	0.4401	1.9648	4668	1.3	0.175	77	5.6
			77.6	0.2732	1.2214	5438	1.2	0.249	105	5.4
			81.1	0.3543	1.8748	1592	0.772	0.117	52	2.6
			75.6	0.4195	1.7187	1468	0.715	0.122	67	2.8
	12-Sep-21	RG_FO22	77.1	0.1328	0.5796	13822	2.1	0.419	275	14
			79.4	0.1265	0.6126	4027	0.859	0.106	82	3.5
			80.8	0.2298	1.1944	2702	0.814	0.125	62	2.8
			77.3	0.1361	0.5992	8611	1.7	0.313	163	7.6
			79.7	0.3971	1.954	8858	1.4	0.351	192	9.8
	11-Sep-21	RG_FOUEW	76	0.2176	0.9059	2432	0.909	0.098	74	2.9
			72.8	0.7637	2.804	1092	0.639	0.052	51	1.9
			80.8	0.1783	0.9277	3711	0.982	0.093	82	3.7
			67.7	0.3892	1.2035	1468	1	0.066	62	2.1
			79.9	0.4907	2.4397	1827	0.751	0.125	68	2.5
	14-Sep-21	RG_FRSCH2	74.5	0.1667	0.653	432	<0.471	0.051	24	1.1
			83.4	0.1307	0.7852	2226	2.4	0.164	61	4.5
			77.6	0.0485	0.2161	891	0.678	0.066	24	2.4
			68.3	0.1166	0.3677	95	<0.471	0.017	7.8	0.339
			76.6	0.0537	0.2291	864	<0.471	0.093	23	2

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Moisture	Dry Mass	Wet Mass	Aluminum	Arsenic	Antimony	Barium	Boron
		Units	%	g d.w.	g w.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
December	16-Dec-21	RG_UFR1	79.5	0.1647	0.8024	582	0.841	0.029	54	1.6
			80.7	0.1342	0.6954	530	1.2	0.025	33	1.5
			78.7	0.1813	0.8502	118	<0.425	0.004	6	0.261
			77.3	0.2529	1.1144	511	0.922	0.026	26	1.5
			80.5	0.1957	1.0034	624	0.542	0.028	27	1.3
	15-Dec-21	RG_FODHE	74.9	0.1388	0.5524	2070	1.4	0.085	61	3.9
			79.3	0.121	0.5844	1240	0.841	0.05	39	2
			79.8	0.114	0.5634	1346	0.986	0.054	38	2.4
	15-Dec-21	RG_FOUCL	72.9	0.1981	0.7322	750	1	0.043	79	1.6
			75.5	0.1822	0.7451	745	1.1	0.033	52	1.6
			73.7	0.2477	0.9432	800	1.2	0.033	68	1.6
	15-Dec-21	RG_FOUNGD	78.1	0.1707	0.7807	150	0.425	0.01	14	0.741
			79	0.1806	0.862	353	0.763	0.023	15	1.7
			75.6	0.191	0.7816	129	<0.425	0.011	11	0.793
	15-Dec-21	RG_FODNGD	80.8	0.1326	0.6914	1244	0.986	0.058	58	1.6
			78.3	0.1835	0.8452	1104	0.87	0.05	55	1.6
			78	0.167	0.7588	1310	0.957	0.055	62	2.4
	15-Dec-21	RG_MP1	72.3	0.1595	0.575	660	0.615	0.041	65	1.2
			73.6	0.1737	0.6581	415	1.2	0.033	16	0.671
			73.7	0.1289	0.4898	790	0.531	0.033	40	1.1
	15-Dec-21	RG_FOUSH	76.8	0.2531	1.0906	329	0.719	0.072	75	0.672
			79.1	0.2193	1.0492	481	0.66	0.044	58	0.517
			78.5	0.18	0.8378	366	0.939	0.037	62	0.465
	14-Dec-21	RG_FOUKI	74.1	0.1673	0.6468	187	<0.425	0.037	17	0.276
			75.4	0.2552	1.0367	284	0.499	0.042	24	0.362
			76.6	0.2046	0.8727	419	0.469	0.042	31	0.517
			72.6	0.2928	1.0675	521	0.499	0.088	63	0.758
			69.4	0.2555	0.8356	221	<0.425	0.073	16	0.345
	9-Dec-21	RG_SCOUTDS	73.7	0.1314	0.4991	449	<0.425	0.042	17	1.8
			75.5	0.0328	0.1337	2667	0.895	0.108	210	4.5
			79.2	0.0857	0.4124	374	<0.425	0.041	21	0.722
			78	0.0821	0.3738	236	<0.425	0.027	11	0.719
			79.6	0.0529	0.2596	513	0.461	0.026	35	0.8
	14-Dec-21	RG_FOBKS	69.9	0.1305	0.4336	562	0.496	0.11	141	0.889
			80.7	0.0514	0.2657	1774	0.695	0.117	134	2.3
			77	0.0567	0.2466	517	0.546	0.113	92	0.904
			73.4	0.2473	0.9291	879	<0.425	0.11	138	1.3
			81.9	0.0693	0.383	715	0.459	0.067	73	1
	9-Dec-21	RG_FOBSC	77.3	0.0653	0.2874	727	0.533	0.057	43	1.4
			77.7	0.0805	0.3607	941	0.62	0.072	66	2.3
			66.6	0.0694	0.2078	2886	1.3	0.128	166	3
			88.5	0.018	0.1572	14648	1.7	0.417	1117	36
			76.1	0.0941	0.3932	648	0.435	0.048	37	3
	14-Dec-21	RG_FOBCP	79.5	0.1326	0.648	345	0.496	0.048	28	0.768
			76.4	0.1485	0.6295	124	<0.425	0.045	19	0.422
			75.5	0.1217	0.496	350	0.633	0.063	34	0.873
			75.8	0.1077	0.4458	390	0.62	0.053	25	0.512
			76.2	0.0718	0.3011	670	0.62	0.057	20	0.843
	13-Dec-21	RG_FRUPO	81.1	0.2167	1.1487	1773	1.5	0.115	65	1.6
			78	0.1895	0.862	517	<0.425	0.034	22	1.2
			76.1	0.1111	0.4648	382	<0.425	0.03	15	0.638
			80.4	0.1175	0.5996	593	0.531	0.028	29	1.2
			73.7	0.1707	0.6494	219	0.559	0.031	65	1.1
	14-Dec-21	RG_FODPO	76	0.1089	0.4544	1184	0.464	0.05	34	53
			76.6	0.1318	0.5627	3458	0.696	0.082	77	53
			73.1	0.0514	0.1912	1035	<0.425	0.069	34	4.6
			78.3	0.0963	0.4443	776	0.464	0.042	30	7.2
			81.3	0.0676	0.3616	1974	0.638	0.072	64	3.1
	13-Dec-21	RG_FO22	80.2	0.0589	0.2973	691	<0.425	0.035	27	0.783
			82.9	0.0848	0.4961	1034	0.534	0.062	48	1.5
			83.5	0.042	0.2542	1681	0.62	0.058	40	2.1
			76.4	0.1009	0.4271	437	0.521	0.03	21	0.693
			75.6	0.1126	0.4606	831	0.434	0.034	37	1.2
	13-Dec-21	RG_FOUEW	74.3	0.168	0.6545	312	<0.425	0.02	18	0.606
			79	0.1402	0.6665	711	0.499	0.03	39	1.3
			74.3	0.1935	0.7533	1354	0.558	0.053	77	1.4
			77.7	0.1365	0.6131	364	<0.425	0.024	35	0.862
			72.8	0.2996	1.1011	173	<0.425	0.022	26	0.551
	14-Dec-21	RG_FRSCH2	74.6	0.2353	0.9249	653	0.531	0.044	22	1
			78.2	0.2067	0.9483	452	0.559	0.04	18	0.906
			79.5	0.2213	1.0781	406	0.503	0.039	20	0.873
			80.3	0.1669	0.8451	451	0.531	0.033	15	0.738
			76.4	0.1134	0.4795	2301	1.3	0.145	124	3.6
	13-Dec-21	RG_FRGHSC	79.1	0.0894	0.4286	1906	1.3	0.075	89	3.3
			81.4	0.0737	0.396	2265	1.4	0.086	68	3
			77.9	0.0777	0.3515	1745	1.3	0.084	59	2.4
			81	0.0487	0.2559	592	<0.425	0.032	26	1.3
			79.7	0.1163	0.5725	151	<0.425	0.014	49	0.302

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Date		Area	Calcium	Cadmium	Copper	Cobalt	Chromium	Iron	Lead	Lithium	Magnesium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
June	16-Jun-21	RG_HENUP	5657	0.804	11	0.474	6.6	216	0.087	0.278	1837
			6239	1.3	12	0.355	4.2	241	0.097	0.399	2000
			4446	0.775	10	0.479	7.1	240	0.084	0.377	1437
	14-Jun-21	RG_FO26	4358	1.2	17	0.809	3.4	243	0.121	0.138	2171
			2982	1.3	11	0.629	5.5	256	0.107	0.152	1467
			4917	1.3	12	0.996	4.3	436	0.25	0.218	2117
	15-Jun-21	RG_UFR1	5575	2.8	17	1.4	9.2	645	0.263	0.49	2233
			4764	1.6	15	1.2	7.8	453	0.238	0.272	1992
			2662	2.6	16	1.7	14	790	0.329	0.474	1522
			5155	1.2	13	0.632	7.1	351	0.174	0.233	1869
			4568	1.6	14	0.904	5.7	343	0.161	0.277	2042
	14-Jun-21	RG_FODHE	4690	1.2	16	0.769	4.1	266	0.17	0.664	1773
			5552	2	15	1.2	6.5	364	0.162	0.32	1954
			2317	2.8	17	1.4	4.6	421	0.234	0.671	1390
	14-Jun-21	RG_FOUCL	5848	4.8	17	5.2	32	3195	1	2.5	1723
			4243	1.9	16	2.7	28	988	0.316	0.694	1625
			3728	5.3	22	11	99	2344	0.656	1.4	1917
	15-Jun-21	RG_FOUNGD	2816	2.3	16	3.6	38	1718	0.864	2	1130
			3263	3.2	17	5.6	2.9	265	0.139	0.58	1421
			2073	2.9	19	3.3	3.6	214	0.097	0.891	1263
	16-Jun-21	RG_FODNGD	5531	6.4	25	6.8	5.2	501	0.247	0.991	2314
			4008	1	24	1.2	6.9	293	0.08	1.1	1254
			2715	6.1	19	9.1	5.4	445	0.133	0.856	1353
	14-Jun-21	RG_MP1	2616	9.7	22	17	14	988	0.415	0.972	1717
			2632	10	23	17	19	899	0.352	0.88	2274
			3805	6.7	20	12	10	721	0.412	1.6	2303
	15-Jun-21	RG_FOUSH	3922	5.7	24	10	10	1021	0.419	1.3	1537
			6246	3.1	21	5.3	8.8	1208	0.361	1	1822
			3381	3.8	24	5.8	6.2	651	0.315	1.1	1817
	17-Jun-21	RG_FOUKI	2060	5.4	17	6.5	5.9	663	0.284	1.3	1451
			2783	3.8	23	8.8	6.8	571	0.285	1.6	1646
			2250	7.1	21	9.3	6.2	485	0.183	1.1	1406
			4639	6	18	12	4.1	543	0.237	1	1986
			4366	5.3	22	9.9	5.6	660	0.306	1.3	2043
	16-Jun-21	RG_SCOUTDS	1627	3.9	16	5.3	4.7	374	0.166	0.934	1406
			4969	9.6	21	16	46	2005	0.736	2.1	2057
			2390	8.7	18	17	17	1267	0.256	0.852	1890
			5700	5.2	18	13	114	3513	0.735	2	1886
			5161	8.9	25	18	147	7751	3.3	5.4	2241
	16-Jun-21	RG_FOBKS	3465	7.9	19	14	54	1911	0.679	1.9	1829
			4376	6.7	23	18	190	6618	2.5	4.5	2107
			5199	7.4	18	13	75	2998	0.93	2.6	1963
			2969	7.4	17	13	19	1074	0.415	1.5	1467
			3545	6.7	19	12	70	2140	0.957	2	1738
	17-Jun-21	RG_FOBSC	4372	7.9	23	12	37	1640	0.753	1.9	2085
			3140	8.3	20	13	26	1234	0.335	0.996	1607
			4669	9.5	25	17	37	2306	0.675	1.6	1801
			3438	9.3	27	24	12	1148	0.485	1.3	1673
			3723	13	28	28	14	1282	0.519	1.2	1947
	17-Jun-21	RG_FOBCP	3215	6.8	19	9.5	24	728	0.272	0.812	1491
			2685	8.2	22	12	9.6	591	0.232	1.1	1732
			8368	11	19	14	32	1440	0.581	2.2	1947
			3721	12	22	14	17	846	0.307	1.2	1676
			1813	7.9	20	14	9.9	570	0.141	0.918	1719
	17-Jun-21	RG_FRCP1SW	3133	8.2	18	9.9	10	1006	0.389	1.9	1760
			4697	5.7	21	9.4	89	3493	1.1	2.4	2025
			6068	11	21	10	172	5648	2	3.5	2235
			3163	11	21	13	25	1273	0.452	1.5	1759
			2670	5.4	16	5.4	16	861	0.269	1.4	1436
	17-Jun-21	RG_FRCP1SW	10405	22	12	26	494	16904	5.3	9.9	3154
			9578	11	11	8.7	76	13376	6.7	11	2774
	18-Jun-21	RG_FRUPO	4021	12	19	16	67	2468	0.827	2	1911
			3851	5.7	17	7.3	18	931	0.392	1.3	1714
			5656	9.1	20	11	61	2764	0.956	1.9	2132
			4242	9.2	22	13	35	1825	0.911	2	1952
			4303	9.9	23	14	26	1828	0.704	1.2	2215
	17-Jun-21	RG_FODPO	4631	4.6	17	5.4	17	1121	0.416	1.4	2001
			6413	4.5	22	9.5	32	2561	1.2	3.2	2340
			5963	3.3	19	5.5	51	2293	1.2	2.8	2161
			3435	2.6	17	4.5	21	1107	0.408	1.4	1978
			4392	6.1	20	8.4	23	1629	0.691	1.8	2235
	18-Jun-21	RG_FO22	6128	4.1	24	5.5	39	3254	1.4	3.6	2770
			5578	2.8	23	3.7	28	1957	0.87	2.3	2732
			5693	6.5	23	15	116	5667	1.5	3.1	2369
			6745	2.9	26	5.2	40	2592	1.3	3.1	2774
			5666	5.6	22	10	86	5535	3	5.8	2742
	18-Jun-21	RG_FOUEW	4522	7	26	10	60	3642	1.6	3.3	2394
			3579	7.6	19	8.5	25	1508	0.591	1.5	2208
			5292	6.6	22	11	125	7098	2.7	3.5	2325
			3998	8.6	24	10	49	2410	0.814	1.6	1890
			2986	4.6	25	5.2	28	1439	0.483	1.5	1767

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Date		Area	Calcium	Cadmium	Copper	Cobalt	Chromium	Iron	Lead	Lithium	Magnesium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
September	16-Sep-21	RG_HENUP	6663	0.887	8.4	0.651	8.9	376	0.193	0.745	1634
			2998	0.856	7.7	0.241	3.1	154	0.09	0.285	1294
			3704	0.52	8	0.172	2.1	134	0.094	0.273	1168
	15-Sep-21	RG_FO26	4126	1.1	12	1.5	20	1139	0.572	0.86	1864
			1532	0.67	11	0.3	3.2	193	0.155	0.248	1224
			2982	0.717	13	1.1	11	782	0.464	0.754	1564
			2500	0.655	12	0.679	7.1	439	0.289	0.394	1533
			1765	0.842	13	0.673	8.5	450	0.289	0.376	1314
	20-Sep-21	RG_UFR1	2941	3.8	15	0.674	14	499	0.238	0.357	1576
			2172	2.8	14	1.1	20	679	0.25	0.376	1595
			2371	2.3	12	0.561	17	515	0.232	0.5	1375
			2245	3	16	0.855	15	385	0.184	0.3	1367
			1954	1.7	11	0.373	9.8	314	0.145	0.271	1205
	13-Sep-21	RG_FODHE	1788	2.2	16	0.584	4.4	255	0.192	0.767	1198
			2189	2.6	19	1.1	4.1	287	0.207	5.7	1464
			1251	2	14	0.861	3.5	218	0.117	0.757	1408
	13-Sep-21	RG_FOUCL	1873	1.8	15	1.3	13	461	0.27	1.3	1774
			2635	3.8	17	1.5	9.7	351	0.11	1.2	2076
			3120	3	18	1.4	9.3	383	0.103	4.4	2519
	17-Sep-21	RG_FOUNGD	5076	4.1	12	2.6	5.2	427	0.249	1.3	1832
			2786	2.6	13	2.5	17	704	0.4	1.6	1385
			4691	2.2	14	2.6	15	1034	0.746	2.5	2015
	17-Sep-21	RG_FODNGD	4918	2.5	21	10	19	928	0.514	2	2007
			4957	2.8	19	6.7	39	1694	1.2	9.3	1795
			4130	2.2	20	2.3	20	948	0.759	2.6	1917
	14-Sep-21	RG_MP1	1906	1.6	16	1.8	14	694	0.232	2.4	1236
			2123	1.7	13	1.6	12	541	0.293	5	1516
			2931	7	20	2.9	7.1	339	0.178	5.1	1743
	16-Sep-21	RG_FOUSH	3529	0.808	19	10	13	3059	0.284	1.6	1320
			3579	1.6	19	3.6	8.8	2385	0.233	2.7	1234
			8434	1.3	22	8.2	30	4334	0.513	2.6	1640
	20-Sep-21	RG_FOUKI	5337	1.2	18	4.8	15	1062	0.177	1.4	1601
			4700	0.656	11	5.8	3.7	406	0.094	1.5	1200
			6923	0.666	15	9.1	9.4	608	0.127	2.3	1405
			2535	0.305	5.9	3.8	2.3	205	0.033	0.46	311
			2843	0.611	23	5.5	2.6	238	0.036	0.706	1450
	14-Sep-21	RG_SCOUTDS	1993	2.9	15	8.6	2.3	504	0.172	1.2	1190
			1886	2.9	13	4.6	4	346	0.078	0.862	1226
			2184	1.9	22	4.8	3.9	191	0.033	1	1677
			2727	2	20	5	5.9	377	0.093	1.1	1659
			2534	4.3	21	13	5.1	674	0.199	1.6	1524
	9-Sep-21	RG_FOBKS	5834	2	23	7.4	5.4	319	0.101	2.2	1984
			7275	2.7	22	12	22	1752	0.546	2.4	1616
			17147	3	18	14	19	2175	0.755	3.4	1903
			4517	1.7	16	6.9	6.6	377	0.098	1.4	1277
			5871	1.7	16	12	17	808	0.251	2.7	1402
	13-Sep-21	RG_FOBSC	3594	5.3	24	18	19	1302	0.374	3.3	1826
			6666	7.9	41	12	120	7905	1.8	8.3	3368
			6464	8.5	31	15	41	3053	0.97	2.9	2351
			8875	11	33	15	47	3629	1.3	5.8	2676
			3267	4.4	24	9	12	644	0.192	1.7	1593
	13-Sep-21	RG_FOBCP	1649	0.705	12	2.6	3.9	218	0.05	0.754	1305
			5997	3.8	21	8.7	46	3233	0.882	2.9	2322
			4900	6.2	17	6.5	44	2322	0.971	2.8	2303
			1451	1.2	9.3	3.2	6.9	393	0.116	1	845
			2739	4	16	4.8	9.1	525	0.165	2.5	1772
	14-Sep-21	RG_FRCP1SW	1751	1.4	13	2.4	3.9	199	0.062	0.971	1199
			4872	2.9	28	4.3	4.4	311	0.099	1.3	2162
			3278	0.992	12	1.9	12	413	0.112	1	1269
			3396	1.4	17	2.2	9.7	674	0.183	1.4	1336
			3568	1.4	15	2	13	536	0.153	1.5	1589
	19-Sep-21	RG_FRUPO	1644	0.663	13	0.524	3.8	150	0.068	0.667	1478
			4535	1.2	19	0.567	11	353	0.125	1.1	2217
			2927	0.86	12	0.464	4.3	154	0.068	0.788	1786
			4654	1	17	0.951	15	565	0.18	0.931	1814
			4044	1.2	19	0.821	29	823	0.266	1.5	2184
	19-Sep-21	RG_FRGHSC	6317	3.9	14	12	317	6793	1.9	3.6	2279
			4072	2	13	1.6	85	2938	0.627	2	1789
			5655	3.2	14	9.5	211	5304	1.1	2.4	2151
			6236	6.2	15	3	94	5176	1.8	4.4	2425
			7794	5.7	15	17	409	15058	5.2	8.2	3130
	11-Sep-21	RG_FODPO	3788	1.7	15	2.4	17	1108	0.368	1.4	1782
			3876	1.8	14	4	30	2823	0.987	2.4	1791
			5289	2.3	26	5.4	60	2882	1.3	2.1	2340
			5950	1.9	20	5	12	916	0.491	1.2	2290
			5309	1.5	17	3.9	29	1313	0.484	1.4	2115
	12-Sep-21	RG_FO22	3651	1.7	16	5.8	66	9168	2.9	5.2	2308
			4330	3	21	4.3	23	2324	1	1.8	1971
			2995	2.2	20	2.7	33	1697	0.652	1.4	1753
			4972	2.5	24	13	231	6583	1.9	4.6	2207
			6162	3.4	20	4.7	57	4110	1.9	4.5	2182
	11-Sep-21	RG_FOUEW	4155	2.6	20	2.4	39	2215	0.857	1.6	1762
			3739	2.5	16	2	11	1055	0.476	1.3	1331
			6156	2.4	17	2.7	34	2171	0.837	1.8	1578
			4083	2.9	21	2.6	12	1177	0.571	1.2	1706
			5831	1.4	15	1.3	4.6	772	0.433	1.4	1818
	14-Sep-21	RG_FRSCH2	2129	1.2	15	5.5	5.1	371	0.185	2.6	1812
			3369	2.3	18	5.7	29	1881	0.793	3.3	1736
			3464	1.2	18	3	22	625	0.245	1.2	1827
			3176	0.562	17	1.3	3.7	135	0.04	0.712	1923
			3478	1.5	22	4.1	29	875	0.24	1.3	2172

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Calcium	Cadmium	Copper	Cobalt	Chromium	Iron	Lead	Lithium	Magnesium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
December	16-Dec-21	RG_UFR1	1481	1.7	11	0.451	3.8	253	0.177	0.339	937
			1624	1.8	13	0.273	3.4	191	0.18	0.345	946
			565	1.2	11	0.167	2	63	0.035	0.061	280
			1525	1.2	9.6	0.465	4	216	0.163	0.284	735
			1099	0.827	13	0.41	4.2	265	0.152	0.306	665
	15-Dec-21	RG_FODHE	3779	2.1	24	2.4	37	1170	0.547	2	1690
			2208	0.981	24	1.1	18	667	0.327	1.4	1231
			2626	2.1	18	1.5	16	600	0.267	1.6	1499
	15-Dec-21	RG_FOUCL	1814	1.6	16	2.3	7.5	455	0.289	0.893	1119
			2631	1.3	17	1.3	6.5	297	0.187	0.584	1405
			3311	1.3	17	1.5	6.9	378	0.252	0.792	1366
	15-Dec-21	RG_FOUNGD	1883	1.4	11	0.764	2.1	101	0.071	0.629	996
			3215	0.809	9.8	0.631	3	149	0.121	0.826	1301
			1497	0.627	6.7	0.828	2.9	92	0.06	0.564	598
	15-Dec-21	RG_FODNGD	3482	1.2	18	5.3	11	463	0.304	2.7	1422
			3728	0.868	17	4.7	15	489	0.257	1.2	1317
			3564	1.6	15	5.7	10	449	0.254	1.9	1384
	15-Dec-21	RG_MP1	1982	0.831	14	5.6	3.8	340	0.268	1.2	1074
			3207	1.3	12	3.6	2.7	170	0.106	0.721	1539
			2557	1.2	16	3.2	4.2	410	0.239	0.959	1096
	15-Dec-21	RG_FOUSH	2398	0.647	10	3.3	2.8	2214	0.16	0.858	826
			1497	0.607	9	0.615	2.4	1890	0.176	1.1	595
			2063	0.566	10	0.881	3	3047	0.224	0.729	759
	14-Dec-21	RG_FOUKI	1919	0.283	11	0.718	3.2	184	0.05	0.464	593
			2241	0.647	10	1.5	2.7	217	0.071	1.2	1045
			1803	2.1	7.5	1.6	3.1	290	0.112	0.787	797
			5483	0.728	15	4.5	2.3	316	0.139	0.97	1049
			1928	0.647	13	3.9	1.7	190	0.068	0.588	649
	9-Dec-21	RG_SCOUTDS	1802	1.6	14	2.7	4.5	258	0.177	0.944	1654
			3166	1.5	16	3.6	20	1374	0.592	2.1	1840
			2237	3.1	17	4.2	3	244	0.142	6.6	1344
			1940	3	12	1.5	3.7	138	0.074	5.5	1210
			2993	0.827	14	0.937	4.3	217	0.106	0.499	619
	14-Dec-21	RG_FOBKS	16814	0.675	11	2.6	5	409	0.164	1.6	1301
			5146	0.843	15	3.1	9.8	795	0.375	1.8	1051
			14071	1.1	13	3.4	4.3	351	0.148	2.1	1259
			16122	1	12	3.7	3.6	397	0.195	1.6	1463
			2621	0.675	14	2.2	4.5	515	0.177	1.5	1028
	9-Dec-21	RG_FOBSC	1988	0.776	11	1.7	6	330	0.199	1	958
			1909	1	19	1.5	4.8	356	0.285	0.85	975
			4390	2.5	23	4	41	1617	0.584	1.3	1714
			22824	5.7	30	18	394	9696	2.6	6.2	3984
			2010	1.2	20	2.4	8.3	400	0.183	1.1	1635
	14-Dec-21	RG_FOBCP	1347	1.2	10	5	2.2	191	0.107	1.2	904
			1292	1.2	12	3.9	2.1	148	0.052	1.1	1170
			1734	0.945	15	4.8	5.7	220	0.125	0.79	1398
			2220	1.8	15	2.5	3.7	215	0.099	0.894	1193
			2311	0.79	26	1.7	7.2	275	0.125	1	1329
	13-Dec-21	RG_FRUPO	4480	1.8	16	1.5	8.2	1072	0.63	2.5	1899
			2817	1.6	13	0.517	7.6	500	0.199	0.898	1333
			2900	0.706	12	0.531	6.8	262	0.162	0.635	1227
			2964	0.748	8.9	0.398	4.8	331	0.167	0.825	1521
			2899	0.332	6	0.499	4.9	175	0.09	1.1	1751
	14-Dec-21	RG_FODPO	3227	0.675	17	1.4	17	724	0.257	0.937	1445
			3799	0.531	15	2.9	47	1569	0.599	1.9	1517
			4897	0.884	13	2.8	38	990	0.251	0.866	1486
			2849	0.547	14	1.7	15	548	0.184	0.786	1744
			3602	1.3	18	5.8	61	1734	0.389	1.3	1819
	13-Dec-21	RG_FO22	2046	0.405	12	0.297	5	1492	0.243	0.501	1225
			3276	0.607	17	0.923	12	1426	0.368	0.929	1638
			4751	0.607	13	0.917	12	1291	0.48	1	1584
			2654	0.388	14	0.351	5.8	882	0.164	0.599	1415
			1978	0.506	12	0.823	22	1354	0.27	0.572	1387
	13-Dec-21	RG_FOUEW	2861	0.515	15	0.466	5.8	324	0.083	0.574	1626
			3122	0.647	13	1	13	639	0.242	0.67	1754
			6876	0.768	12	1.1	6.1	942	0.491	1.1	1458
			4146	0.728	15	0.625	3.8	375	0.185	0.599	1900
			2408	1.4	11	1.1	2.6	371	0.197	0.505	826
	14-Dec-21	RG_FRSCH2	1804	0.748	14	2.7	3.3	261	0.146	0.935	1028
			1960	0.623	13	2.8	3	268	0.126	0.831	1375
			2692	0.748	16	3	3.5	283	0.156	1.5	1684
			2635	2.1	15	2.2	4	257	0.116	1	1548
			3540	2.1	15	3.6	18	1489	0.721	1.7	1570
	13-Dec-21	RG_FRGHSC	5066	5.2	13	0.755	5.1	965	0.701	2.2	1955
			4483	4.3	15	1.1	12	1040	0.493	1.6	1460
			3377	3.3	10	1.2	16	1050	0.374	1.2	1248
			3279	1.5	15	0.209	4	146	0.176	1.1	1382
			1283	6.2	8	0.091	1.9	101	0.146	0.476	579

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Molybdenum	Mercury	Manganese	Nickel	Potassium	Phosphorus	Silver	Selenium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
June	16-Jun-21	RG_HENUP	0.249	<0.034	14	11	9762	13260	0.08	5.1
			0.275	0.034	21	6.7	9271	13295	0.08	5.2
			0.213	<0.034	11	11	7936	9843	0.071	4.8
	14-Jun-21	RG_FO26	0.379	0.041	52	7.1	14524	15827	0.085	5.4
			0.327	0.041	36	6.9	9629	11325	0.067	3.2
			0.392	0.041	47	7.4	11547	13336	0.07	4.4
	15-Jun-21	RG_UFR1	0.398	0.034	51	14	10721	12987	0.155	3.9
			0.398	<0.034	56	13	11465	13229	0.103	2.9
			0.406	0.04	49	23	10358	10913	0.136	4.9
			0.398	0.037	43	12	9754	12436	0.132	3.1
			0.398	<0.034	31	8.9	10875	13683	0.112	3.4
	14-Jun-21	RG_FODHE	0.375	<0.034	62	6.9	8869	13510	0.138	4.4
			0.31	<0.034	42	10	8090	13422	0.146	3.3
			0.407	0.034	79	8.3	9914	11653	0.134	5
	14-Jun-21	RG_FOUCL	0.887	0.046	124	53	9467	10192	0.12	6.1
			0.418	0.062	47	41	8965	11317	0.12	5.4
			0.583	0.037	105	148	12482	12754	0.142	8.7
	15-Jun-21	RG_FOUNGD	0.898	0.049	76	69	11790	11917	0.061	7.1
			0.242	<0.034	37	9.7	6498	7550	0.065	5.2
			0.207	<0.034	25	10	9797	9743	0.071	5.4
	16-Jun-21	RG_FODNGD	0.391	0.046	81	16	10990	13583	0.146	6.5
			0.234	<0.034	27	12	9144	11473	0.151	3.7
			0.284	<0.034	40	22	8686	9154	0.102	6.2
	14-Jun-21	RG_MP1	0.426	0.051	85	38	9842	9926	0.116	6.2
			0.426	0.068	77	43	12101	13211	0.123	9.7
			0.619	0.047	99	32	14724	15294	0.116	13
	15-Jun-21	RG_FOUSH	0.38	0.045	67	24	11244	11784	0.141	5.4
			0.38	<0.034	80	23	11412	11572	0.181	4.5
			0.363	<0.034	75	18	10649	11967	0.147	6
	17-Jun-21	RG_FOUKI	0.35	<0.034	84	18	12523	11204	0.102	5.6
			0.333	0.044	104	20	12247	12686	0.12	5.7
			0.275	0.048	101	21	9770	10100	0.095	5.4
			0.363	<0.034	97	17	11509	13118	0.158	4.6
			0.345	<0.034	117	18	12266	15092	0.155	6.3
	16-Jun-21	RG_SCOUTDS	0.398	<0.034	65	12	11887	11196	0.107	6.8
			0.516	0.04	145	82	13308	12009	0.14	5.8
			0.546	0.037	85	39	9928	11430	0.097	5.2
			0.664	0.037	137	211	10913	10539	0.097	6.7
			2.3	0.062	184	238	13854	9539	0.124	6.5
	16-Jun-21	RG_FOBKS	0.987	0.049	127	89	12873	11370	0.122	5.7
			1.9	<0.034	170	232	15303	11215	0.142	5.7
			0.613	0.063	139	123	13706	12221	0.146	5.7
			0.538	0.042	100	38	12469	10239	0.134	6
			0.478	0.049	101	102	13293	11200	0.152	5.7
	17-Jun-21	RG_FOBSC	0.896	<0.034	129	72	13704	11884	0.126	6.7
			0.717	0.046	116	55	11725	11169	0.098	6.3
			0.652	<0.034	119	115	11911	11764	0.126	6.5
			0.554	0.046	121	32	10333	9914	0.116	5.6
			0.489	0.084	149	36	11433	10319	0.175	6.8
	17-Jun-21	RG_FOBCP	0.47	<0.034	99	44	11536	11684	0.105	6
			0.366	<0.034	73	33	12531	11639	0.165	6.2
			0.553	0.042	226	66	12678	11234	0.13	6.8
			0.688	0.053	114	43	11547	10817	0.122	6.1
			0.314	0.039	52	31	10361	10236	0.096	7.7
	17-Jun-21	RG_FRCP1SW	0.57	0.041	76	25	10506	11086	0.092	6.8
			0.955	0.038	130	158	12046	12469	0.122	5.8
			2.1	<0.034	196	262	13081	10544	0.131	9.9
			0.513	0.034	117	45	11281	11831	0.14	7.5
			0.477	<0.034	55	32	9675	10559	0.113	6.7
	17-Jun-21	RG_FRCP1SW	1.8	0.871	322	801	14636	9708	2.2	253
			1.7	0.397	263	173	14113	5101	0.639	103
	18-Jun-21	RG_FRUPO	0.743	0.046	115	126	12124	10852	0.108	8.1
			0.46	<0.034	125	38	10946	10644	0.104	6.7
			0.941	<0.034	262	106	11193	11580	0.113	6.3
			0.613	0.034	198	69	12489	11084	0.151	7.1
			0.746	0.043	99	65	11154	10857	0.104	6.6
	17-Jun-21	RG_FODPO	0.535	<0.034	184	34	12056	11573	0.133	6
			0.853	0.046	414	62	13830	11176	0.16	7.5
			0.678	0.035	366	78	12465	10085	0.142	6.4
			0.561	<0.034	182	37	11596	9771	0.116	6.2
			0.987	<0.034	304	44	11442	10191	0.138	6.8
	18-Jun-21	RG_FO22	0.993	0.051	221	65	15645	12936	0.166	9.6
			0.607	<0.034	134	51	14648	13485	0.153	9.6
			0.862	0.054	293	240	13889	11553	0.147	8.5
			0.875	0.041	204	66	11880	11020	0.19	6.9
			0.666	0.108	218	112	14585	8555	0.134	12
	18-Jun-21	RG_FOUEW	0.967	0.044	231	95	17674	12646	0.146	7
			0.683	<0.034	125	53	12884	12887	0.102	7.3
			1.1	0.037	202	197	13400	11318	0.13	6.5
			0.9	0.037	137	90	13406	12098	0.126	7.3
			0.683	<0.034	62	46	14068	12268	0.142	7.3

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Molybdenum	Mercury	Manganese	Nickel	Potassium	Phosphorus	Silver	Selenium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
September	16-Sep-21	RG_HENUP	0.281	0.057	16	16	9442	10108	0.079	4.8
			0.269	0.049	9.3	6.3	9048	9567	0.091	6
			0.333	<0.034	15	4.9	6689	9406	0.06	6
	15-Sep-21	RG_FO26	0.358	<0.034	88	31	15576	14417	0.06	4.2
			0.278	0.035	45	4.9	12395	13482	0.035	3.7
			0.387	<0.034	66	18	16975	14572	0.047	3.8
			0.363	<0.034	67	11	16100	14200	0.041	2.9
			0.459	0.035	67	14	14585	13057	0.052	3.8
	20-Sep-21	RG_UFR1	0.531	0.06	51	24	12949	12008	0.078	4.8
			0.436	0.048	49	34	15234	14357	0.066	5.6
			0.531	0.06	45	29	13687	13114	0.066	4.5
			0.398	0.052	50	23	12998	13551	0.081	4.9
			0.417	0.045	34	13	10149	10950	0.06	4.8
	13-Sep-21	RG_FODHE	0.567	0.075	102	10	9771	10858	0.12	7.4
			0.462	0.052	132	10	10514	12760	0.176	7.9
			0.441	0.052	95	7	18413	17363	0.113	12
	13-Sep-21	RG_FOUCL	0.305	0.037	76	26	21611	18493	0.088	11
			0.294	0.045	45	18	13923	12040	0.198	8.8
			0.231	0.06	32	17	12577	14428	0.151	11
	17-Sep-21	RG_FOUNGD	0.486	0.041	55	22	12315	12978	0.083	8.1
			0.435	0.049	48	38	10015	9202	0.174	8.1
			0.435	0.061	86	47	13690	12421	0.129	7.8
	17-Sep-21	RG_FODNGD	0.353	0.047	64	44	11237	12933	0.11	7.7
			0.517	0.034	66	83	11693	11959	0.128	8
			0.472	0.068	73	50	14164	12520	0.122	11
	14-Sep-21	RG_MP1	0.325	0.044	29	25	8333	8105	0.167	5
			0.242	0.051	39	25	12991	12315	0.113	8.5
			0.435	0.063	64	16	11603	11477	0.239	8.4
	16-Sep-21	RG_FOUSH	0.497	<0.034	285	37	9380	9952	0.13	7.5
			0.609	0.045	101	23	9519	10972	0.162	7.3
			0.472	0.068	100	64	12580	11184	0.162	5.7
	20-Sep-21	RG_FOUKI	0.265	0.037	129	33	13365	12234	0.151	6.2
			0.303	<0.034	269	17	7992	8882	0.096	5.5
			0.433	0.056	432	34	10014	10814	0.12	7
			0.13	<0.034	148	6.9	2156	2239	0.032	4.5
			0.325	0.04	139	12	8129	9940	0.145	4.9
	14-Sep-21	RG_SCOUTDS	0.433	0.064	344	17	8801	8676	0.145	9.8
			0.281	0.064	131	17	8225	8677	0.126	10
			0.26	<0.034	125	13	8916	9601	0.151	7.7
			0.26	0.056	142	18	8466	9275	0.214	8.1
			0.422	0.064	470	31	11770	11967	0.139	11
	9-Sep-21	RG_FOBKS	0.242	0.035	92	25	8977	11702	0.221	6.9
			0.459	<0.034	238	72	10927	9952	0.166	7.8
			0.749	0.035	428	75	10596	9750	0.145	7.6
			0.411	0.044	169	26	7055	7931	0.151	7.2
			0.353	0.034	368	49	10120	8560	0.116	7.8
	13-Sep-21	RG_FOBSC	0.799	0.059	601	77	17587	17293	0.126	15
			2.2	0.11	434	190	22868	17725	0.21	16
			0.836	0.076	306	99	13776	14457	0.179	14
			0.909	0.093	529	115	17116	13544	0.231	13
			0.418	0.051	330	37	11353	13600	0.184	10
	13-Sep-21	RG_FOBCP	0.199	<0.034	54	12	6433	8486	0.066	4.7
			0.576	0.056	153	88	14099	11773	0.175	8.7
			0.477	0.071	212	89	12853	11510	0.131	12
			0.258	0.044	106	21	7307	6116	0.038	8.1
			0.377	0.064	142	29	12259	12013	0.11	10
	14-Sep-21	RG_FRCP1SW	0.266	0.051	94	13	6479	6538	0.095	7.7
			0.387	0.051	105	14	9181	12595	0.214	8
			0.29	<0.034	61	23	5688	6432	0.091	4.9
			0.338	0.059	90	26	6919	7879	0.117	6.1
			0.266	0.051	66	35	8455	8931	0.126	6.9
	19-Sep-21	RG_FRUPO	0.165	<0.034	30	4.2	10139	11456	0.075	9.3
			0.202	0.035	21	13	7765	11026	0.18	5.1
			0.165	0.035	12	5.4	5931	9288	0.098	5.9
			0.257	<0.034	50	23	10137	11465	0.105	5.7
			0.514	0.035	40	45	12130	12996	0.117	6.3
	19-Sep-21	RG_FRGHSC	0.899	0.042	147	420	14064	10732	0.079	19
			1	0.042	53	117	9692	9298	0.051	5.5
			0.661	0.042	88	292	10900	9790	0.07	13
			1.3	0.078	84	135	11904	9873	0.075	18
			1.4	0.078	305	580	15264	9020	0.096	28
	11-Sep-21	RG_FODPO	0.462	0.043	81	31	10995	9258	0.11	4.9
			0.544	0.034	97	61	10025	7168	0.076	4.6
			1.5	0.043	178	110	12148	11612	0.134	7.5
			0.435	0.034	96	32	9919	10777	0.105	6.8
			0.353	0.034	130	54	9039	9704	0.093	6.1
	12-Sep-21	RG_FO22	1.1	<0.034	230	107	11392	8022	0.151	8.7
			0.486	0.045	93	46	10734	11385	0.189	9.2
			0.715	<0.034	92	57	12221	11731	0.115	8.6
			1.6	0.056	201	337	11516	10254	0.11	8.9
			1.2	0.04	139	88	13139	10145	0.121	8.3
	11-Sep-21	RG_FOUEW	0.983	0.051	150	66	11935	13265	0.142	8.9
			0.516	<0.034	136	27	10526	9991	0.113	11
			0.811	<0.034	94	65	11581	9764	0.089	6.2
			0.787	0.051	164	26	12761	10623	0.116	7.9
			0.665	0.041	114	13	9730	12437	0.144	8.5
	14-Sep-21	RG_FRSCH2	0.314	0.051	195	15	15795	14884	0.132	9.6
			0.846	0.055	114	74	18097	10813	0.132	7.3
			0.378	0.037	70	46	12945	12518	0.151	6.7
			0.189	0.037	22	4.8	9762	11535	0.129	3.5
			0.63	<0.034	52	62	15532	14268	0.195	6.7

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Molybdenum	Mercury	Manganese	Nickel	Potassium	Phosphorus	Silver	Selenium
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
December	16-Dec-21	RG_UFR1	0.226	0.058	42	6.2	7194	9970	0.059	3.7
			0.419	0.058	21	4.7	8067	11531	0.084	4
			0.064	0.058	12	1.5	2412	4366	0.034	1.7
			0.193	0.058	41	5.3	7140	8212	0.055	3
			0.419	0.048	25	6	4169	7385	0.067	4
	15-Dec-21	RG_FODHE	0.535	0.078	105	65	10822	12033	0.193	7.3
			0.535	0.059	114	33	10502	12501	0.168	7.8
			0.301	0.078	65	25	9455	10770	0.16	5.9
	15-Dec-21	RG_FOUCL	0.435	0.059	55	16	10012	11257	0.092	7.3
			0.335	0.049	57	15	9538	10965	0.076	7.5
			0.351	0.049	58	16	10816	12700	0.092	8.7
	15-Dec-21	RG_FOUNGD	0.093	0.052	26	5.6	7384	7305	0.034	4.6
			0.155	<0.033	12	7.4	5904	8396	0.05	3.3
			0.093	<0.033	29	7.9	4691	5499	0.034	3.2
	15-Dec-21	RG_FODNGD	0.301	0.078	42	28	8613	8757	0.118	5.2
			0.251	0.039	35	28	8276	10661	0.126	4.6
			0.368	0.069	32	26	8671	9572	0.126	5.4
	15-Dec-21	RG_MP1	0.27	0.04	58	12	9624	10931	0.108	6.1
			0.24	0.04	28	9.5	7523	10832	0.113	4.1
			0.18	0.035	26	8.5	7837	10087	0.108	4.4
	15-Dec-21	RG_FOUSH	0.249	0.052	124	12	4533	6944	0.05	5.1
			0.155	<0.033	19	7.1	5120	6043	0.05	2.4
			0.155	0.042	14	7.3	5274	6457	0.076	3.8
	14-Dec-21	RG_FOUKI	0.233	<0.033	22	5.5	4754	5556	0.084	2.5
			0.155	0.042	47	6.7	7768	8157	0.109	4
			0.217	0.042	64	7.7	6733	6549	0.076	2.5
			0.404	<0.033	153	14	5879	7636	0.113	5.5
			0.311	<0.033	112	9.2	4890	5980	0.084	3.1
	9-Dec-21	RG_SCOUTDS	0.12	0.05	56	10	8525	10804	0.13	6.3
			0.36	0.07	131	45	12429	12399	0.108	11
			0.27	0.06	97	11	8313	10101	0.216	8.6
			0.322	0.043	47	8.8	7500	7855	0.109	4.8
			0.258	<0.033	31	8.5	3136	4796	0.092	3.7
	14-Dec-21	RG_FOBKS	0.381	0.042	120	15	5929	8091	0.076	8.9
			0.272	0.058	78	26	9063	8604	0.124	5.3
			0.217	0.058	128	14	7550	8613	0.089	5.9
			0.435	0.033	229	15	5313	7248	0.096	6
			0.245	0.038	65	13	8113	8912	0.082	4.8
	9-Dec-21	RG_FOBSC	0.245	0.05	63	14	7576	8470	0.055	6.3
			0.353	0.05	68	11	6563	8521	0.117	7.3
			0.462	0.083	85	73	8828	11005	0.148	8.5
			2.6	0.127	273	593	6767	9160	0.16	9.9
			0.268	0.088	66	17	10449	10075	0.113	11
	14-Dec-21	RG_FOBCP	0.272	0.05	145	20	7532	9711	0.041	7.3
			0.217	0.058	90	17	9604	12123	0.052	7.5
			0.245	0.054	101	17	9358	9258	0.062	8.5
			0.326	0.067	53	13	7080	9305	0.048	5.5
			0.435	0.058	46	18	11188	11236	0.131	6.7
	13-Dec-21	RG_FRUPO	0.48	0.05	63	20	17974	11062	0.09	6.1
			0.24	0.04	36	14	8126	9951	0.086	5.2
			0.24	<0.033	23	9.6	7309	9231	0.108	4.6
			0.24	0.035	31	6.8	7473	9064	0.054	6.2
			0.3	<0.033	37	5.4	10986	10635	0.038	4.6
	14-Dec-21	RG_FODPO	0.535	0.039	41	32	6766	8408	0.092	4.7
			0.385	<0.033	45	79	7323	7823	0.092	4.4
			0.602	0.049	38	62	5608	8872	0.109	4.9
			0.335	0.039	43	30	7730	9449	0.067	5.4
			0.636	0.054	73	108	6847	8836	0.084	5.4
	13-Dec-21	RG_FO22	0.272	0.042	52	9	5781	8515	0.072	7.4
			0.299	0.05	62	29	8401	9258	0.096	9.3
			0.326	0.058	58	22	6962	8638	0.069	8.1
			0.245	<0.033	23	9.9	8123	9850	0.069	5.6
			0.231	0.042	64	30	7947	9023	0.062	6.5
	13-Dec-21	RG_FOUEW	0.201	0.039	45	8.5	8066	9158	0.143	5.7
			0.155	0.042	123	20	7978	9758	0.109	5
			0.404	0.062	226	12	6518	8492	0.084	6.6
			0.311	0.062	99	7.1	10232	13766	0.181	7.1
			0.249	0.073	91	11	6672	4805	0.109	5.4
	14-Dec-21	RG_FRSCH2	0.3	<0.033	75	7.7	7822	8970	0.13	4.4
			0.27	<0.033	83	9.3	8549	10192	0.081	4.4
			0.21	0.04	97	8	7763	11219	0.13	5.1
			0.24	0.05	29	6.6	9600	10408	0.157	7.4
			0.42	0.05	52	29	10136	10871	0.151	6.7
	13-Dec-21	RG_FRGHSC	0.311	0.052	39	8.2	8050	7560	0.05	13
			0.435	0.062	24	19	7582	7837	0.067	17
			0.311	0.052	22	26	6324	6241	0.034	15
			0.165	0.035	13	3.9	4445	6611	0.043	6.5
			0.15	<0.033	45	1.7	5564	5620	0.032	4.6

Table E.21: **Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021**

Date		Area	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
June	16-Jun-21	RG_HENUP	3869	11	0.019	0.577	12	0.027	0.478	248
			3571	9.8	0.024	0.481	20	0.035	0.557	348
			3067	7.6	0.018	0.557	13	0.023	0.54	249
	14-Jun-21	RG_FO26	4215	6.1	0.017	0.39	17	0.029	0.485	204
			2998	5	0.014	0.401	17	0.032	0.549	159
			2997	7.8	0.022	0.215	46	0.035	0.991	197
	15-Jun-21	RG_UFR1	3253	9.6	0.027	0.474	80	0.048	2.1	229
			3046	7.4	0.023	0.952	44	0.038	1.3	196
			3426	5	0.032	0.701	109	0.064	2.6	209
			2516	6.7	0.02	0.355	39	0.03	0.971	166
			3375	7.2	0.025	0.385	50	0.039	1.2	238
	14-Jun-21	RG_FODHE	2771	6	0.025	0.234	26	0.029	0.663	218
			2318	7.6	0.027	0.285	25	0.026	0.801	201
			2728	4.1	0.041	0.477	75	0.043	1.4	225
	14-Jun-21	RG_FOUCL	2376	8.1	0.071	0.96	303	0.149	7.7	258
			2556	6.8	0.03	0.49	119	0.046	3.3	203
			3858	7	0.099	0.822	211	0.135	6.6	330
	15-Jun-21	RG_FOUNGD	3626	7.8	0.125	0.402	265	0.214	10	220
			2116	4.9	0.06	0.189	22	0.075	0.76	277
			3604	2.7	0.045	0.154	16	0.05	0.538	261
	16-Jun-21	RG_FODNGD	3740	7.3	0.088	0.528	54	0.173	1.4	515
			3190	4.9	0.014	0.221	19	0.014	0.624	162
			2961	3.1	0.047	0.304	31	0.091	0.983	503
	14-Jun-21	RG_MP1	3219	4.6	0.082	0.697	111	0.137	3.4	543
			4190	4.3	0.099	0.685	97	0.128	2.9	614
			4153	6.5	0.076	0.714	99	0.107	2.5	482
	15-Jun-21	RG_FOUSH	3811	5.5	0.077	0.564	111	0.067	2.8	411
			3301	7.4	0.064	0.402	108	0.081	2.7	301
			3827	4.5	0.072	0.229	59	0.061	1.7	288
	17-Jun-21	RG_FOUKI	3434	3	0.055	0.433	64	0.052	1.5	374
			4013	3.5	0.073	0.347	43	0.042	1.4	347
			3715	2.9	0.07	0.213	45	0.045	0.992	473
			3703	5.7	0.092	0.453	57	0.07	1.5	511
			4876	5.4	0.091	0.363	59	0.053	1.6	464
	16-Jun-21	RG_SCOUTDS	3145	3.2	0.045	0.207	36	0.033	0.728	375
			3806	8.8	0.138	1.1	374	0.21	7.2	627
			2948	3.7	0.086	0.398	122	0.08	2.7	699
			2921	8.6	0.076	1.1	416	0.196	8	418
			3165	19	0.237	1.5	1662	0.749	29	490
	16-Jun-21	RG_FOBKS	3716	5.7	0.082	0.516	197	0.099	5.4	527
			3038	18	0.162	1.3	1221	0.457	28	414
			3275	8.6	0.08	1	382	0.136	9	423
			3389	4.5	0.055	1.2	134	0.066	3.3	461
			4317	6.1	0.065	0.771	248	0.167	7.6	493
	17-Jun-21	RG_FOBSC	3501	7.8	0.109	0.601	390	0.154	7.6	466
			2877	4.8	0.075	0.512	130	0.075	2.8	464
			2913	8.7	0.098	0.879	238	0.11	7.1	516
			2867	5.8	0.098	0.278	195	0.099	3.6	685
			3992	5.8	0.137	0.386	206	0.153	4	769
	17-Jun-21	RG_FOBCP	2659	4.6	0.037	0.328	69	0.053	1.7	452
			3670	3.6	0.056	0.637	172	0.142	1.4	602
			3286	9.1	0.065	0.882	187	0.14	4.5	511
			3553	5.1	0.054	0.742	114	0.145	2.7	579
			2659	2.3	0.039	0.242	46	0.051	1.5	480
	17-Jun-21	RG_FRCP1SW	3286	5.2	0.097	0.635	153	0.085	3.2	534
			2961	11	0.155	1	471	0.199	14	404
			2361	14	0.271	1.5	646	0.267	17	410
			3372	5	0.103	0.929	173	0.093	4	670
			3136	3.6	0.064	0.616	79	0.054	2.1	376
	17-Jun-21	RG_FRCP1SW	4174	34	0.603	1.1	2381	1.5	51	523
			2216	36	0.786	1.2	3634	1.2	80	329
	18-Jun-21	RG_FRUPO	3328	7.5	0.134	0.856	378	0.149	7.6	550
			3045	4.5	0.074	0.792	121	0.088	3.2	361
			2556	10	0.086	1.2	388	0.214	9	360
			3775	6.5	0.091	0.657	361	0.229	7.3	457
			2836	6.1	0.067	0.529	219	0.203	4.6	504
	17-Jun-21	RG_FODPO	2496	5.3	0.039	0.518	136	0.085	3.1	311
			3058	11	0.101	0.67	473	0.252	8.9	421
			1967	8.5	0.093	0.618	438	0.194	7.9	275
			2523	5.1	0.038	0.38	169	0.088	3.8	247
			2750	6.6	0.067	0.362	332	0.151	5.7	444
	18-Jun-21	RG_FO22	3140	9.1	0.088	0.967	519	0.204	9.4	370
			3769	7.9	0.064	0.365	292	0.159	6.7	343
			3196	12	0.139	0.894	722	0.268	15	456
			3096	8.8	0.088	0.684	485	0.195	9	358
			3707	16	0.207	0.88	1359	0.43	24	424
	18-Jun-21	RG_FOUEW	3485	11	0.181	0.812	725	0.294	13	409
			4217	5.4	0.106	0.371	159	0.175	3.6	383
			2803	15	0.233	0.778	1210	0.51	25	334
			3291	7.4	0.094	0.771	292	0.157	6.1	401
			4703	4.3	0.07	0.95	135	0.084	3.4	316

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
September	16-Sep-21	RG_HENUP	2783	8.9	0.038	0.375	37	0.101	1.4	192
			3276	6	0.032	0.42	17	0.072	0.478	187
			2268	7.4	0.034	0.188	8.6	0.053	0.455	140
	15-Sep-21	RG_FO26	4811	8.2	0.051	0.551	164	0.135	4	150
			4206	2.2	0.026	0.165	17	0.033	0.564	119
			5397	6.2	0.058	0.328	101	0.123	2.6	127
			4784	3.8	0.034	0.399	28	0.064	1.3	125
			5038	3.1	0.032	0.351	36	0.053	1.3	120
	20-Sep-21	RG_UFR1	3618	4.9	0.031	0.358	53	0.063	1.5	203
			4957	3.9	0.03	0.613	59	0.06	2	212
			3124	4.3	0.032	0.38	75	0.062	1.9	186
			4495	3.8	0.023	0.659	35	0.053	1.3	223
			3622	3.2	0.02	0.261	41	0.033	0.87	132
	13-Sep-21	RG_FODHE	3919	2.5	0.027	0.215	13	0.059	0.42	174
			7169	2.7	0.045	0.363	24	0.065	0.653	179
			4411	2.1	0.055	0.637	16	0.039	0.448	220
	13-Sep-21	RG_FOUCL	5234	3.3	0.061	0.397	69	0.15	1.7	180
			8516	3.1	0.043	0.481	31	0.062	0.901	176
			7539	2.7	0.071	0.602	18	0.087	0.698	223
	17-Sep-21	RG_FOUNGD	3610	7.1	0.05	0.515	52	0.115	1.5	267
			3065	5.3	0.051	0.591	167	0.156	3.4	256
			4375	9.1	0.078	0.493	234	0.301	5.3	215
	17-Sep-21	RG_FODNGD	3774	9.7	0.098	0.538	182	0.235	5.6	277
			8347	9.8	0.099	0.55	183	0.252	6	234
			4798	8.4	0.089	0.639	131	0.325	4.5	260
	14-Sep-21	RG_MP1	4596	2.9	0.038	0.355	116	0.05	1.8	255
			8305	3	0.056	0.348	79	0.057	1.8	196
			10100	3	0.037	0.518	32	0.062	0.759	201
	16-Sep-21	RG_FOUSH	2888	6.6	0.035	0.245	45	0.128	2.8	239
			5510	6	0.037	0.393	36	0.105	2	180
			3488	16	0.062	0.546	155	0.331	6	250
	20-Sep-21	RG_FOUKI	3623	7.9	0.034	0.923	68	0.137	1.7	219
			2571	4.3	0.022	0.169	27	0.071	0.71	145
			3603	6.7	0.026	0.255	47	0.086	0.986	227
			763	3.2	0.016	0.142	9.1	0.028	0.285	46
			2099	3.3	0.016	0.418	7.4	0.03	0.355	250
	14-Sep-21	RG_SCOUTDS	2627	3.4	0.036	0.286	44	0.071	1.1	233
			2739	2.9	0.027	0.27	33	0.053	0.618	278
			2743	2.7	0.025	0.263	10	0.019	0.362	306
			2813	3.5	0.031	0.257	29	0.052	0.795	377
			3701	4.8	0.045	0.527	55	0.086	1.4	325
	9-Sep-21	RG_FOBKS	3752	6	0.034	0.234	29	0.064	0.815	311
			3544	11	0.082	0.37	239	0.185	6.1	206
			3120	16	0.108	0.425	326	0.296	6.3	158
			2302	4.5	0.024	0.421	18	0.077	0.692	154
			2843	7.1	0.057	0.226	96	0.146	2.5	169
	13-Sep-21	RG_FOBSC	5756	6.9	0.072	0.107	90	0.117	3.2	322
			5759	17	0.217	0.59	706	0.303	14	530
			5326	11	0.107	0.346	284	0.261	10	498
			5551	21	0.182	0.407	494	0.333	8.6	456
			3690	4.9	0.049	0.111	39	0.055	1.8	246
	13-Sep-21	RG_FOBCP	1952	2.1	0.014	0.161	13	0.026	0.436	157
			3824	11	0.107	0.61	484	0.226	11	381
			3405	9.7	0.144	0.79	530	0.24	8.7	322
			2156	2.9	0.032	0.183	31	0.049	1.1	156
			5908	3.3	0.045	0.474	34	0.076	1.1	285
	14-Sep-21	RG_FRCP1SW	2279	2	0.03	0.438	16	0.032	0.392	241
			3369	5	0.03	0.321	17	0.041	0.578	399
			2075	3.7	0.023	0.515	25	0.047	0.857	249
			2305	4.3	0.032	0.495	56	0.076	1.4	262
			3545	4.6	0.031	0.52	45	0.064	1.1	407
	19-Sep-21	RG_FRUPO	3139	2.4	0.009	0.237	9.7	0.028	0.352	152
			2257	4.8	0.01	1	33	0.084	0.977	269
			1872	2.7	0.007	0.405	8.3	0.032	0.325	190
			3300	5.5	0.014	1	37	0.093	1.5	182
			4408	5.5	0.025	0.817	75	0.099	2.1	183
	19-Sep-21	RG_FRGHSC	2809	12	0.116	1.3	841	0.447	21	188
			2596	5.3	0.031	1.1	176	0.222	5.1	115
			2607	8.2	0.07	1	459	0.367	13	173
			2554	13	0.123	2.1	710	0.481	17	165
			2074	29	0.524	2.3	2879	1.1	65	213
	11-Sep-21	RG_FODPO	3786	7.1	0.038	0.313	165	0.151	5.3	146
			4152	7.9	0.114	0.262	317	0.195	8.5	105
			3435	13	0.133	0.555	326	0.493	10	216
			3138	8.6	0.068	0.41	123	0.243	3.2	206
			2774	7.9	0.089	0.313	115	0.218	4	171
	12-Sep-21	RG_FO22	3574	14	0.228	0.77	1253	0.501	37	150
			2891	7.1	0.077	0.646	279	0.218	5.9	256
			4001	5.9	0.064	1	197	0.195	5.5	184
			4095	11	0.137	0.971	705	0.305	18	194
			5768	15	0.164	0.854	798	0.503	15	241
	11-Sep-21	RG_FOUEW	3680	7	0.066	0.297	200	0.19	5.8	167
			3218	4.5	0.042	0.266	62	0.142	2.7	163
			3283	8.5	0.091	0.284	173	0.175	6.4	165
			2627	4.2	0.045	0.225	99	0.106	3.1	275
			2765	7.2	0.06	0.407	117	0.342	3.6	162
	14-Sep-21	RG_FRSCH2	3721	2.7	0.03	0.526	28	0.065	0.691	264
			10340	4.6	0.077	0.61	194	0.154	2.3	119
			4446	4.6	0.041	0.55	50	0.108	1.6	219
			3454	3	0.015	0.257	5.9	0.018	0.255	322
			5021	4.5	0.044	1.2	51	0.127	1.7	296

Table E.21: Composite-Taxa Benthic Invertebrate Tissue Chemistry, FRO LAEMP, June, September, December, 2021

Date		Area	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
		Units	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.
December	16-Dec-21	RG_UFR1	2939	2.7	0.021	0.16	39	0.027	1.1	145
			3139	2.6	0.025	0.297	26	0.042	1	130
			771	0.865	0.008	0.055	4.8	0.007	0.233	71
			2662	2.3	0.02	0.159	38	0.021	1	98
			1661	2	0.024	0.171	41	0.023	1.5	112
	15-Dec-21	RG_FODHE	3585	8.5	0.033	0.631	205	0.154	6.8	254
			3997	4.9	0.02	0.491	119	0.074	3.1	202
			4462	5.4	0.024	0.747	97	0.076	3.3	205
	15-Dec-21	RG_FOUCL	3085	3.3	0.019	0.54	85	0.07	2.4	186
			2758	3.7	0.014	0.184	49	0.072	1.6	223
			3387	3.7	0.015	0.234	58	0.085	2.2	172
	15-Dec-21	RG_FOUNGD	2166	2.7	0.009	0.156	8.6	0.036	0.299	153
			1906	3.7	0.013	0.351	14	0.044	0.786	124
			1662	1.8	0.009	0.112	7	0.016	0.338	85
	15-Dec-21	RG_FODNGD	3748	5.2	0.023	0.394	95	0.092	2.7	237
			2660	5.2	0.02	0.34	94	0.058	2.5	148
			2825	5.7	0.022	0.364	103	0.083	2.9	200
	15-Dec-21	RG_MP1	3878	3	0.023	0.205	43	0.051	1.3	179
			3090	3.8	0.028	0.12	19	0.019	0.756	173
			3058	3.9	0.024	0.171	43	0.046	1.6	170
	15-Dec-21	RG_FOUSH	1860	4.1	0.017	0.162	24	0.036	1.7	142
			2170	3.1	0.014	0.24	36	0.033	1.6	85
			1607	3.5	0.012	0.206	30	0.035	2.4	136
	14-Dec-21	RG_FOUKI	1697	2.7	0.012	0.067	9.8	0.02	0.407	189
			3722	2.5	0.015	0.109	15	0.024	0.603	141
			2027	2.7	0.018	0.295	23	0.025	0.869	103
			2236	4.7	0.018	0.122	24	0.05	0.788	180
			1923	2.1	0.015	0.099	14	0.022	0.52	121
	9-Dec-21	RG_SCOUTDS	3132	2.9	0.025	0.124	25	0.029	0.844	266
			3924	9.2	0.073	0.365	159	0.173	4.7	213
			7201	2.3	0.036	0.242	26	0.037	0.717	191
			8464	1.6	0.034	0.34	11	0.019	0.536	125
			1380	5.6	0.03	0.277	39	0.071	0.888	137
	14-Dec-21	RG_FOBKS	1879	11	0.021	0.148	38	0.108	1.2	140
			3630	9	0.043	0.376	139	0.104	4.1	166
			3357	9.2	0.022	0.429	31	0.092	1.1	177
			1792	13	0.022	0.275	58	0.124	1.7	129
			3367	3.5	0.026	0.355	52	0.056	1.4	144
	9-Dec-21	RG_FOBSC	2893	3.6	0.027	0.127	41	0.041	1.4	157
			2768	4.5	0.031	0.307	57	0.053	1.9	181
			3303	9	0.065	0.23	226	0.107	6.7	314
			1410	62	0.135	2.2	1266	0.808	36	401
			3313	3.8	0.02	0.117	40	0.046	1.3	300
	14-Dec-21	RG_FOBCP	2943	2.3	0.02	0.268	20	0.037	0.671	167
			4647	1.5	0.017	0.078	6.4	0.023	0.295	202
			3892	3.1	0.031	0.232	38	0.048	0.671	126
			2655	4	0.033	0.214	20	0.029	0.782	231
			3200	3.6	0.031	0.25	39	0.035	0.961	281
	13-Dec-21	RG_FRUPO	4703	4.4	0.049	0.573	94	0.127	2.8	145
			4454	3.1	0.014	0.418	28	0.059	0.94	145
			2656	2.7	0.01	0.514	18	0.037	0.694	135
			2496	3.2	0.015	0.194	39	0.086	1.4	114
			3891	2.7	0.009	0.101	11	0.032	0.542	166
	14-Dec-21	RG_FODPO	1901	4.9	0.015	0.253	79	0.07	2.3	203
			2346	7.1	0.026	0.381	239	0.141	7.1	141
			1649	5.8	0.019	0.258	85	0.28	3.2	238
			2427	5.1	0.012	0.312	58	0.086	1.7	166
			2178	6.7	0.029	0.375	164	0.122	5.4	186
	13-Dec-21	RG_FO22	2225	3.5	0.013	0.444	28	0.063	1.1	127
			3653	5.1	0.021	0.355	67	0.083	2.3	178
			2160	5.1	0.025	0.53	60	0.115	2.3	158
			3114	3	0.013	0.298	27	0.034	1.1	123
			2737	4.2	0.018	0.224	66	0.043	2.6	149
	13-Dec-21	RG_FOUEW	2320	3.3	0.004	0.146	16	0.023	0.748	241
			3222	4.2	0.015	0.265	41	0.044	1.4	238
			2190	6.4	0.024	0.219	105	0.112	2.2	141
			3848	4.5	0.012	0.404	21	0.049	0.797	237
			2136	2.2	0.007	0.071	9.2	0.079	0.479	144
	14-Dec-21	RG_FRSCH2	2987	2.5	0.025	0.231	40	0.068	1.1	126
			3301	2.4	0.019	0.418	21	0.052	0.903	119
			4332	2.9	0.022	0.374	27	0.051	0.858	155
			3772	2.7	0.017	0.3	19	0.054	0.83	132
			3114	7.7	0.064	0.542	186	0.171	6.4	171
	13-Dec-21	RG_FRGHSC	2700	5.9	0.033	0.638	161	0.279	3.4	120
			2247	5.2	0.031	0.633	145	0.248	3.8	107
			1898	5.1	0.032	0.54	168	0.207	3.8	126
			1792	3.4	0.015	0.506	17	0.133	1.1	133
			1715	0.904	0.002	0.153	6	0.187	0.274	125

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Abundance	Richness	EPT (%)	Eph (%)	Plec (%)	Tric (%)	Chiron (%)
June	RG_HENUP	1	6,260.0	21	95.85	69.97	23.64	2.24	3.19
		2	3,722.2	27	95.22	68.96	23.88	2.39	2.99
		3	1,730.0	25	96.82	76.01	18.5	2.31	1.16
	RG_FO26	1	10,020.0	37	95.21	41.92	43.71	9.58	2.99
		2	6,720.0	33	93.75	43.75	36.01	13.99	4.76
		3	6,480.0	31	94.44	45.06	36.42	12.96	3.4
	RG_UFR1	1	9,040.0	38	92.7	38.05	44.69	9.96	6.86
		2	6,620.0	35	94.26	45.32	35.05	13.9	3.93
		3	14,020.0	37	80.17	48.79	27.1	4.28	18.97
	RG_FODHE	1	8,780.0	33	74.94	57.63	11.16	6.15	22.55
		2	3,744.4	27	69.44	55.79	8.01	5.64	28.78
		3	8,160.0	28	87.99	75.98	10.05	1.96	9.07
	RG_FOUCL	1	3,912.5	25	95.21	79.87	11.18	4.15	2.88
		2	7,840.0	33	89.8	77.55	8.67	3.57	6.63
		3	4,957.1	30	94.24	80.4	8.65	5.19	3.46
	RG_FOUNGD	1	1,180.6	34	80	39.53	18.82	21.65	6.12
		2	1,823.5	30	95.81	72.9	15.16	7.74	1.94
		3	8,080.0	33	92.33	76.49	12.62	3.22	4.95
	RG_FODNGD	1	3,307.7	33	93.95	70.93	16.05	6.98	2.56
		2	856.0	31	91.59	66.82	14.95	9.81	1.87
		3	1,535.0	32	90.88	62.21	17.92	10.75	2.61
	RG_MP1	1	3,555.6	33	91.25	60.63	12.19	18.44	5
		2	5,866.7	34	94.03	74.15	9.37	10.51	2.56
		3	6,300.0	34	90.16	67.62	9.52	13.02	2.54
	RG_FOUSH	1	9,320.0	39	88.41	71.89	10.09	6.44	6.87
		2	7,740.0	37	84.75	67.96	10.85	5.94	11.11
		3	6,980.0	34	86.25	70.2	9.46	6.59	7.16
	RG_FOUKI	1	5,850.0	28	91.74	80.91	3.13	7.69	5.41
		2	3,210.0	41	76.01	60.44	5.92	9.66	12.46
		3	11,040.0	38	83.51	68.84	6.34	8.33	10.33
	RG_SCOUTDS	1	7,840.0	38	85.46	73.47	4.85	7.14	8.42
		2	356.7	29	95.64	85.67	4.98	4.98	1.25
		3	3,877.8	37	92.26	77.36	5.16	9.74	2.01
	RG_FOBKS	1	690.0	29	88.99	62.61	9.28	17.1	6.09
		2	1,820.0	27	93.41	76.92	4.95	11.54	4.12
		3	2,100.0	31	91.07	78.87	3.57	8.63	5.06
	RG_FOBSC	1	2,185.0	34	86.04	73	3.43	9.61	5.26
		2	3,500.0	28	95.56	82.54	2.86	10.16	2.22
		3	4,657.1	28	71.17	63.5	2.45	5.21	23.93
	RG_FOBCP	1	3,811.1	32	86.3	76.09	2.92	7.29	5.25
		2	6,860.0	29	89.8	78.43	4.66	6.71	5.25
		3	4,287.5	31	67.35	57.14	2.33	7.87	18.37
	RG_FRCP1SW	1	1,307.4	32	88.67	74.22	5.1	9.35	6.23
		2	897.5	33	86.63	66.57	9.47	10.58	4.46
		3	4,625.0	30	69.19	56.76	4.86	7.57	4.66
	RG_FRUPO	1	1,320.0	35	84.55	63.03	7.88	13.64	5.45
		2	6,780.0	36	91.45	62.83	10.03	18.58	3.54
		3	2,676.9	36	80.46	56.61	11.78	12.07	6.03
	RG_FODPO	1	8,120.0	41	70.44	25.62	24.88	19.95	13.05
		2	4,785.7	36	78.81	33.13	25.97	19.7	6.87
		3	2,390.0	36	81.59	44.98	26.78	9.83	9.62
	RG_FO22	1	2,866.7	35	75.29	21.22	48.26	5.81	4.94
		2	424.0	35	85.38	23.58	54.01	7.78	1.18
		3	3,877.8	35	62.18	10.32	45.27	6.59	14.04
	RG_FOUEW	1	9,360.0	39	59.83	36.54	18.8	4.49	22.65
		2	4,800.0	40	83.63	43.75	33.93	5.95	4.76
		3	7,220.0	33	88.37	58.17	23.27	6.93	3.05

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Autotrophic Heterotrophic Index	Filtering Collector Index	Predator Index	Benthic Hyporheic Index	EPT Abund.	Eph Abund.
June	RG_HENUP	1	0.42	0.02	0.11	0	6,000.0	4,380.0
		2	0.51	0.01	0.13	0.01	3,544.4	2,566.7
		3	1.11	0.01	0.13	0.01	1,675.0	1,315.0
	RG_FO26	1	0.5	0.07	0.21	0	9,540.0	4,200.0
		2	0.7	0.05	0.21	0	6,300.0	2,940.0
		3	0.68	0.01	0.22	0.01	6,120.0	2,920.0
	RG_UFR1	1	0.49	0.02	0.32	0	8,380.0	3,440.0
		2	0.69	0.03	0.53	0.01	6,240.0	3,000.0
		3	0.46	0.02	0.16	0	11,240.0	6,840.0
	RG_FODHE	1	0.48	0.02	0.14	0	6,580.0	5,060.0
		2	0.64	0	0.09	0.01	2,600.0	2,088.9
		3	0.51	0.02	0.07	0.01	7,180.0	6,200.0
	RG_FOUCL	1	1.24	0.03	0.14	0	3,725.0	3,125.0
		2	0.87	0.05	0.12	0.01	7,040.0	6,080.0
		3	0.76	0.01	0.11	0	4,671.4	3,985.7
	RG_FOUNGD	1	0.88	0.26	0.64	0.01	944.4	466.7
		2	0.97	0.02	0.26	0.01	1,747.1	1,329.4
		3	1.72	0.05	0.18	0.02	7,460.0	6,180.0
	RG_FODNGD	1	0.45	0.05	0.26	0.01	3,107.7	2,346.2
		2	0.92	0.09	0.33	0.01	784.0	572.0
		3	0.83	0.1	0.33	0.03	1,395.0	955.0
	RG_MP1	1	0.93	0.02	0.4	0.01	3,244.4	2,155.6
		2	0.9	0.02	0.22	0	5,516.7	4,350.0
		3	1.05	0.03	0.23	0.04	5,680.0	4,260.0
	RG_FOUSH	1	0.71	0.06	0.17	0	8,240.0	6,700.0
		2	0.53	0.04	0.19	0.01	6,560.0	5,260.0
		3	0.93	0.08	0.17	0.02	6,020.0	4,900.0
	RG_FOUKI	1	1.27	0.04	0.13	0	5,366.7	4,733.3
		2	0.65	0.05	0.28	0.02	2,440.0	1,940.0
		3	0.84	0.13	0.17	0.01	9,220.0	7,600.0
	RG_SCOUTDS	1	0.56	0.11	0.19	0.04	6,700.0	5,760.0
		2	0.75	0.03	0.11	0.01	341.1	305.6
		3	1.1	0.04	0.18	0.04	3,577.8	3,000.0
	RG_FOBKS	1	0.85	0.06	0.39	0.01	614.0	432.0
		2	0.58	0.01	0.19	0.01	1,700.0	1,400.0
		3	0.96	0.03	0.14	0.01	1,912.5	1,656.3
	RG_FOBSC	1	1.29	0.08	0.15	0.09	1,880.0	1,595.0
		2	1.79	0.04	0.14	0.02	3,344.4	2,888.9
		3	0.33	0.02	0.12	0.03	3,314.3	2,957.1
	RG_FOBCP	1	0.92	0.14	0.12	0.03	3,288.9	2,900.0
		2	0.63	0.1	0.12	0.02	6,160.0	5,380.0
		3	0.36	0.09	0.19	0.07	2,887.5	2,450.0
	RG_FRCP1SW	1	1.15	0.11	0.17	0	1,159.3	970.4
		2	1.41	0.19	0.23	0.02	777.5	597.5
		3	1.18	1.32	0.12	0.13	3,200.0	2,625.0
	RG_FRUPO	1	0.92	0.02	0.29	0.06	1,116.0	832.0
		2	0.42	0.07	0.35	0.01	6,200.0	4,260.0
		3	0.49	0.02	0.38	0.14	2,153.9	1,515.4
	RG_FODPO	1	0.49	0.08	0.41	0.04	5,720.0	2,080.0
		2	0.7	0.18	0.42	0.02	3,771.4	1,585.7
		3	0.66	0.02	0.24	0.01	1,950.0	1,075.0
	RG_FO22	1	0.61	0.47	0.3	0.07	2,158.3	608.3
		2	0.45	0.48	0.57	0.04	362.0	100.0
		3	0.21	0.57	0.2	0.16	2,411.1	400.0
	RG_FOUEW	1	0.29	0.23	0.12	0.2	5,600.0	3,420.0
		2	0.46	0.05	0.23	0.04	4,014.3	2,100.0
		3	0.59	0.02	0.2	0.02	6,380.0	4,200.0

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Plec Abund.	Tric Abund.	Chiron Abund.	Baetidae Abund.	Ephemerellidae Abund.	Heptageniidae Abund.
June	RG_HENUP	1	1,480.0	140	200	2,580.00	100	1,700.0
		2	888.9	88.89	111.11	1,277.78	66.67	1,222.2
		3	320.0	40	20	425	20	865.0
	RG_FO26	1	4,380.0	960	300	1,040.00	760	2,400.0
		2	2,420.0	940	320	1,040.00	640	1,220.0
		3	2,360.0	840	220	900	640	1,380.0
	RG_UFR1	1	4,040.0	900	620	1,020.00	500	1,820.0
		2	2,320.0	920	260	1,100.00	680	1,220.0
		3	3,800.0	600	2,660.00	2,740.00	1,000.00	3,100.0
	RG_FODHE	1	980.0	540	1,980.00	2,340.00	660	1,940.0
		2	300.0	211.11	1,077.78	677.78	200	1,188.9
		3	820.0	160	740	3,500.00	520	2,180.0
	RG_FOUCL	1	437.5	162.5	112.5	962.5	125	1,987.5
		2	680.0	280	520	2,560.00	360	3,160.0
		3	428.6	257.14	171.43	1,685.71	257.14	2,028.6
	RG_FOUNGD	1	222.2	255.56	72.22	172.22	52.78	238.9
		2	276.5	141.18	35.29	535.29	94.12	670.6
		3	1,020.0	260	400	1,420.00	240	4,420.0
	RG_FODNGD	1	530.8	230.77	84.62	1,330.77	84.62	930.8
		2	128.0	84	16	228	36	308.0
		3	275.0	165	40	385	45	520.0
	RG_MP1	1	433.3	655.56	177.78	722.22	166.67	1,266.7
		2	550.0	616.67	150	1,400.00	400	2,550.0
		3	600.0	820	160	1,340.00	380	2,540.0
	RG_FOUSH	1	940.0	600	640	1,240.00	460	4,960.0
		2	840.0	460	860	1,000.00	520	3,740.0
		3	660.0	460	500	360	160	4,380.0
	RG_FOUKI	1	183.3	450	316.67	483.33	216.67	3,950.0
		2	190.0	310	400	420	180	1,300.0
		3	700.0	920	1,140.00	840	480	6,280.0
	RG_SCOUTDS	1	380.0	560	660	680	680	4,380.0
		2	17.8	17.78	4.44	31.11	10	262.2
		3	200.0	377.78	77.78	300	133.33	2,544.4
	RG_FOBKS	1	64.0	118	42	26	18	388.0
		2	90.0	210	75	75	20	1,300.0
		3	75.0	181.25	106.25	93.75	37.5	1,518.8
	RG_FOBSC	1	75.0	210	115	270	45	1,275.0
		2	100.0	355.56	77.78	466.67	133.33	2,277.8
		3	114.3	242.86	1,114.29	1,085.71	228.57	1,642.9
	RG_FOBCP	1	111.1	277.78	200	344.44	77.78	2,466.7
		2	320.0	460	360	540	180	4,660.0
		3	100.0	337.5	787.5	437.5	62.5	1,950.0
	RG_FRCP1SW	1	66.7	122.22	81.48	100	25.93	840.7
		2	85.0	95	40	52.5	20	525.0
		3	225.0	350	215.3	100	50	2,475.0
	RG_FRUPO	1	104.0	180	72	68	28	736.0
		2	680.0	1,260.00	240	120	240	3,900.0
		3	315.4	323.08	161.54	100	84.62	1,330.8
	RG_FODPO	1	2,020.0	1,620.00	1,060.00	20	140	1,920.0
		2	1,242.9	942.86	328.57	42.86	85.71	1,457.1
		3	640.0	235	230	20	30	1,025.0
	RG_FO22	1	1,383.3	166.67	141.67	16.67	16.67	575.0
		2	229.0	33	5	4	0	96.0
		3	1,755.6	255.56	544.44	0	88.89	311.1
	RG_FOUEW	1	1,760.0	420	2,120.00	2,040.00	300	1,080.0
		2	1,628.6	285.71	228.57	857.14	128.57	1,114.3
		3	1,680.0	500	220	1,960.00	320	1,920.0

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Abundance	Richness	EPT (%)	Eph (%)	Plec (%)	Tric (%)	Chiron (%)
September	RG_HENUP	1	3,690.0	29	91.06	63.14	23.85	4.07	6.78
		2	14,280.0	32	82.49	55.74	25.77	0.98	16.11
		3	9,840.0	30	81.5	60.98	18.7	1.83	17.48
	RG_FO26	1	47,120.0	45	91.94	58.36	26.7	6.88	2.84
		2	19,180.0	31	84.25	63.09	12.72	8.45	2.19
		3	21,420.0	35	80.21	55	16.43	8.78	7.47
	RG_FODHE	1	21,840.0	36	88.64	73.9	11.81	2.93	5.13
		2	10,080.0	33	84.72	73.81	9.13	1.79	6.75
		3	17,840.0	37	86.21	75.22	9.42	1.57	7.17
	RG_FOUCL	1	23,700.0	45	90.04	80.34	6.24	3.46	1.01
		2	21,980.0	47	92.45	81.89	7.19	3.37	1.09
		3	28,720.0	42	89.97	74.65	10.1	5.22	0.84
	RG_FOUNGD	1	9,700.0	37	86.6	75.46	7.22	3.92	7.22
		2	20,020.0	33	89.11	77.32	6.59	5.19	1
		3	23,120.0	35	92.99	75.26	11.59	6.14	1.12
	RG_FODNGD	1	7,440.0	31	77.15	62.37	9.95	4.84	1.61
		2	14,360.0	33	84.54	70.61	7.1	6.82	4.46
		3	10,660.0	34	82.93	65.67	11.07	6.19	1.13
	RG_MP1	1	11,860.0	38	88.03	59.02	9.44	19.56	2.36
		2	18,180.0	34	74.37	64.36	2.97	7.04	0.77
		3	16,600.0	34	72.65	63.01	2.77	6.87	0.48
	RG_FOUSH	1	6,820.0	31	62.76	42.82	10.26	9.68	2.93
		2	5,583.3	37	62.39	46.57	10.45	5.37	3.88
		3	5,383.3	37	69.35	43.65	12.69	13	3.72
	RG_FOUKI	1	10,400.0	40	54.81	39.81	9.81	5.19	4.62
		2	8,160.0	32	47.3	38.73	4.9	3.68	7.84
		3	11,840.0	34	32.6	20.95	7.43	4.22	1.69
	RG_SCOUTDS	1	8,680.0	37	56.68	33.87	19.59	3.23	1.61
		2	13,440.0	35	69.49	26.93	38.84	3.72	1.49
		3	7,120.0	34	57.87	36.52	16.85	4.49	0.28
	RG_FOBKS	1	7,900.0	38	63.29	.	9.37	10.13	2.03
		2	5,500.0	34	61.52	46.36	8.79	6.36	0.91
		3	3,420.0	38	52.63	37.43	9.65	5.56	1.75
	RG_FOBSC	1	7,100.0	36	42.82	25.92	11.27	5.63	0.28
		2	6,050.0	36	52.62	29.75	15.7	7.16	0.83
		3	10,220.0	35	46.77	22.5	18.4	5.87	0.59
	RG_FOBCP	1	5,857.1	31	61.95	18.29	36.59	7.07	1.95
		2	11,220.0	40	63.28	20.32	34.76	8.2	4.63
		3	12,100.0	40	58.68	23.64	30.58	4.46	3.8
		4	6,400.0	35	59.69	20	32.5	7.19	1.88
		5	10,040.0	34	67.73	17.13	45.22	5.38	2.79
	RG_FRCP1SW	1	10,040.0	36	69.52	16.14	48.21	5.18	13.35
		2	14,000.0	39	72.57	13.14	53.43	6	6.14
		3	10,260.0	33	69.01	10.72	47.95	10.33	2.53
	RG_FRUPO	1	17,760.0	39	65.88	6.31	52.7	6.87	26.58
		2	11,320.0	39	66.43	3.71	57.42	5.3	23.14
		3	11,260.0	38	74.78	3.2	65.72	5.86	14.92
	RG_FODPO	1	13,400.0	43	80.45	8.36	62.39	9.7	7.91
		2	19,040.0	48	72.9	9.14	57.25	6.51	8.61
		3	21,820.0	36	85.15	7.06	72.59	5.5	5.59
	RG_FO22	1	9,320.0	34	70.82	9.01	48.28	13.52	3
		2	6,860.0	30	71.72	9.33	40.82	21.57	0.29
		3	10,520.0	38	56.08	7.79	36.5	11.79	3.04
		4	6,460.0	36	48.3	9.29	19.5	19.5	0.62
		5	7,100.0	37	54.93	9.86	38.83	6.24	0.6
	RG_FOUEW	1	10,640.0	41	77.82	16.73	52.26	8.83	8.83
		2	11,880.0	41	67	16.16	42.93	7.91	4.71
		3	12,200.0	46	74.59	19.18	42.46	12.95	6.07

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Autotrophic Heterotrophic Index	Filtering Collector Index	Predator Index	Benthic Hyporheic Index	EPT Abund.	Eph Abund.
September	RG_HENUP	1	0.59	0.05	0.04	0	3,360.0	2,330.0
		2	0.48	0.01	0.08	0.01	11,780.0	7,960.0
		3	0.59	0.01	0.07	0	8,020.0	6,000.0
	RG_FO26	1	0.46	0.04	0.14	0.04	43,320.0	27,500.0
		2	0.51	0.01	0.2	0.14	16,160.0	12,100.0
		3	0.42	0.02	0.17	0.14	17,180.0	11,780.0
	RG_FODHE	1	0.51	0.03	0.13	0.05	19,360.0	16,140.0
		2	0.58	0.01	0.15	0.08	8,540.0	7,440.0
		3	0.66	0	0.14	0.06	15,380.0	13,420.0
	RG_FOUCL	1	0.75	0.02	0.2	0.1	21,340.0	19,040.0
		2	0.72	0.01	0.24	0.07	20,320.0	18,000.0
		3	0.68	0.01	0.17	0.1	25,840.0	21,440.0
	RG_FOUNGD	1	0.4	0.01	0.34	0.04	8,400.0	7,320.0
		2	0.45	0	0.38	0.1	17,840.0	15,480.0
		3	0.52	0	0.3	0.06	21,500.0	17,400.0
	RG_FODNGD	1	0.6	0	0.13	0.27	5,740.0	4,640.0
		2	0.55	0.01	0.28	0.12	12,140.0	10,140.0
		3	0.62	0.02	0.15	0.18	8,840.0	7,000.0
	RG_MP1	1	0.71	0.02	0.27	0.09	10,440.0	7,000.0
		2	0.57	0	0.21	0.31	13,520.0	11,700.0
		3	0.75	0	0.16	0.36	12,060.0	10,460.0
	RG_FOUSH	1	0.33	0.05	0.26	0.5	4,280.0	2,920.0
		2	0.44	0.04	0.21	0.48	3,483.3	2,600.0
		3	0.4	0.07	0.24	0.38	3,733.3	2,350.0
	RG_FOUKI	1	0.35	0.04	0.15	0.69	5,700.0	4,140.0
		2	0.33	0.02	0.13	0.83	3,860.0	3,160.0
		3	0.18	0.04	0.17	1.92	3,860.0	2,480.0
	RG_SCOUTDS	1	0.28	0.09	0.22	0.67	4,920.0	2,940.0
		2	0.24	0.05	0.25	0.37	9,340.0	3,620.0
		3	0.26	0.05	0.24	0.62	4,120.0	2,600.0
	RG_FOBKS	1	0.39	0.05	0.21	0.51	5,000.0	3,460.0
		2	0.41	0.05	0.14	0.56	3,383.3	2,550.0
		3	0.29	0.03	0.17	0.87	1,800.0	1,280.0
	RG_FOBSC	1	0.22	0.08	0.23	1.15	3,040.0	1,840.0
		2	0.23	0.14	0.24	0.68	3,183.3	1,800.0
		3	0.2	0.07	0.15	1.03	4,780.0	2,300.0
	RG_FOBCP	1	0.16	0.12	0.3	0.48	3,628.6	1,071.4
		2	0.21	0.21	0.26	0.3	7,100.0	2,280.0
		3	0.22	0.03	0.26	0.51	7,100.0	2,860.0
		4	0.18	0.04	0.3	0.52	3,820.0	1,280.0
		5	0.15	0.06	0.31	0.34	6,800.0	1,720.0
	RG_FRCP1SW	1	0.21	0.05	0.27	0.14	6,980.0	1,620.0
		2	0.14	0.08	0.28	0.23	10,160.0	1,840.0
		3	0.27	0.06	0.32	0.28	7,080.0	1,100.0
	RG_FRUPO	1	0.09	0.01	0.86	0.01	11,700.0	1,120.0
		2	0.07	0.01	0.74	0.03	7,520.0	420.0
		3	0.1	0.19	0.69	0.03	8,420.0	360.0
	RG_FODPO	1	0.18	0.03	0.37	0.04	10,780.0	1,120.0
		2	0.28	0.03	0.31	0.03	13,880.0	1,740.0
		3	0.1	0.04	0.39	0.04	18,580.0	1,540.0
	RG_FO22	1	0.78	0.05	0.51	0.03	6,600.0	840.0
		2	1.09	0.03	0.44	0.01	4,920.0	640.0
		3	1.37	0.11	0.33	0.03	5,900.0	820.0
		4	2.53	0.15	0.2	0.03	3,120.0	600.0
		5	1.34	0.11	0.38	0.04	3,900.0	700.0
	RG_FOUEW	1	0.3	0.13	0.4	0.02	8,280.0	1,780.0
		2	0.56	0.11	0.39	0.05	7,960.0	1,920.0
		3	0.46	0.1	0.36	0.05	9,100.0	2,340.0

Table E.22: Supporting Measures Associated with 3-Minute Kick and Sweep Benthic Invertebrate Community Sampling at Fording River, June and September 2021

Month	Station ID	Rep	Plec Abund.	Tric Abund.	Chiron Abund.	Baetidae Abund.	Ephemerellidae Abund.	Heptageniidae Abund.
September	RG_HENUP	1	880.0	150	250	90	50	2,020.0
		2	3,680.0	140	2,300.00	140	860	6,960.0
		3	1,840.0	180	1,720.00	440	360	5,200.0
	RG_FO26	1	12,580.0	3,240.00	1,340.00	6,500.00	4,020.00	16,900.0
		2	2,440.0	1,620.00	420	2,200.00	3,460.00	6,260.0
		3	3,520.0	1,880.00	1,600.00	2,440.00	2,480.00	6,840.0
	RG_FODHE	1	2,580.0	640	1,120.00	2,180.00	3,460.00	10,500.0
		2	920.0	180	680	380	2,080.00	4,920.0
		3	1,680.0	280	1,280.00	540	2,960.00	9,820.0
	RG_FOUCL	1	1,480.0	820	240	860	4,940.00	13,120.0
		2	1,580.0	740	240	1,320.00	5,200.00	11,120.0
		3	2,900.0	1,500.00	240	780	4,340.00	16,300.0
	RG_FOUNGD	1	700.0	380	700	680	3,240.00	3,340.0
		2	1,320.0	1,040.00	200	740	7,140.00	7,580.0
		3	2,680.0	1,420.00	260	400	6,720.00	10,280.0
	RG_FODNGD	1	740.0	360	120	280	740	3,580.0
		2	1,020.0	980	640	200	3,440.00	6,500.0
		3	1,180.0	660	120	360	1,140.00	5,500.0
	RG_MP1	1	1,120.0	2,320.00	280	520	2,260.00	4,220.0
		2	540.0	1,280.00	140	280	3,660.00	7,760.0
		3	460.0	1,140.00	80	180	2,240.00	8,000.0
	RG_FOUSH	1	700.0	660	200	300	820	1,780.0
		2	583.3	300	216.67	33.33	616.67	1,933.3
		3	683.3	700	200	316.67	633.33	1,400.0
	RG_FOUKI	1	1,020.0	540	480	440	580	3,100.0
		2	400.0	300	640	300	620	2,220.0
		3	880.0	500	200	220	400	1,860.0
	RG_SCOUTDS	1	1,700.0	280	140	180	760	2,000.0
		2	5,220.0	500	200	120	480	3,020.0
		3	1,200.0	320	20	40	920	1,640.0
	RG_FOBKS	1	740.0	800	160	360	440	2,660.0
		2	483.3	350	50	250	266.67	2,033.3
		3	330.0	190	60	320	70	890.0
	RG_FOBSC	1	800.0	400	20	40	380	1,420.0
		2	950.0	433.33	50	150	316.67	1,333.3
		3	1,880.0	600	60	60	380	1,860.0
	RG_FOBCP	1	2,142.9	414.29	114.29	14.29	271.43	771.4
		2	3,900.0	920	520	60	360	1,860.0
		3	3,700.0	540	460	40	660	2,160.0
		4	2,080.0	460	120	0	420	860.0
		5	4,540.0	540	280	80	360	1,280.0
	RG_FRCP1SW	1	4,840.0	520	1,340.00	140	180	1,300.0
		2	7,480.0	840	860	100	120	1,620.0
		3	4,920.0	1,060.00	260	0	160	940.0
	RG_FRUPO	1	9,360.0	1,220.00	4,720.00	100	980	40.0
		2	6,500.0	600	2,620.00	160	140	100.0
		3	7,400.0	660	1,680.00	160	120	80.0
	RG_FODPO	1	8,360.0	1,300.00	1,060.00	560	100	460.0
		2	10,900.0	1,240.00	1,640.00	620	380	740.0
		3	15,840.0	1,200.00	1,220.00	720	120	700.0
	RG_FO22	1	4,500.0	1,260.00	280	420	260	160.0
		2	2,800.0	1,480.00	20	440	120	80.0
		3	3,840.0	1,240.00	320	280	260	280.0
		4	1,260.0	1,260.00	40	440	100	60.0
		5	2,757.1	442.86	42.86	471.43	114.29	114.3
	RG_FOUEW	1	5,560.0	940	940	220	460	1,100.0
		2	5,100.0	940	560	280	620	1,020.0
		3	5,180.0	1,580.00	740	400	480	1,440.0

APPENDIX F
INTEGRATED ANALYSES

FIGURES

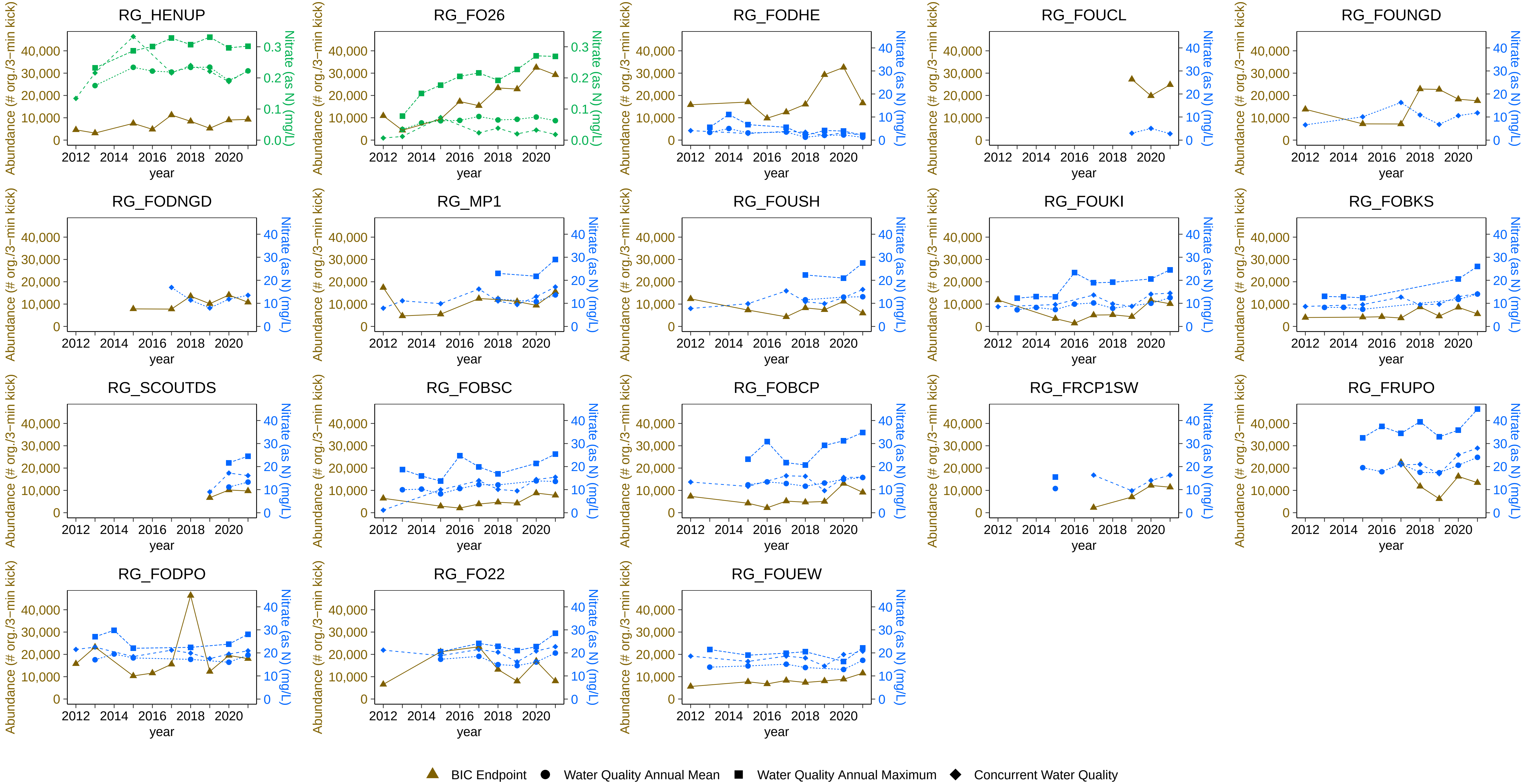


Figure F.1: Temporal Comparisons of Abundance (# organisms/3−min kick) and Nitrate (as N) (mg/L), FRO LAEMP, September 2012 to 2021

Notes: Water chemistry is shown in green for reference areas and blue for mine−exposed areas. Maximum calculated as the maximum monthly mean.

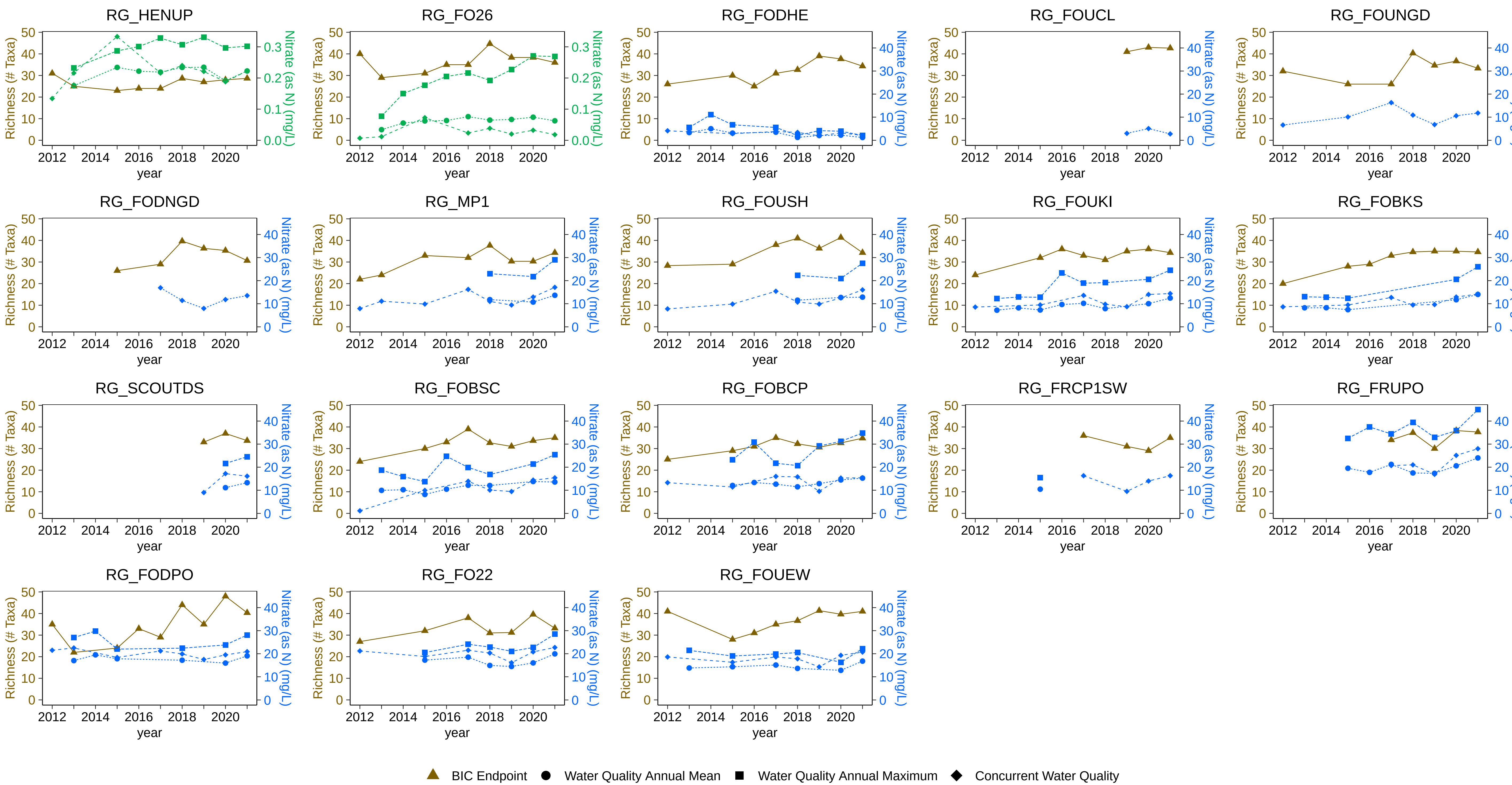


Figure F.2: Temporal Comparisons of Richness (# Taxa) and Nitrate (as N) (mg/L), FRO LAEMP, September 2012 to 2021

Notes: Water chemistry is shown in green for reference areas and blue for mine−exposed areas. Maximum calculated as the maximum monthly mean.

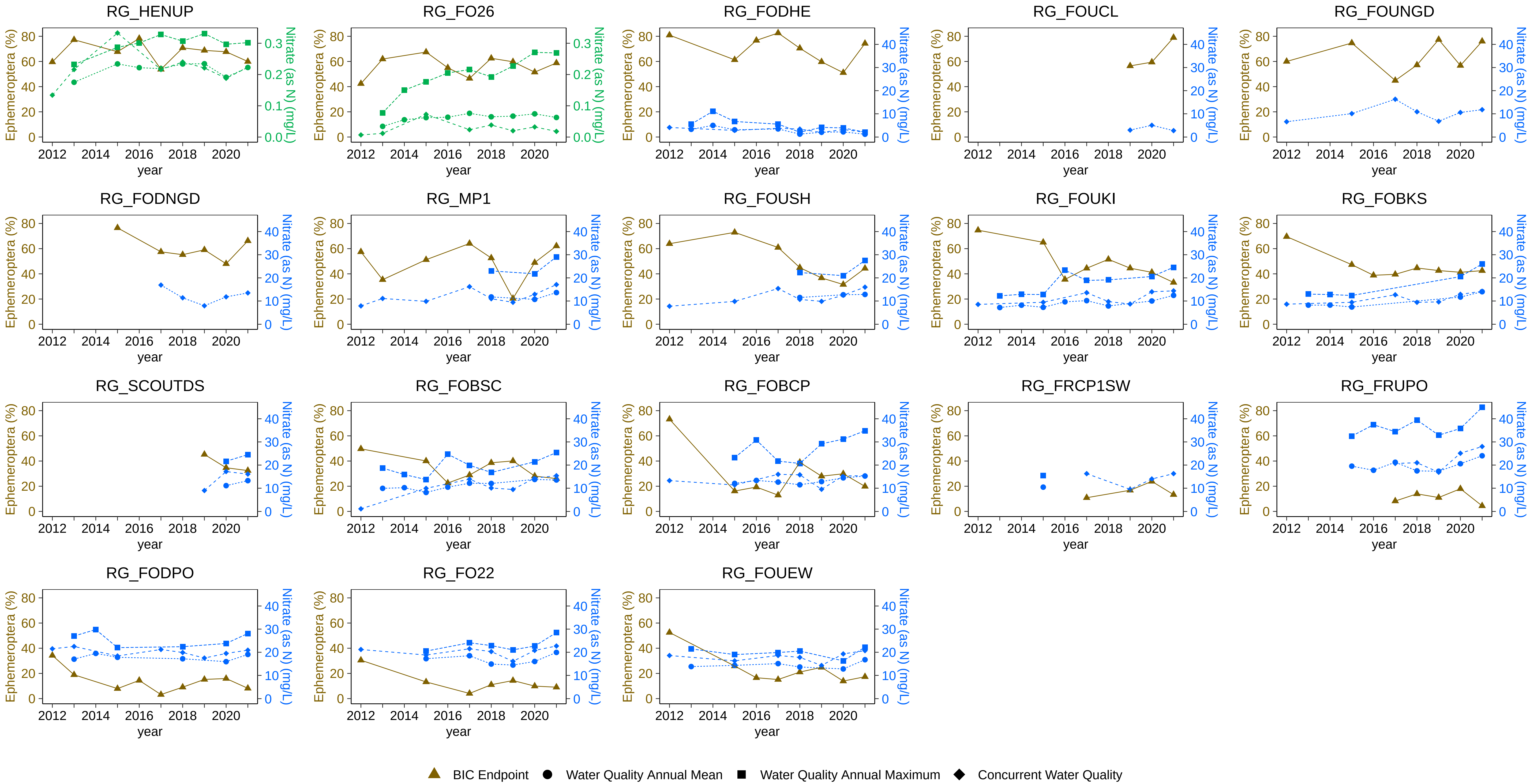


Figure F.3: Temporal Comparisons of Ephemeroptera (%) and Nitrate (as N) (mg/L), FRO LAEMP, September 2012 to 2021

Notes: Water chemistry is shown in green for reference areas and blue for mine−exposed areas. Maximum calculated as the maximum monthly mean.

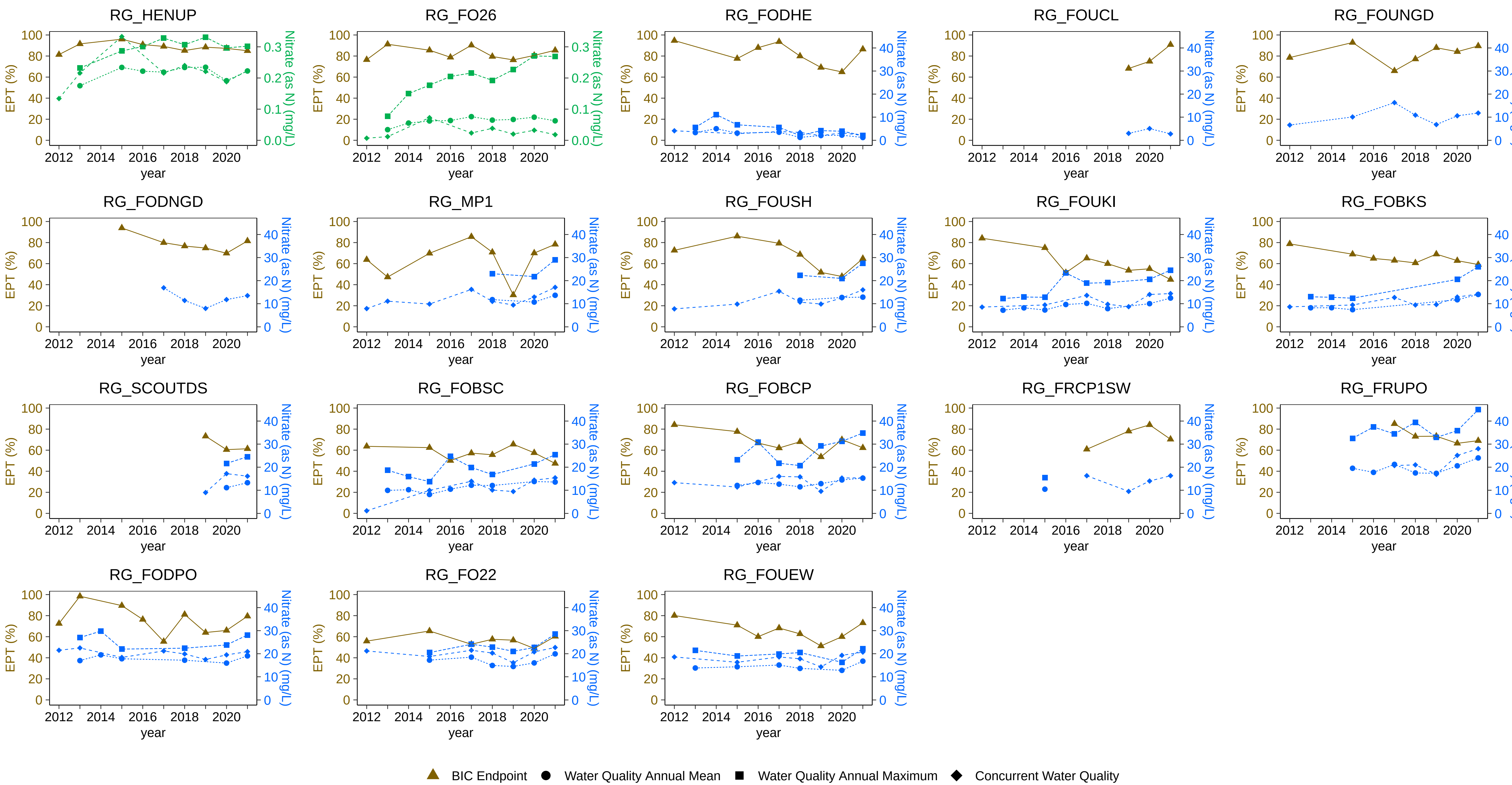
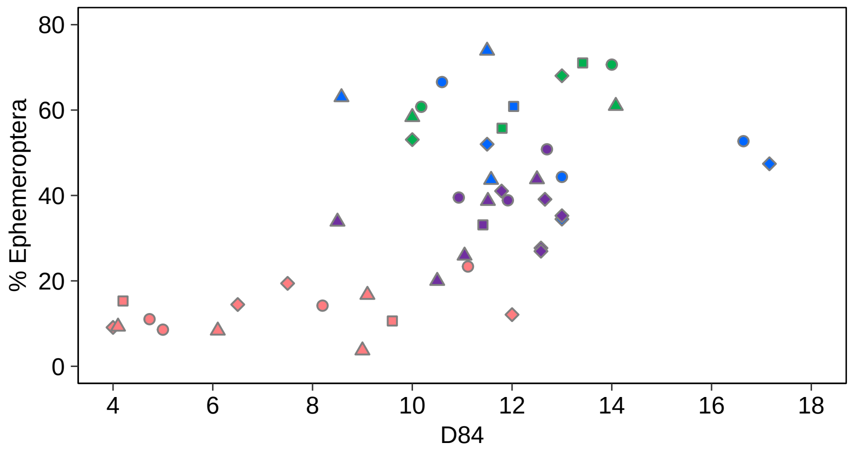


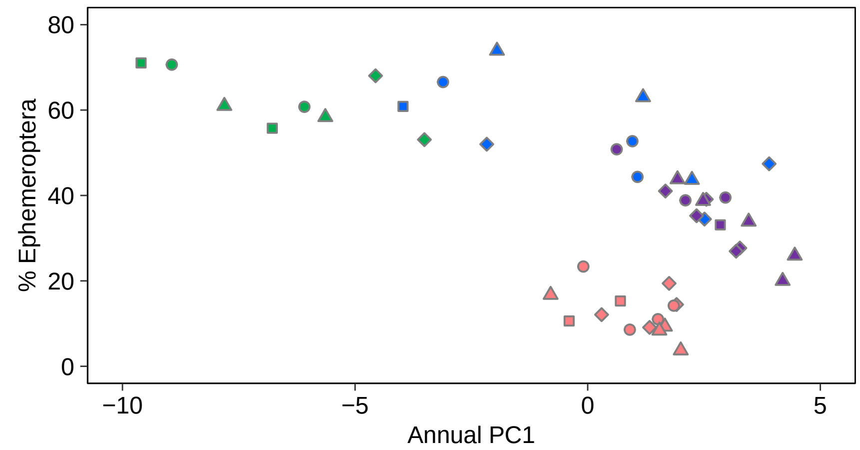
Figure F.4: Temporal Comparisons of EPT (%) and Nitrate (as N) (mg/L), FRO LAEMP, September 2012 to 2021

Notes: Water chemistry is shown in green for reference areas and blue for mine−exposed areas. Maximum calculated as the maximum monthly mean.

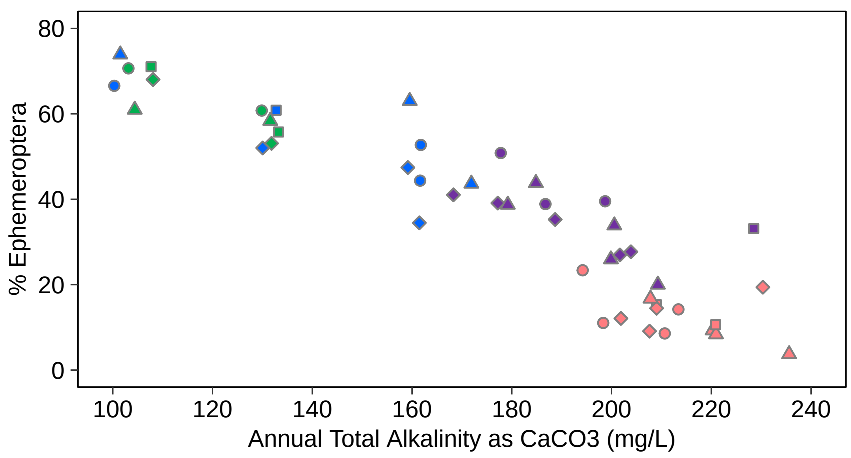
	Full	Upper	Middle	Lower
P-Value	<0.0001	0.0754	0.2110	0.2334
Rho	0.608	−0.585	0.356	0.341



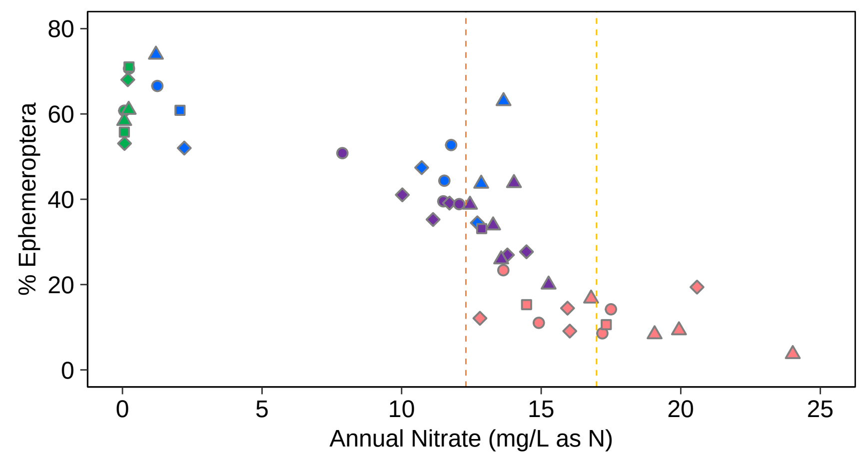
	Full	Upper	Middle	Lower
P-Value	0.0011	0.0490	<0.0001	0.2877
Rho	−0.470	−0.648	−0.859	−0.305



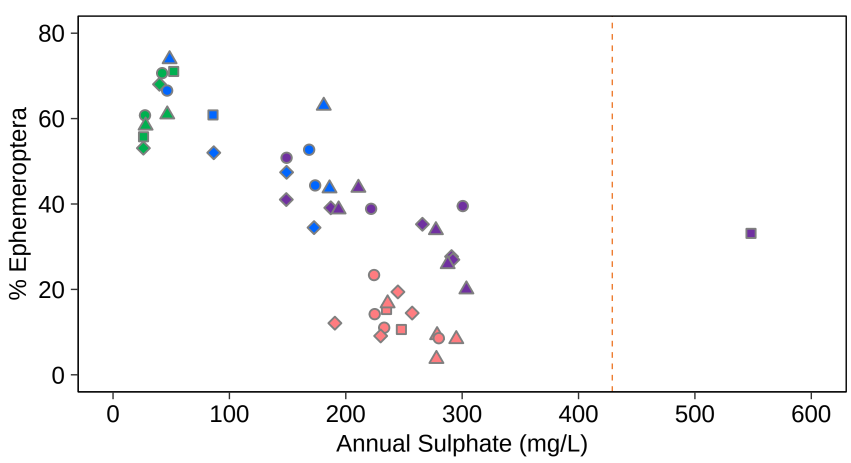
	Full	Upper	Middle	Lower
P-Value	<0.0001	0.0311	0.0008	0.1367
Rho	−0.924	−0.697	−0.807	−0.420



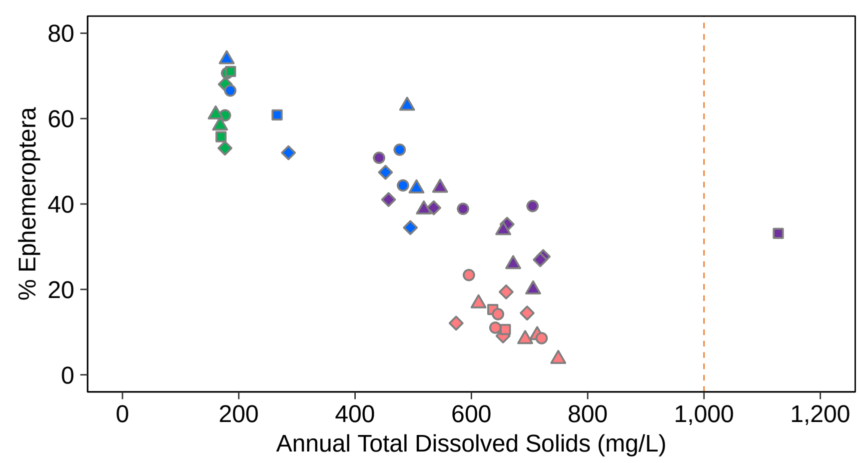
	Full	Upper	Middle	Lower
P-Value	<0.0001	0.0878	0.0089	0.1198
Rho	−0.880	−0.576	−0.684	−0.437



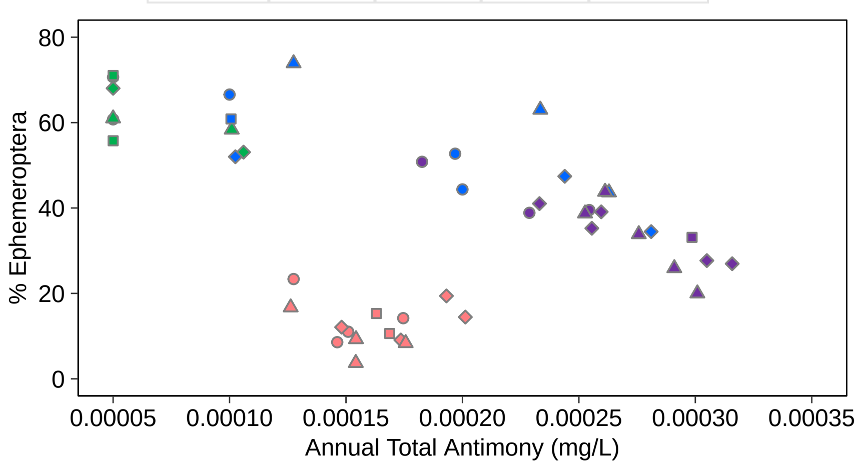
	Full	Upper	Middle	Lower
P-Value	<0.0001	0.0490	0.0052	0.0401
Rho	−0.792	−0.648	−0.719	−0.560



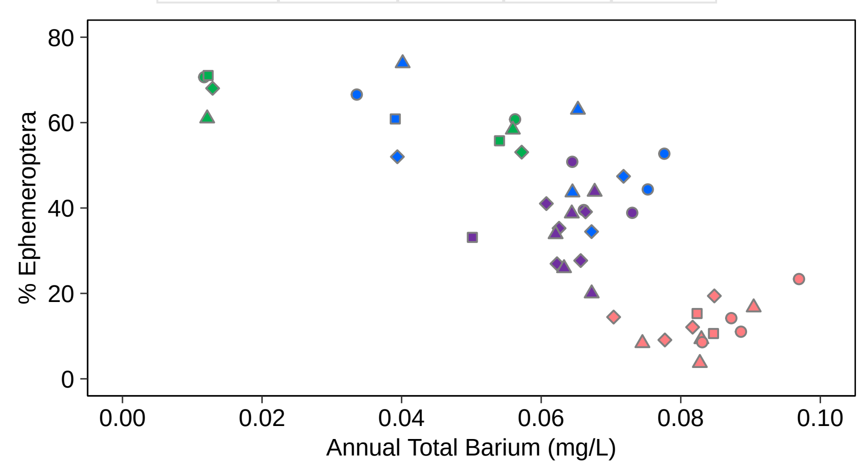
	Full	Upper	Middle	Lower
P-Value	<0.0001	0.0137	0.0027	0.0154
Rho	−0.831	−0.770	−0.754	−0.644



	Full	Upper	Middle	Lower
P-Value	0.0191	0.0212	0.0010	0.8083
Rho	−0.344	−0.733	−0.798	−0.0725



	Full	Upper	Middle	Lower
P-Value	<0.0001	0.1544	0.4541	0.0840
Rho	−0.792	−0.491	0.218	0.481



Reference Upper Middle Lower

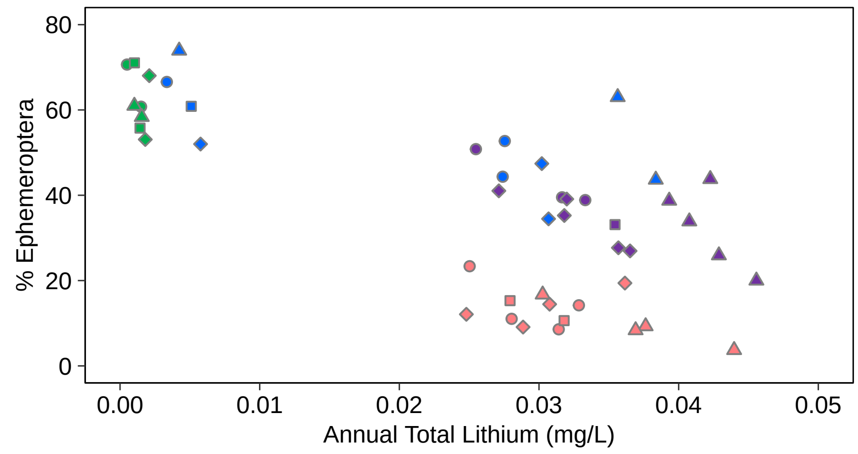
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

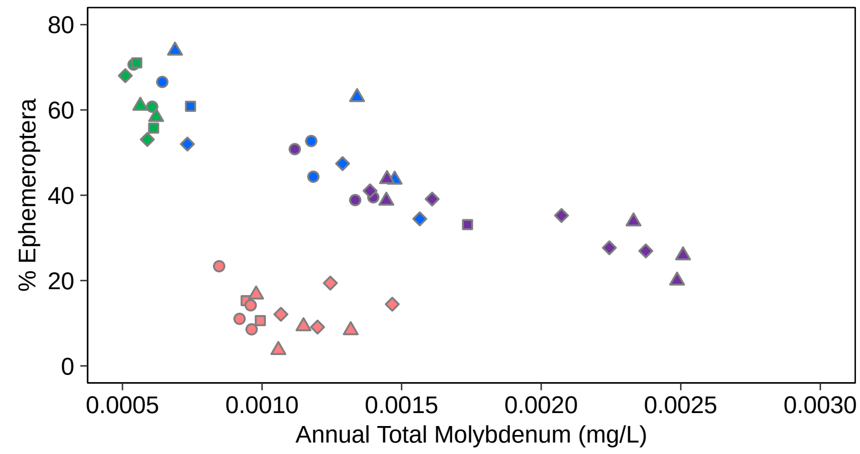
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

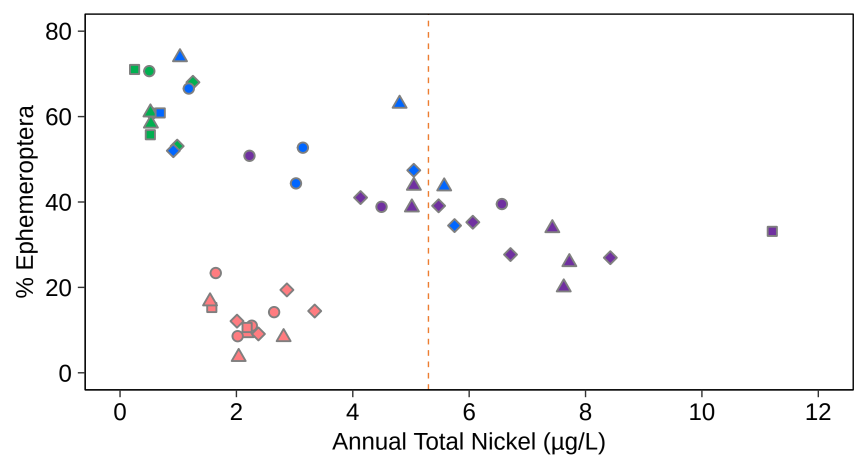
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0490	0.0137	0.0694
Rho	−0.604	−0.648	−0.653	−0.503



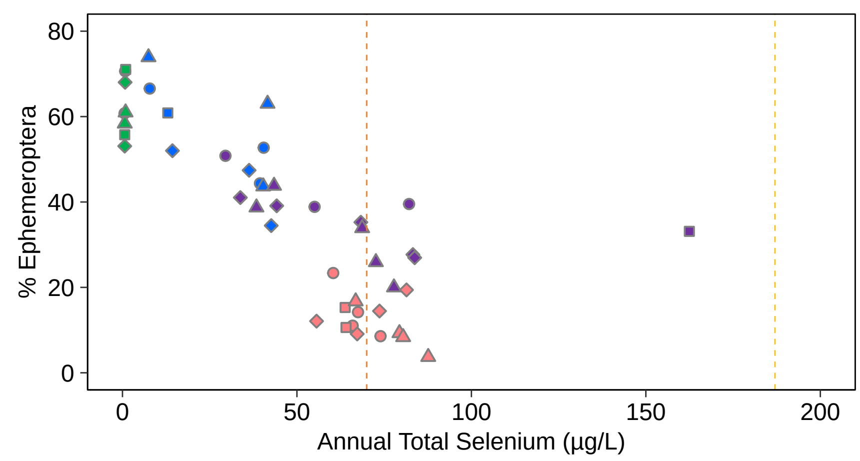
	Full	Upper	Middle	Lower
P−Value	0.0046	0.0159	<0.0001	0.3176
Rho	−0.413	−0.758	−0.886	−0.288



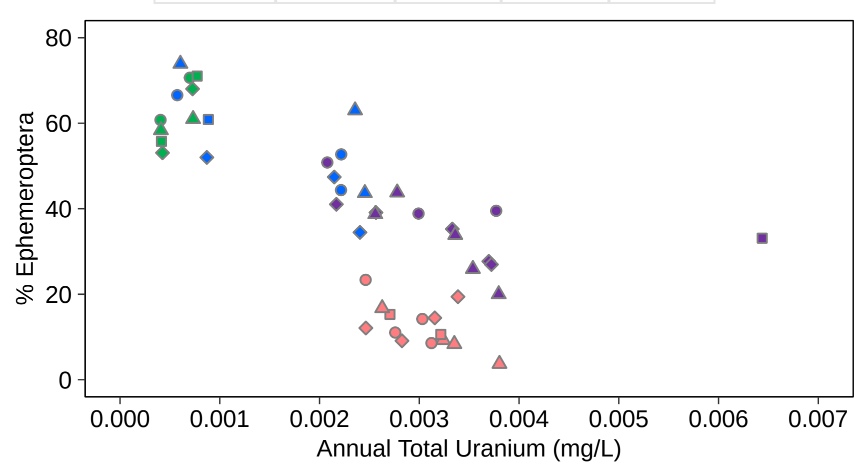
	Full	Upper	Middle	Lower
P−Value	0.0141	0.0544	0.0004	0.5423
Rho	−0.361	−0.636	−0.829	−0.178



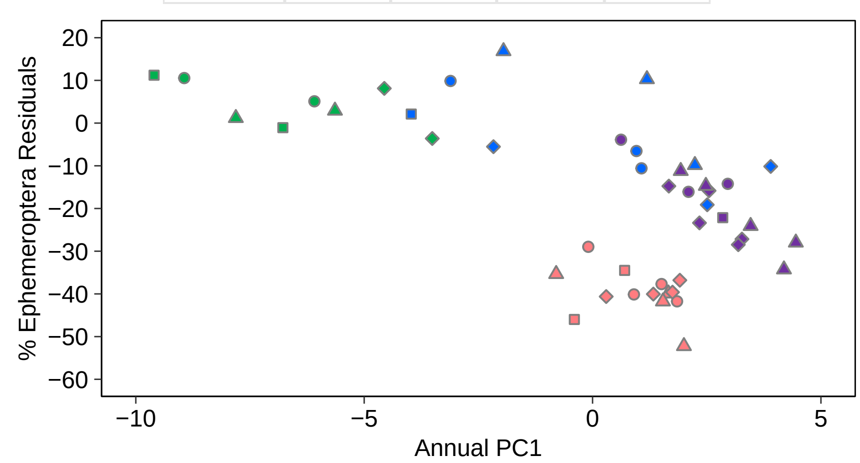
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0602	0.0041	0.0972
Rho	−0.812	−0.624	−0.732	−0.464



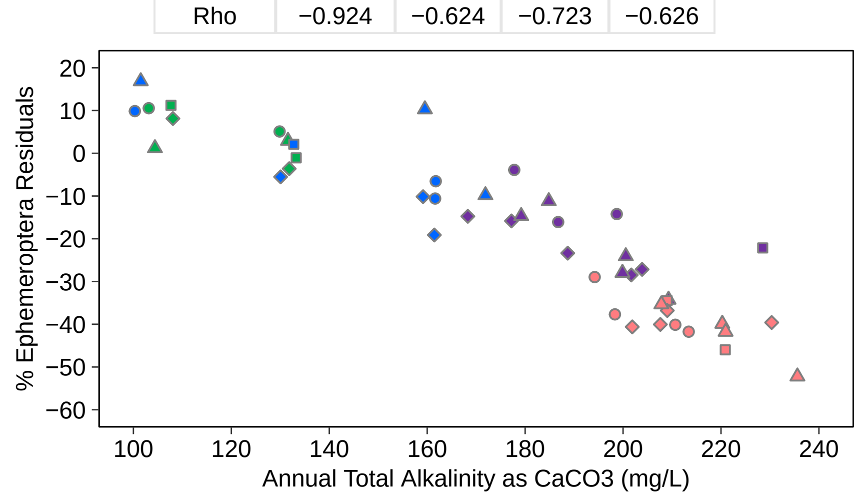
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0311	0.0052	0.0567
Rho	−0.771	−0.697	−0.719	−0.525



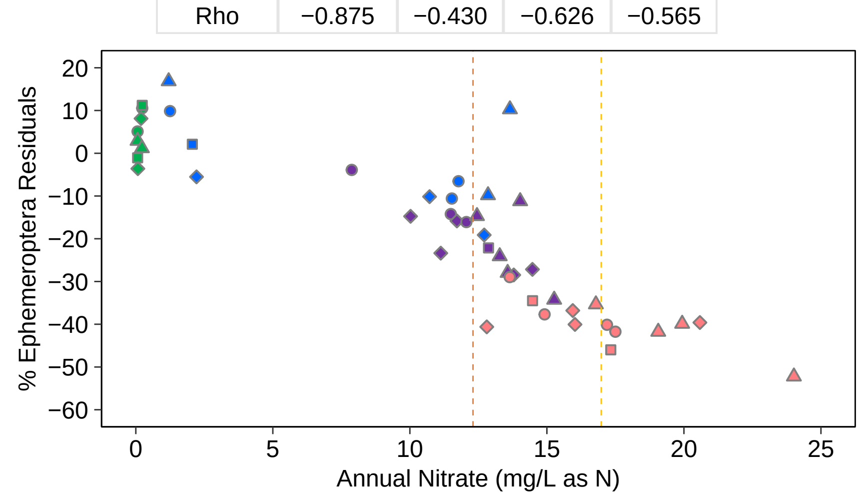
	Full	Upper	Middle	Lower
P−Value	0.0014	0.0665	0.0012	0.2950
Rho	−0.461	−0.612	−0.793	−0.301



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0602	0.0048	0.0192
Rho	−0.924	−0.624	−0.723	−0.626



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.2180	0.0192	0.0384
Rho	−0.875	−0.430	−0.626	−0.565



Reference   Upper   Middle   Lower

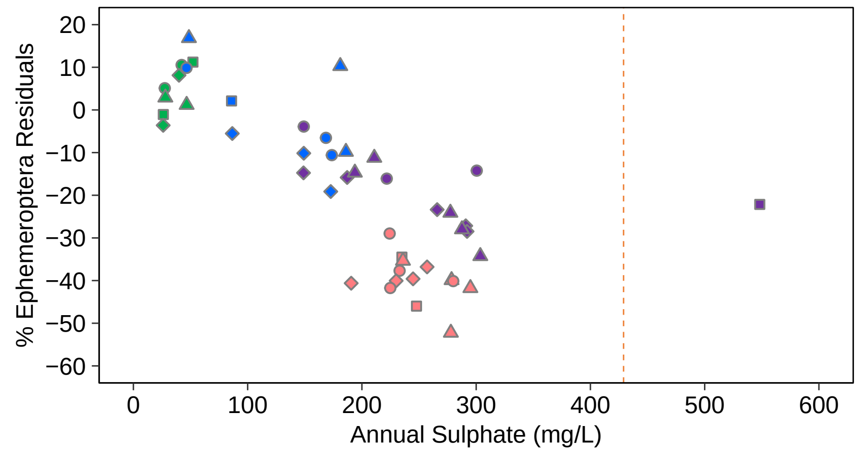
2018   2019   2020   2021

EVWQP Level 1 Benchmark   EVWQP Level 2 Benchmark   EVWQP Level 3 Benchmark

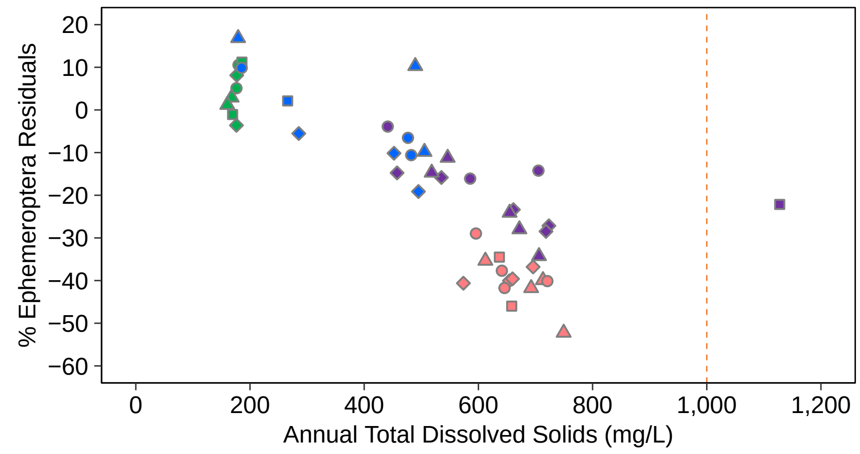
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

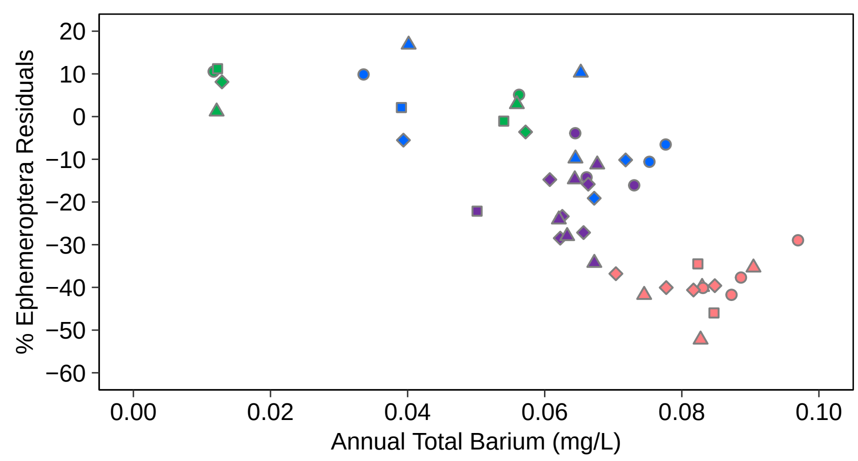
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.1544	0.0225	0.2463
Rho	−0.776	−0.491	−0.613	−0.332



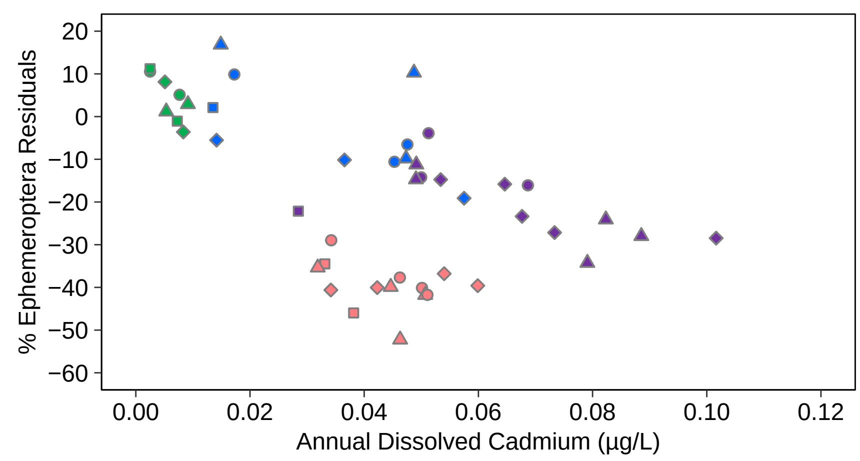
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0602	0.0084	0.0904
Rho	−0.815	−0.624	−0.688	−0.473



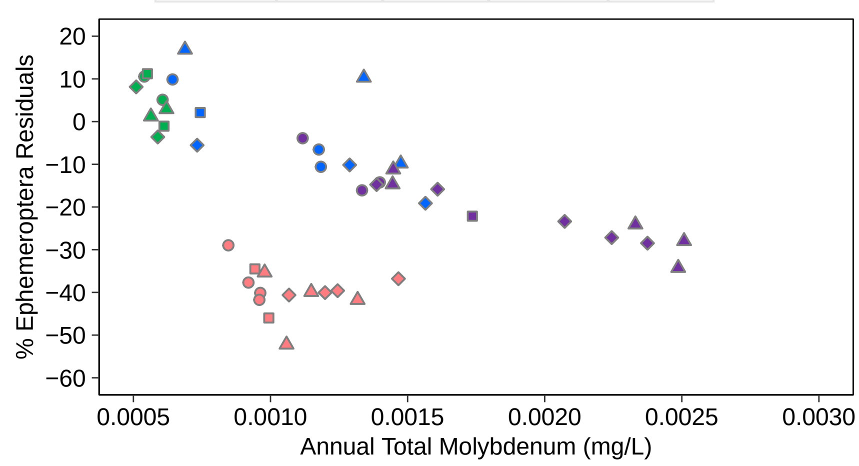
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0731	0.4731	0.2877
Rho	−0.797	−0.600	0.209	0.305



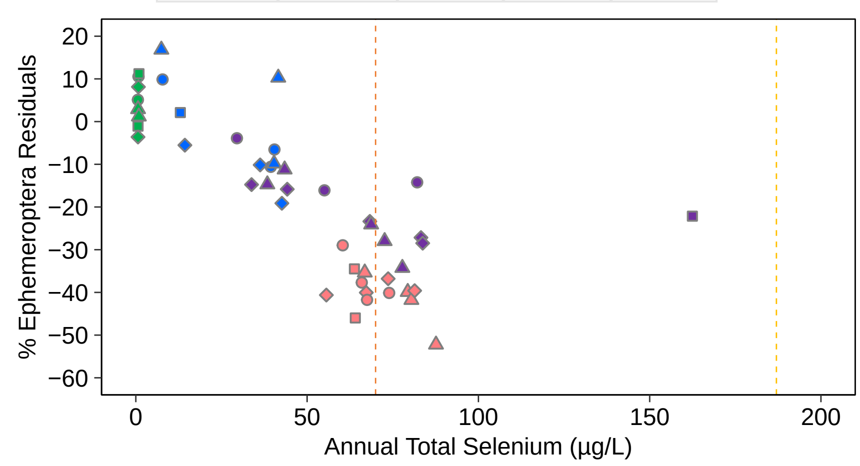
	Full	Upper	Middle	Lower
P−Value	0.0003	0.2180	0.0012	0.2735
Rho	−0.506	−0.430	−0.793	−0.314



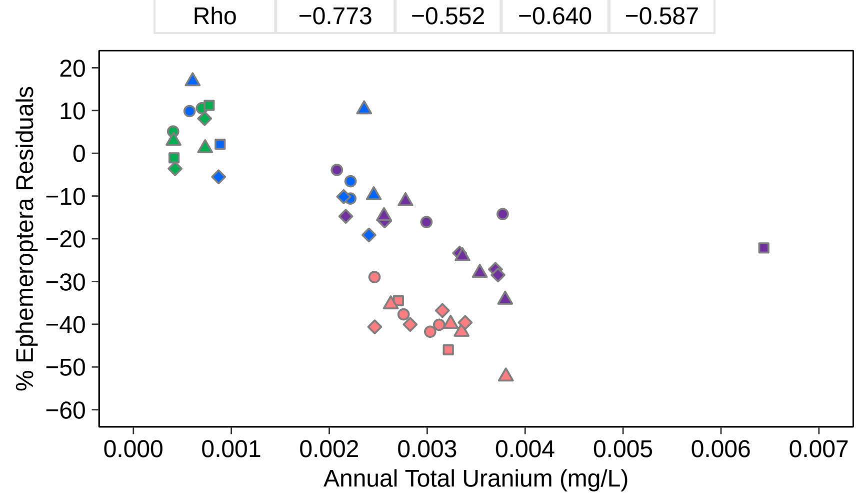
	Full	Upper	Middle	Lower
P−Value	0.0059	0.0544	<0.0001	0.2735
Rho	−0.402	−0.636	−0.877	−0.314



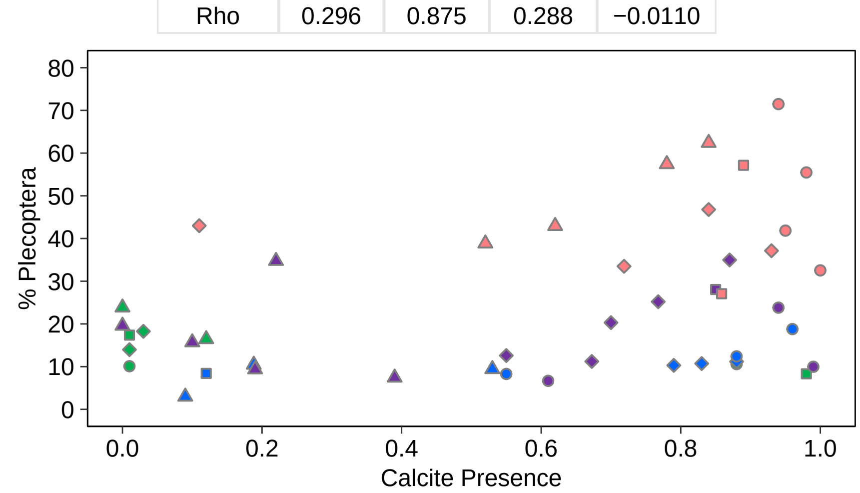
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.1043	0.0108	0.1602
Rho	−0.807	−0.552	−0.670	−0.398



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.1043	0.0163	0.0303
Rho	−0.773	−0.552	−0.640	−0.587



	Full	Upper	Middle	Lower
P−Value	0.0460	0.0009	0.3176	0.9702
Rho	0.296	0.875	0.288	−0.0110



Reference Upper Middle Lower

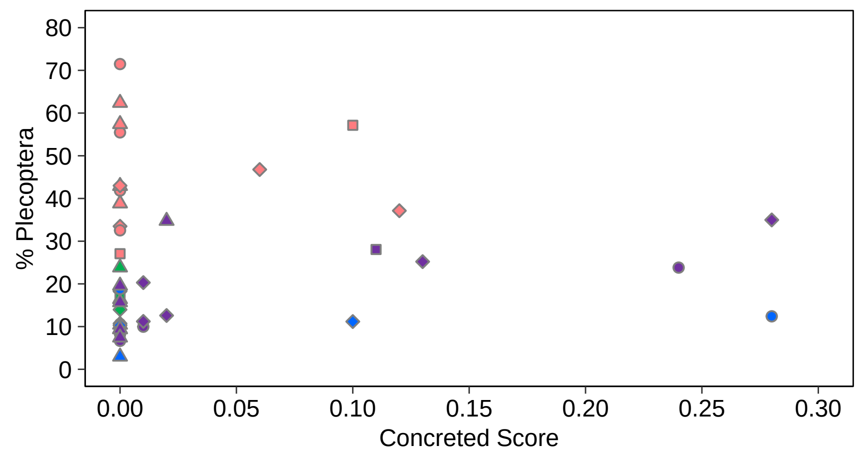
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

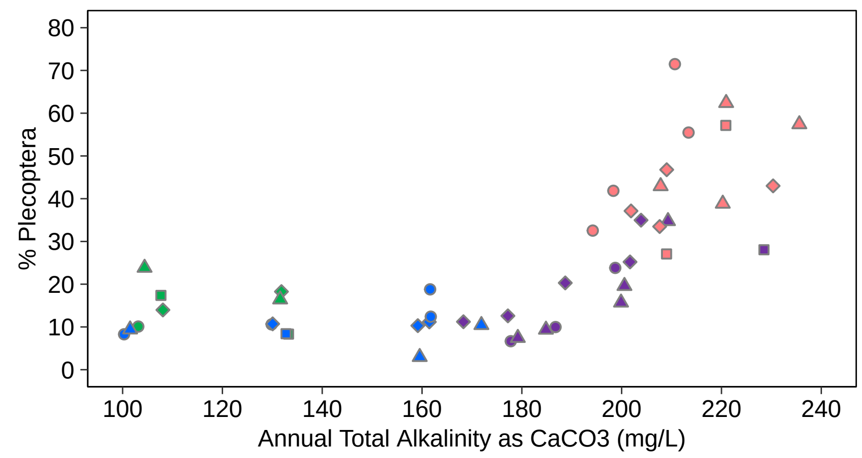
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

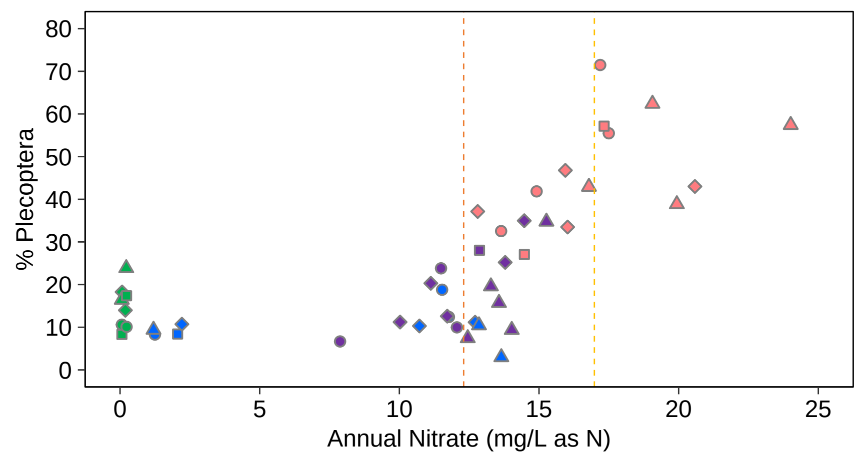
	Full	Upper	Middle	Lower
P−Value	0.1976	0.1170	0.0011	0.9091
Rho	0.194	0.528	0.778	0.0336



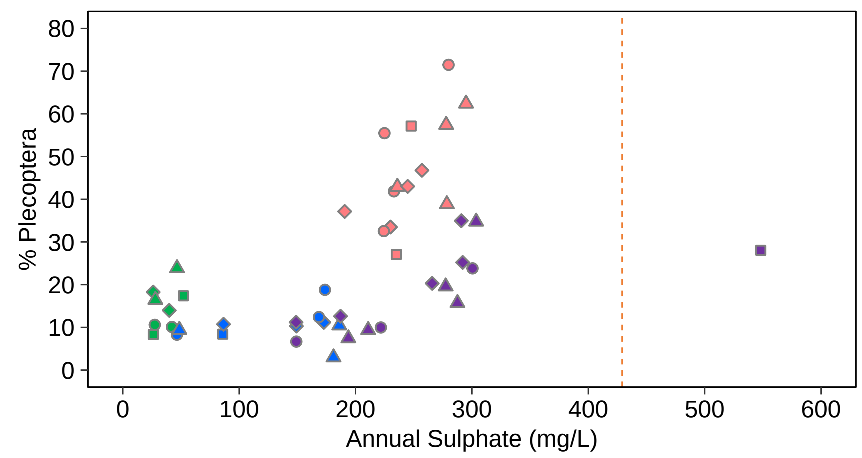
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0802	0.0002	0.0089
Rho	0.770	0.588	0.842	0.684



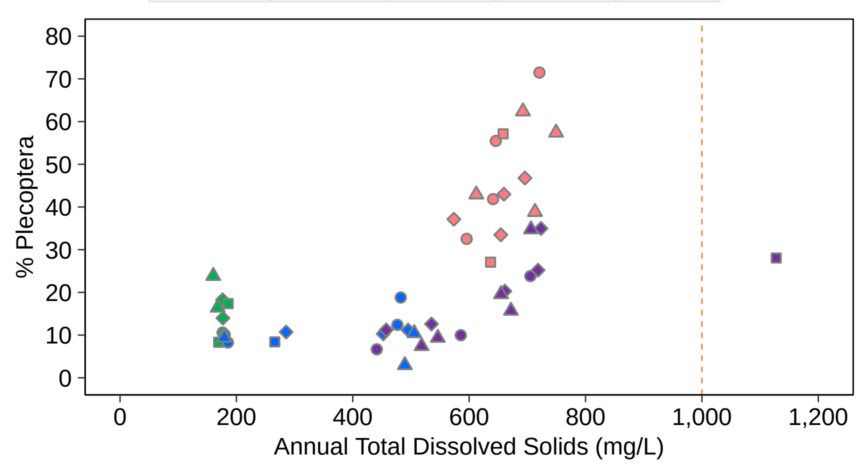
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.5367	0.0616	0.0163
Rho	0.699	0.224	0.516	0.640



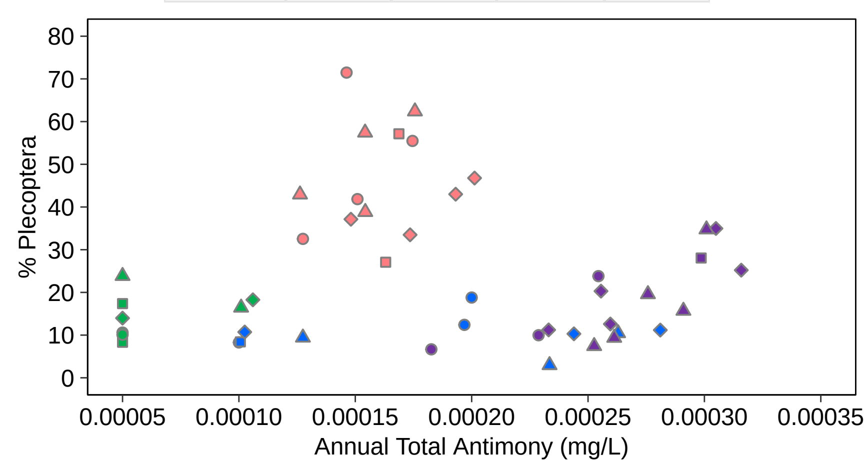
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.3305	0.0002	0.0084
Rho	0.654	0.345	0.846	0.688



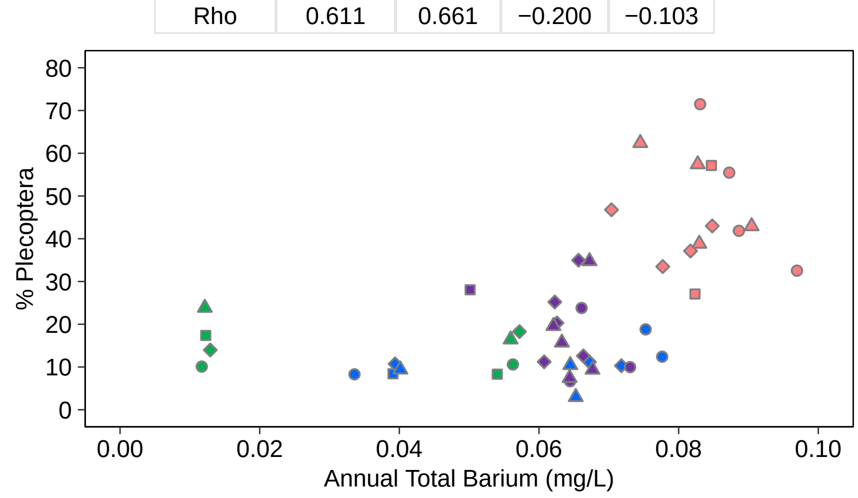
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.2790	<0.0001	0.0089
Rho	0.684	0.382	0.916	0.684



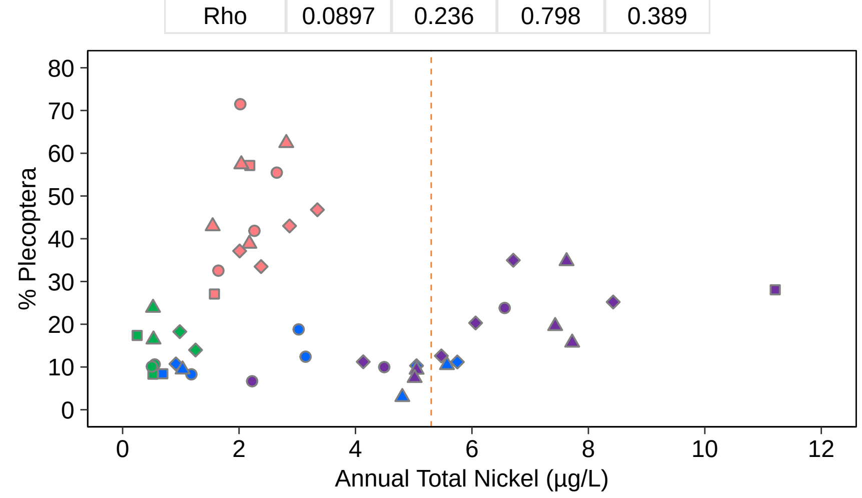
	Full	Upper	Middle	Lower
P−Value	0.7254	0.3305	0.0012	0.4356
Rho	0.0532	0.345	0.793	0.226



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0440	0.4924	0.7270
Rho	0.611	0.661	−0.200	−0.103



	Full	Upper	Middle	Lower
P−Value	0.5520	0.5139	0.0010	0.1702
Rho	0.0897	0.236	0.798	0.389



● Reference ● Upper ● Middle ● Lower

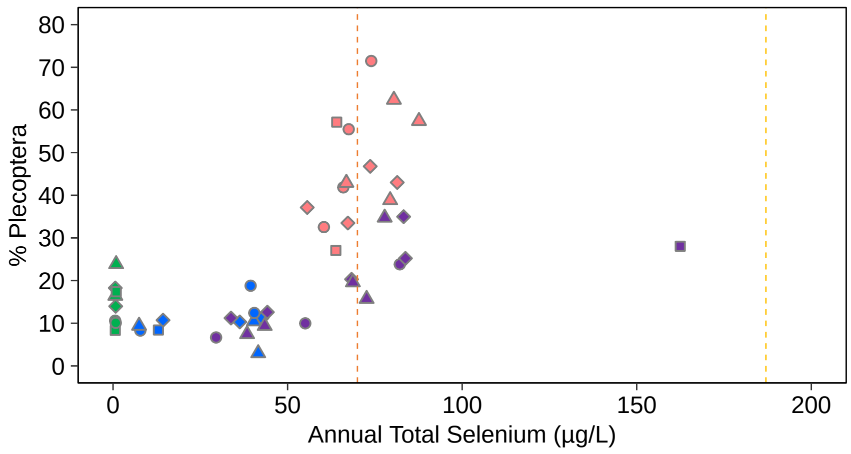
● 2018 ■ 2019 ◆ 2020 ▲ 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

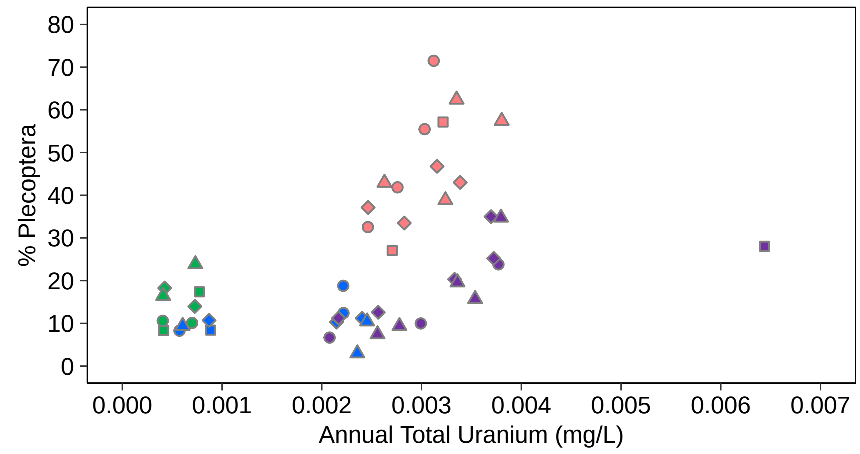
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

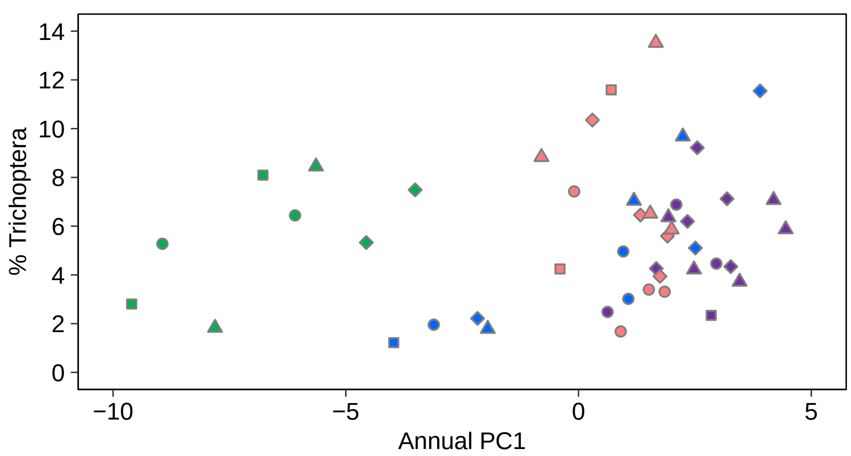
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.2956	<0.0001	0.0172
Rho	0.694	0.370	0.899	0.635



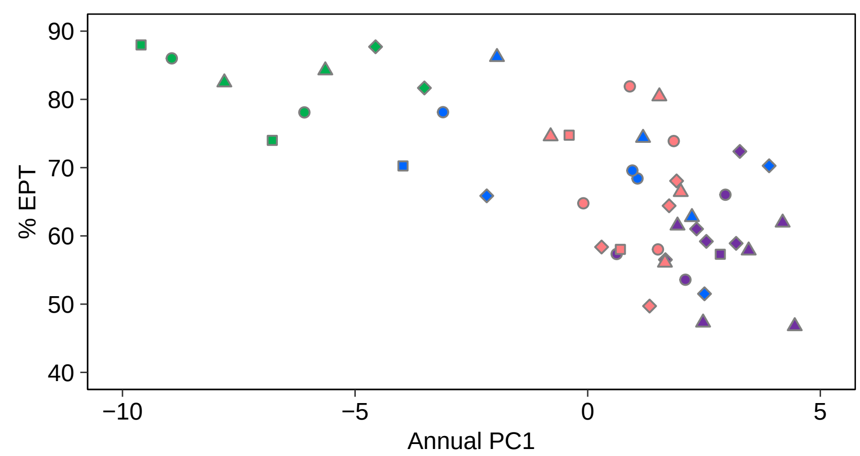
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.3305	<0.0001	0.0115
Rho	0.624	0.345	0.881	0.666



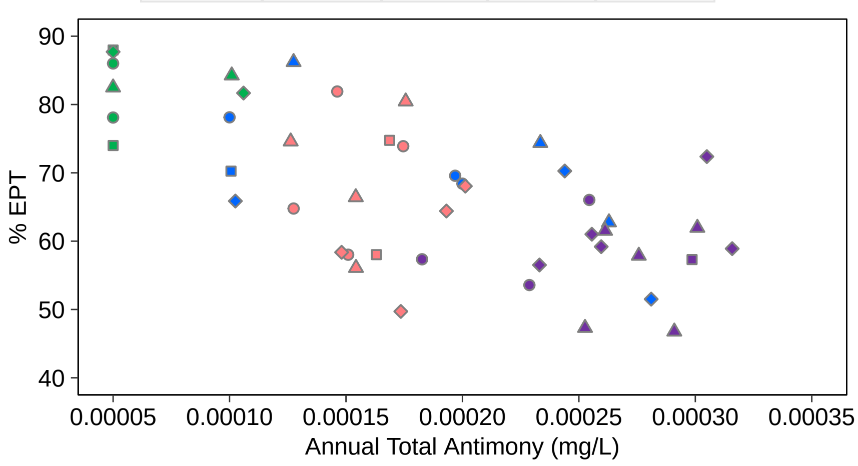
	Full	Upper	Middle	Lower
P−Value	0.2522	0.0005	0.5838	0.2665
Rho	0.172	0.915	0.160	−0.319



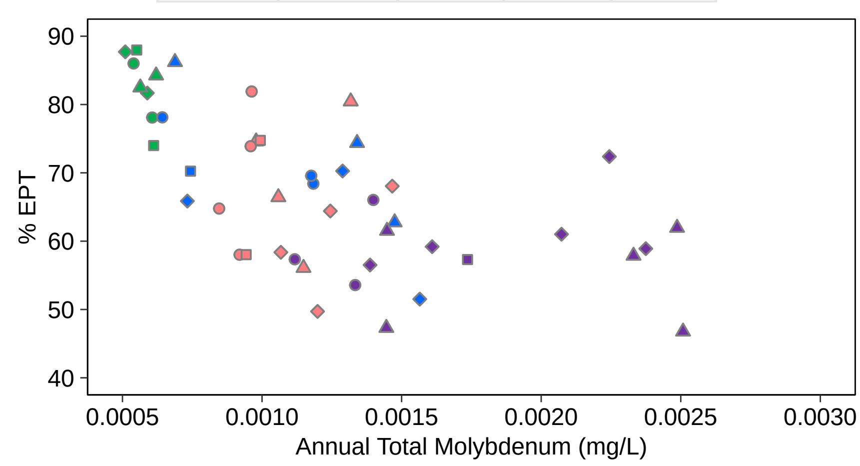
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.3128	0.5322	0.7156
Rho	−0.647	−0.358	0.182	−0.108



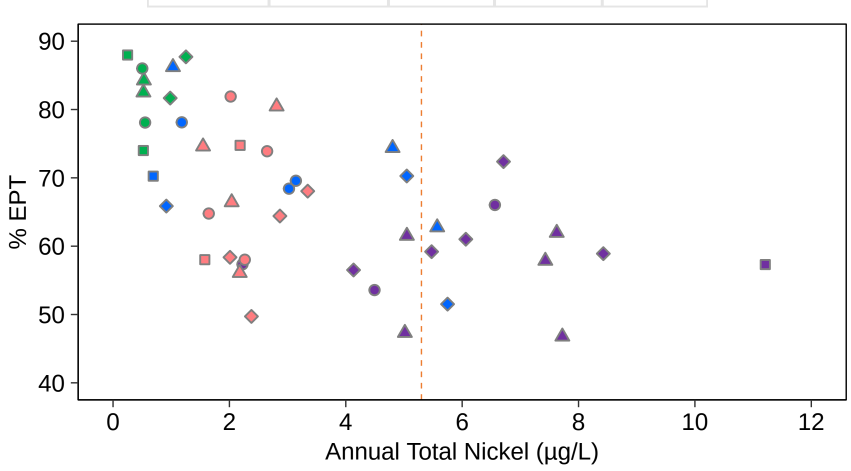
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.1228	0.1808	0.9637
Rho	−0.632	−0.527	0.380	−0.0154



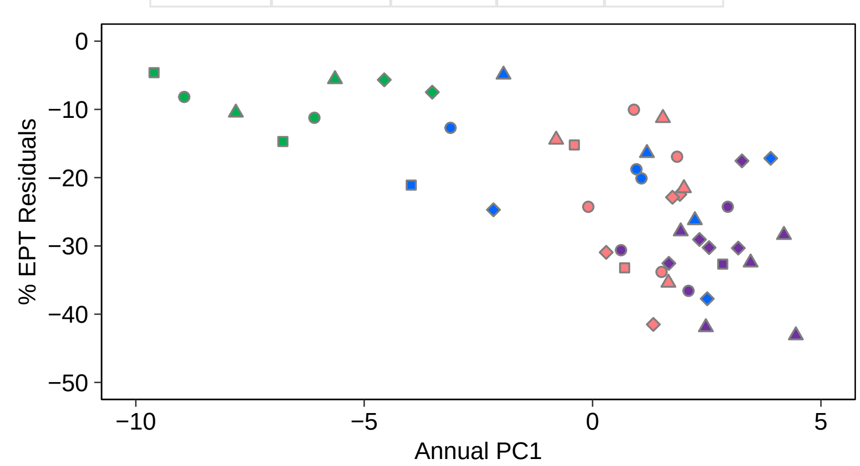
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0665	0.5423	0.9517
Rho	−0.663	−0.612	0.178	0.0198



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.2324	0.5423	0.9155
Rho	−0.622	−0.418	0.178	0.0330



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.4916	0.8319	0.8083
Rho	−0.639	−0.248	0.0637	−0.0725



Reference Upper Middle Lower

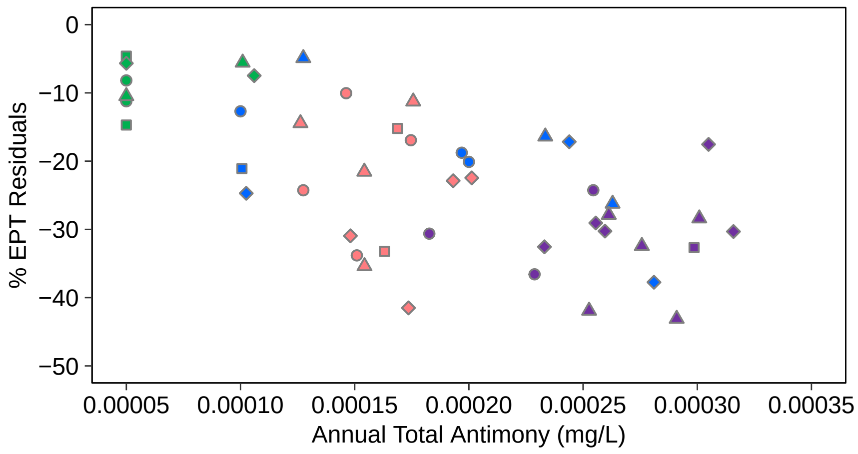
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

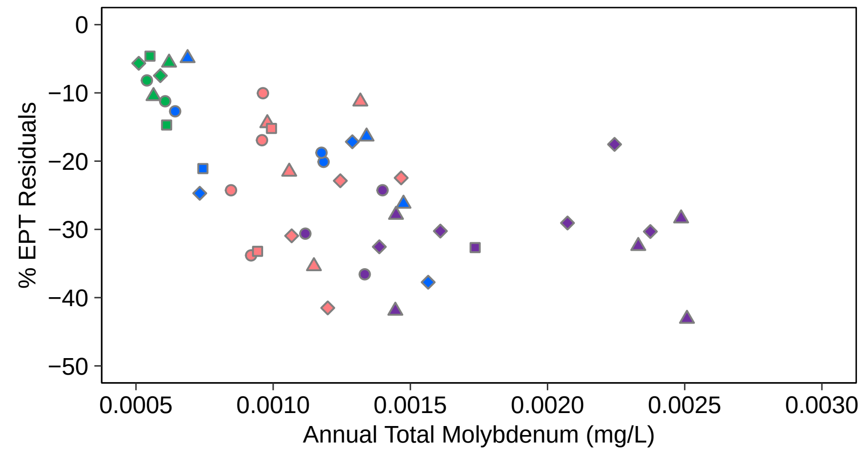
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

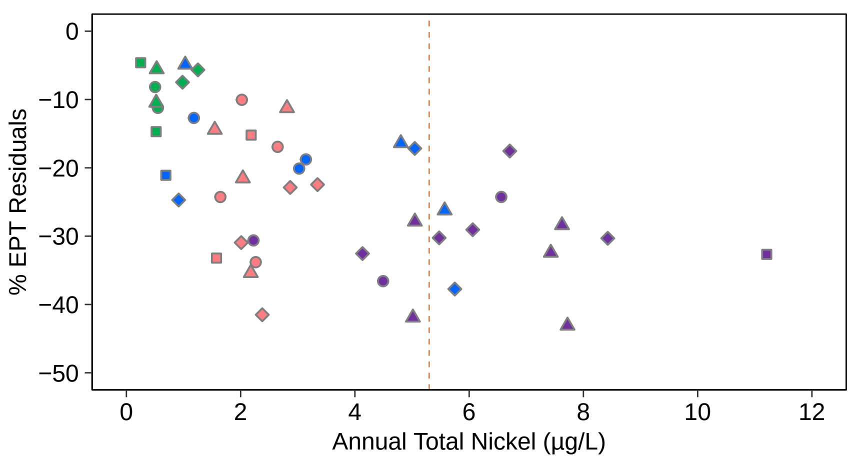
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.2042	0.3099	0.9035
Rho	−0.618	−0.442	0.292	−0.0374



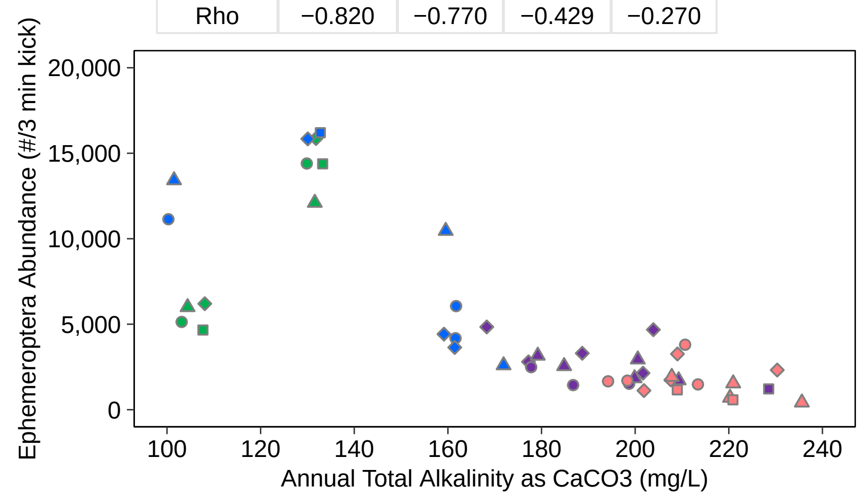
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0878	0.7849	0.9035
Rho	−0.650	−0.576	0.0813	0.0374



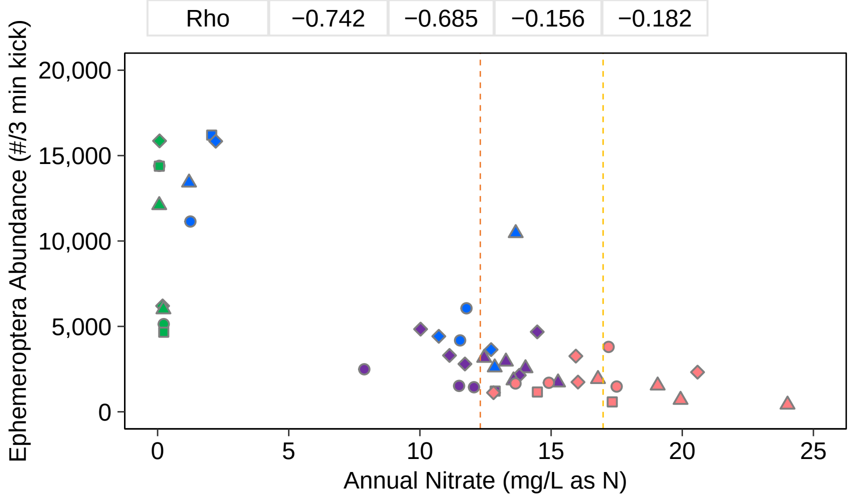
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.3871	0.8438	0.9758
Rho	−0.613	−0.309	0.0593	0.0110



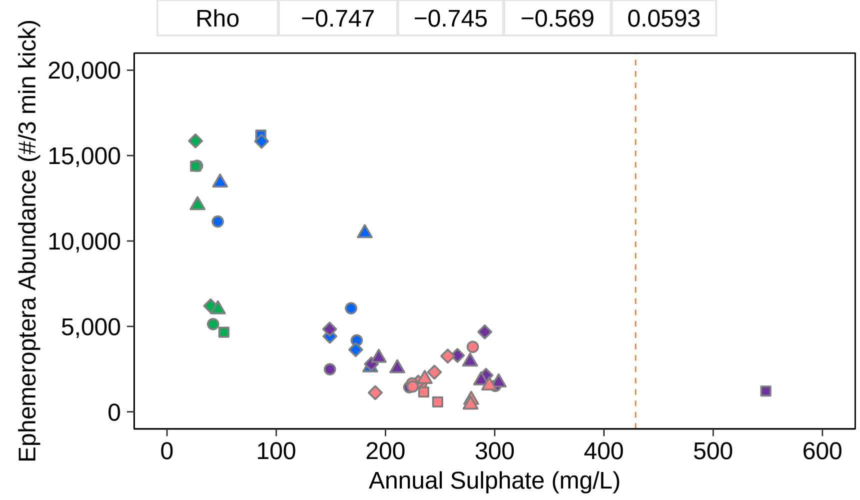
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0137	0.1281	0.3491
Rho	−0.820	−0.770	−0.429	−0.270



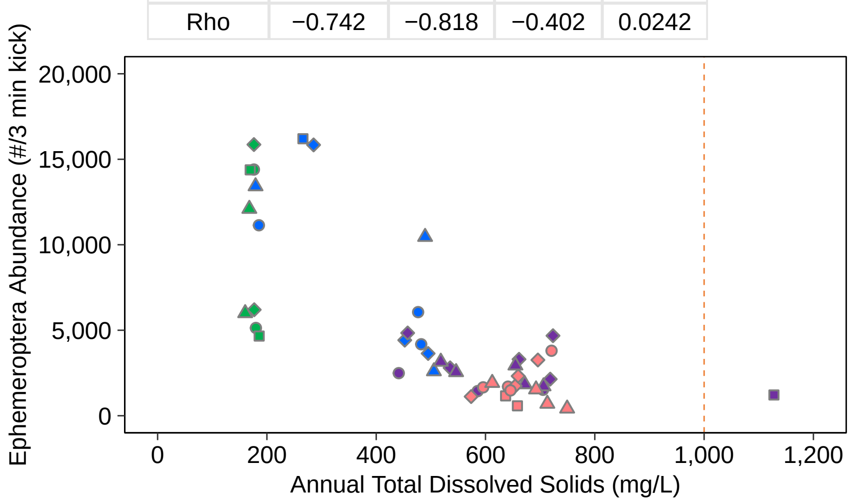
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0351	0.5944	0.5322
Rho	−0.742	−0.685	−0.156	−0.182



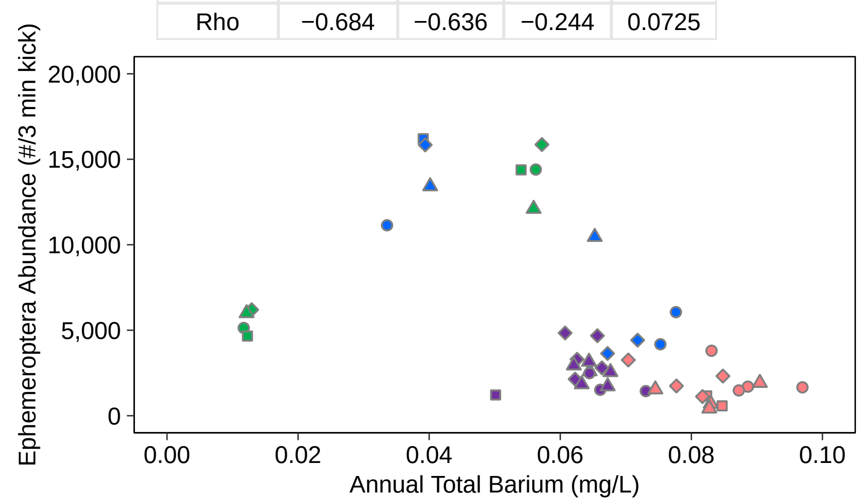
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0184	0.0366	0.8438
Rho	−0.747	−0.745	−0.569	0.0593



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0068	0.1553	0.9396
Rho	−0.742	−0.818	−0.402	0.0242



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0544	0.3998	0.8083
Rho	−0.684	−0.636	−0.244	0.0725



Reference Upper Middle Lower

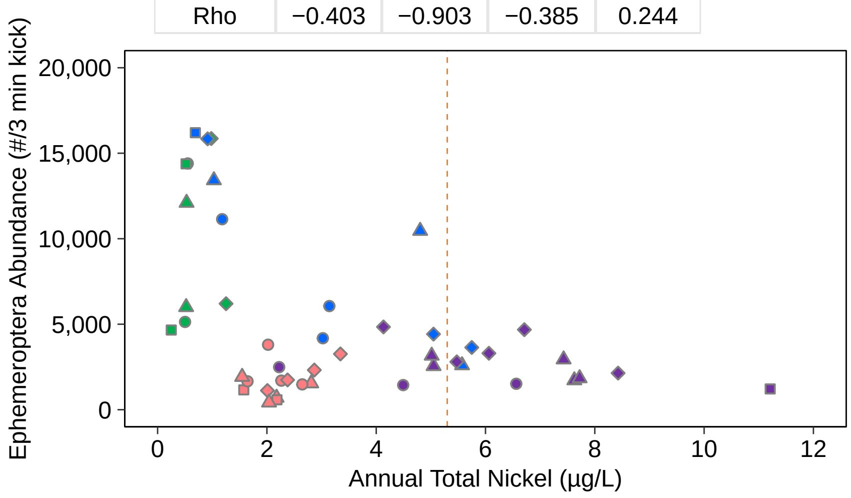
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

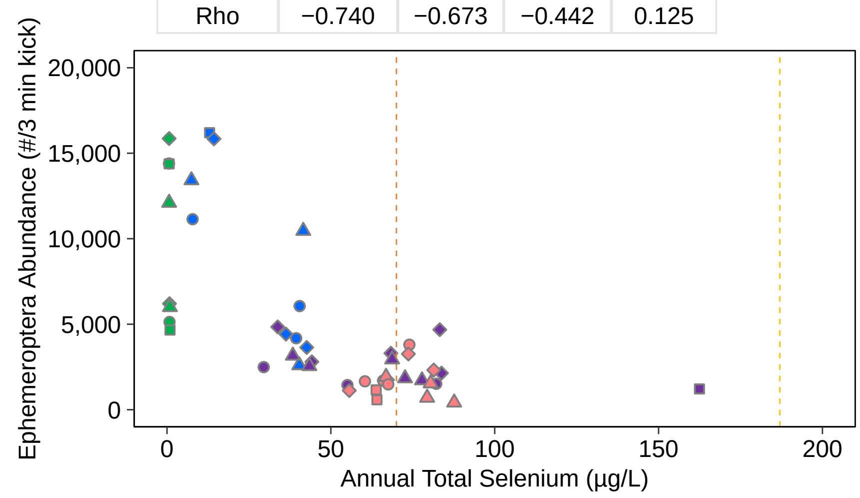
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

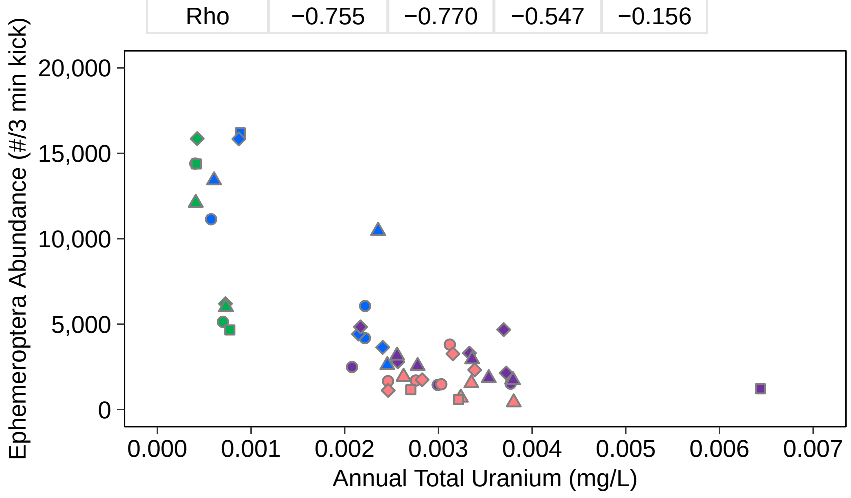
	Full	Upper	Middle	Lower
P−Value	0.0058	0.0009	0.1755	0.3998
Rho	−0.403	−0.903	−0.385	0.244



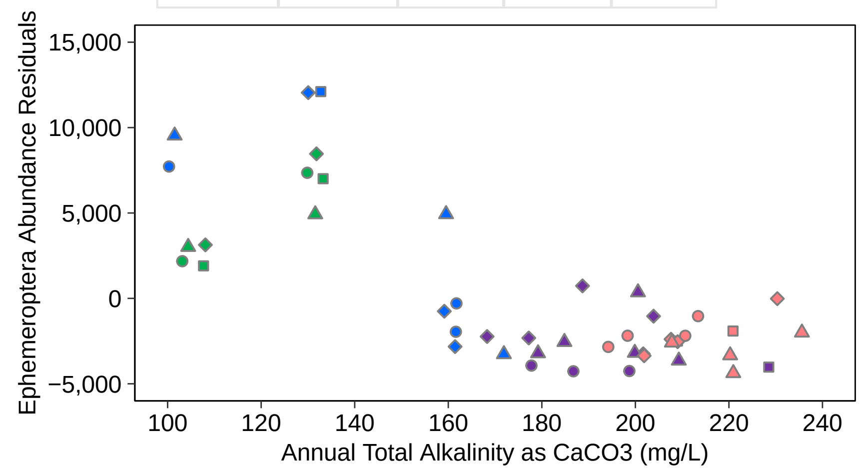
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0394	0.1158	0.6706
Rho	−0.740	−0.673	−0.442	0.125



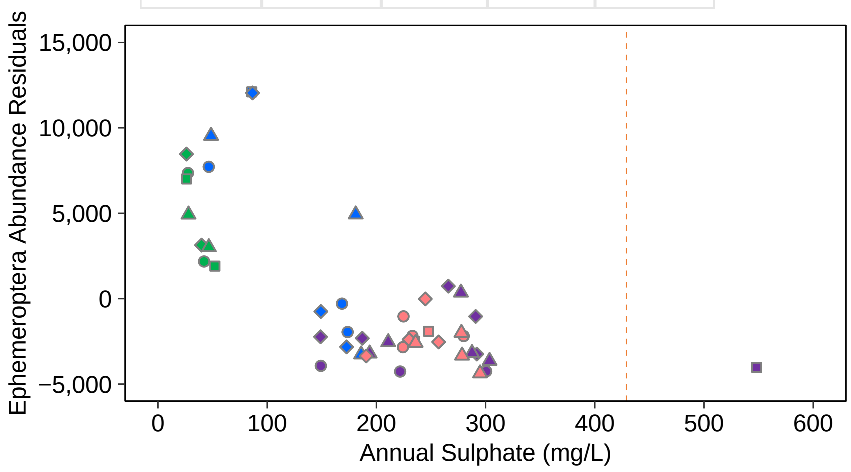
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0137	0.0459	0.5944
Rho	−0.755	−0.770	−0.547	−0.156



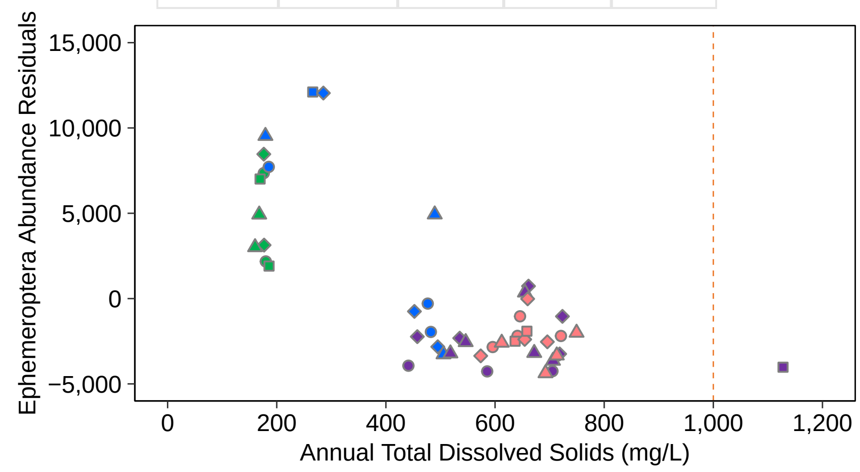
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0137	0.6266	0.2031
Rho	−0.627	−0.770	−0.143	0.363



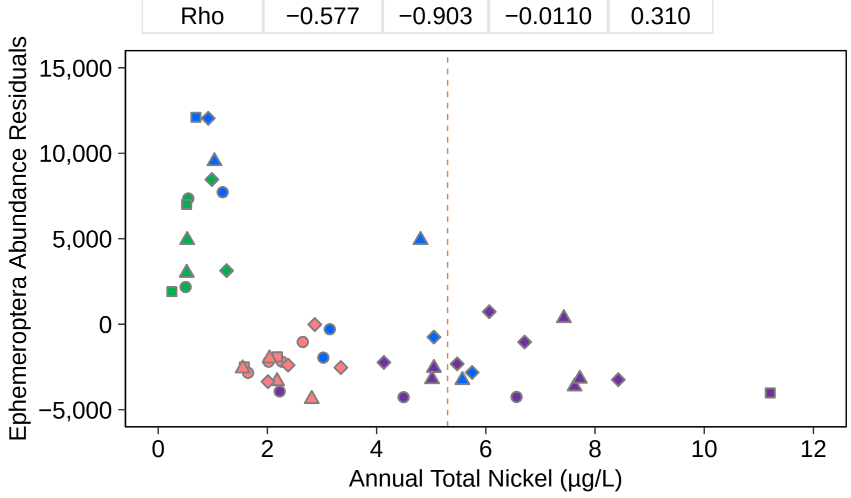
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0184	0.2950	0.8676
Rho	−0.666	−0.745	−0.301	−0.0505



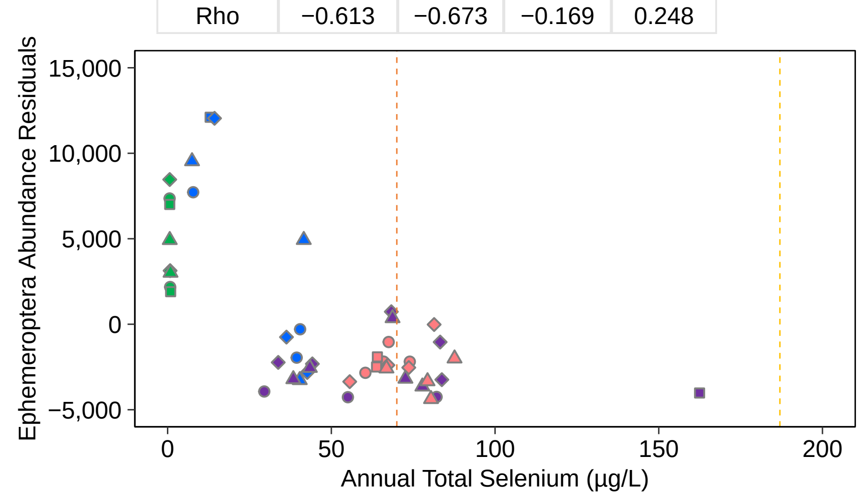
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0068	0.6595	0.4086
Rho	−0.626	−0.818	−0.130	0.240



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0009	0.9758	0.2806
Rho	−0.577	−0.903	−0.0110	0.310



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0394	0.5629	0.3911
Rho	−0.613	−0.673	−0.169	0.248



Reference Upper Middle Lower

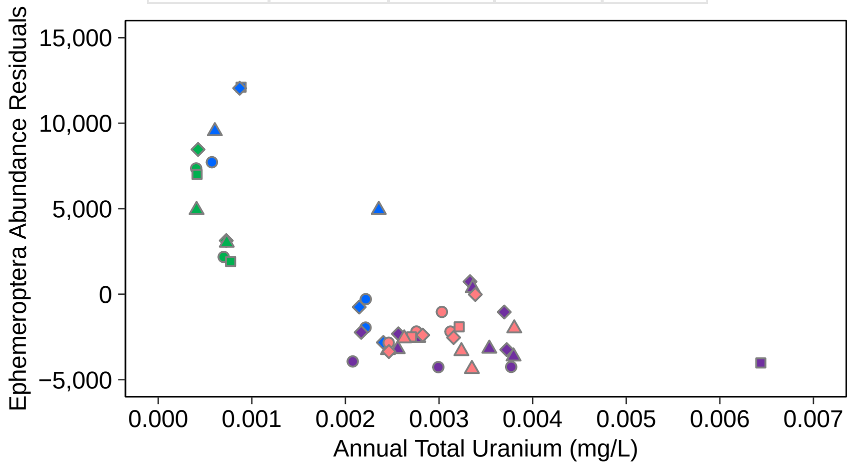
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

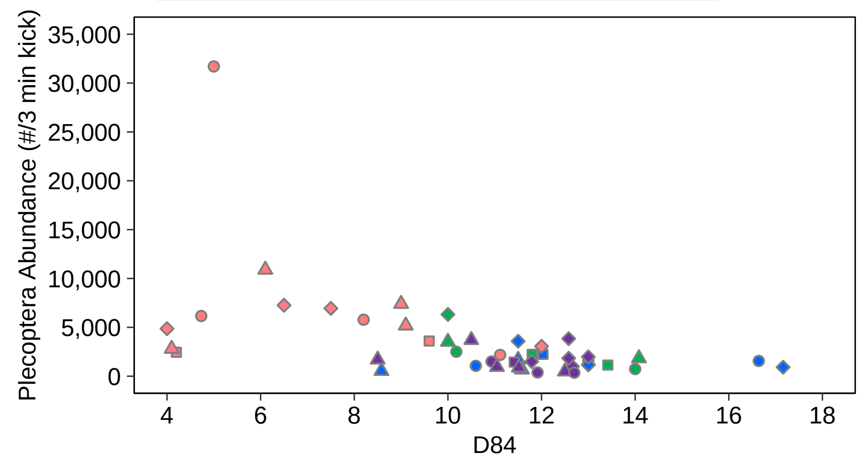
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

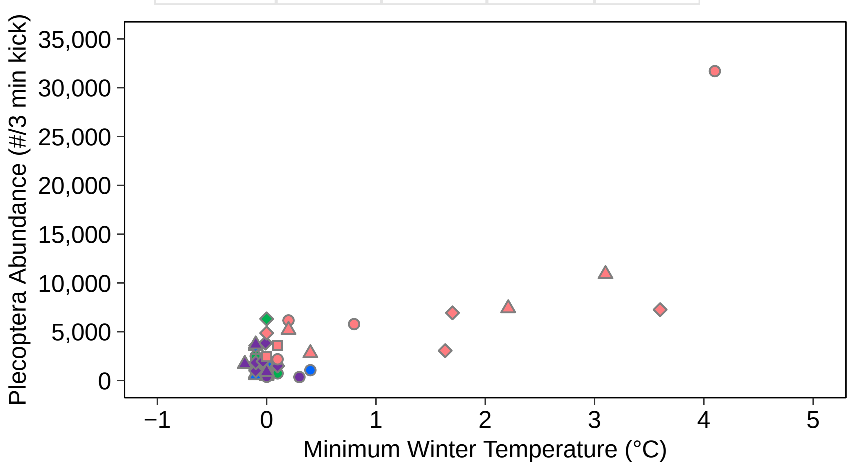
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0137	0.3740	0.2210
Rho	−0.633	−0.770	−0.257	0.349



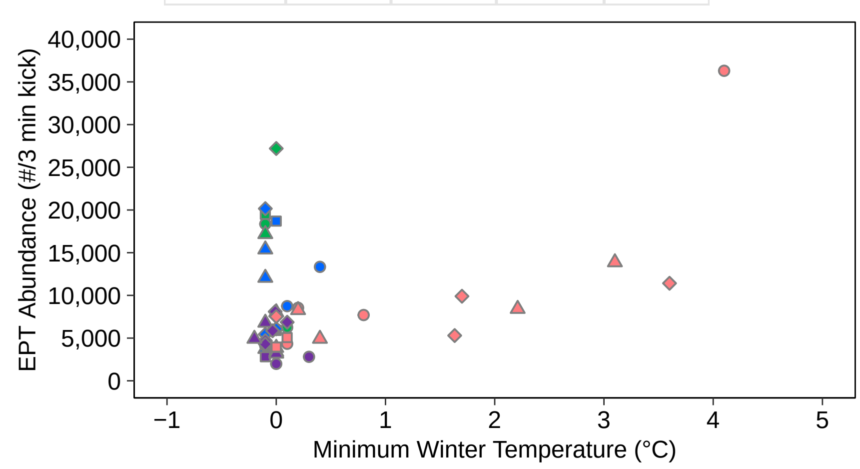
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.8016	0.6634	0.6485
Rho	−0.620	0.0915	−0.128	−0.134



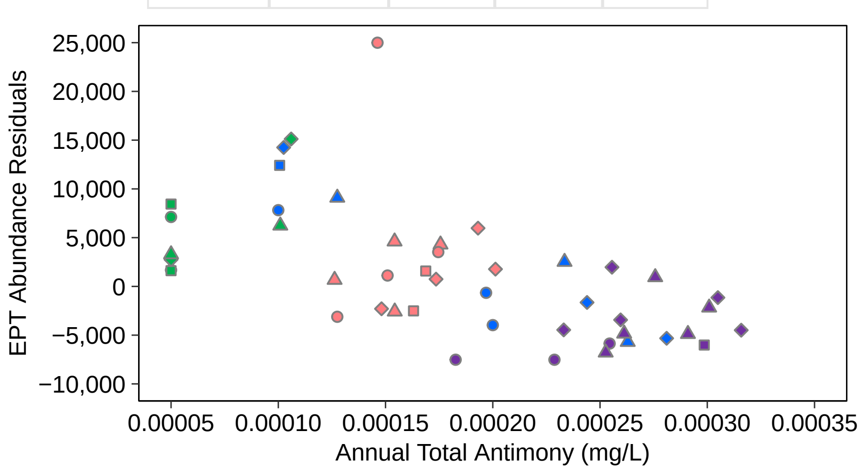
	Full	Upper	Middle	Lower
P−Value	0.0098	0.9284	0.0287	0.0006
Rho	0.377	0.0328	−0.583	0.800



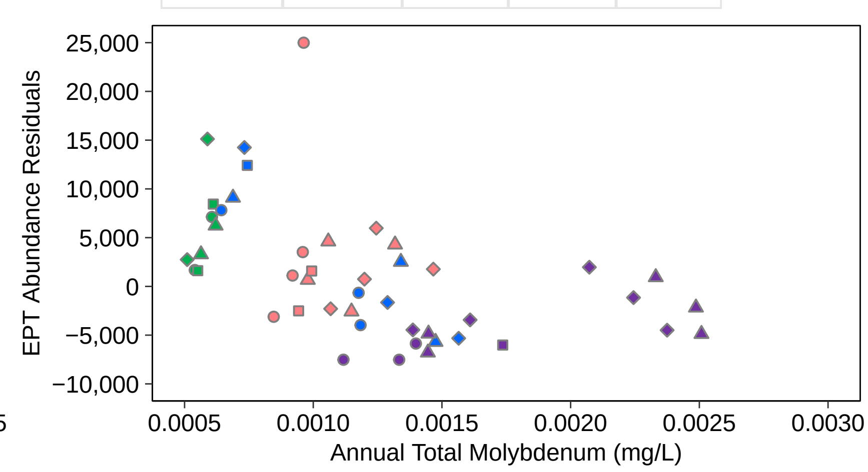
	Full	Upper	Middle	Lower
P−Value	0.3396	0.8431	0.2857	0.0005
Rho	0.144	0.0721	−0.307	0.803



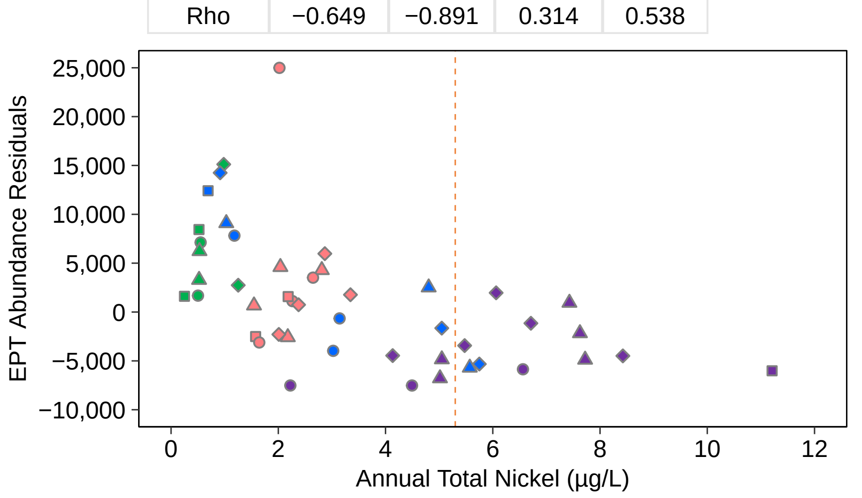
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0045	0.0779	0.1553
Rho	−0.667	−0.842	0.490	0.402



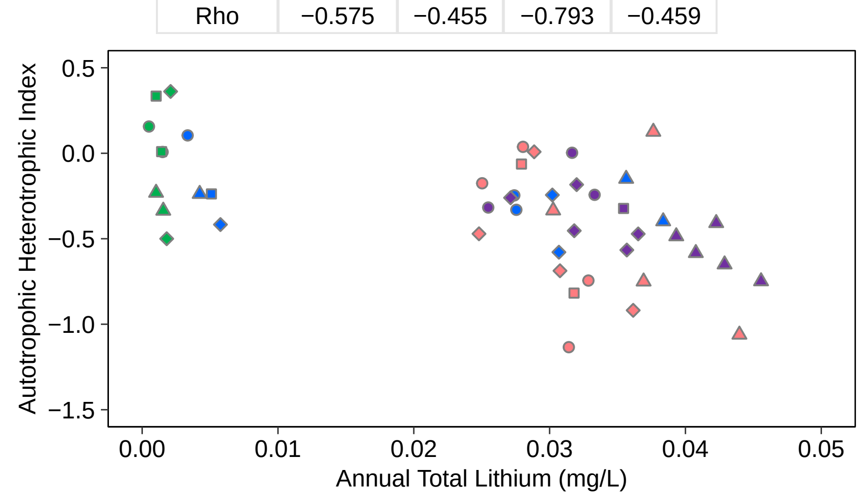
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0098	0.0289	0.2463
Rho	−0.620	−0.794	0.591	0.332



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0014	0.2735	0.0500
Rho	−0.649	−0.891	0.314	0.538



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.1909	0.0012	0.1008
Rho	−0.575	−0.455	−0.793	−0.459



● Reference ● Upper ● Middle ● Lower

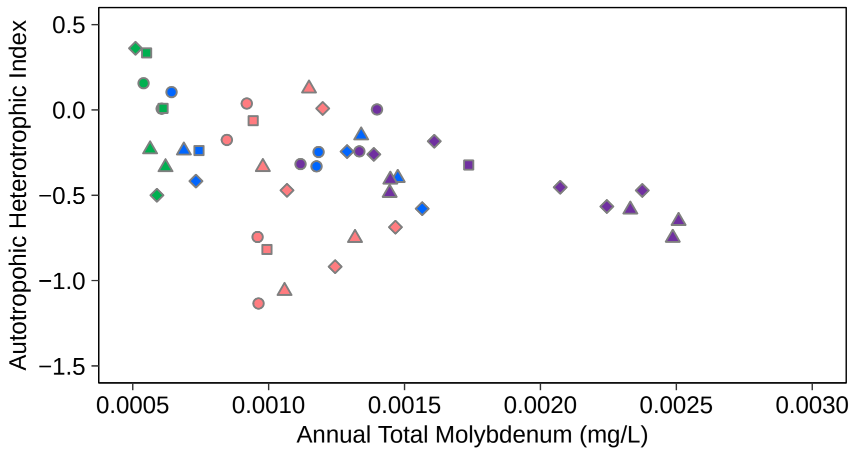
● 2018 ■ 2019 ◆ 2020 ▲ 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

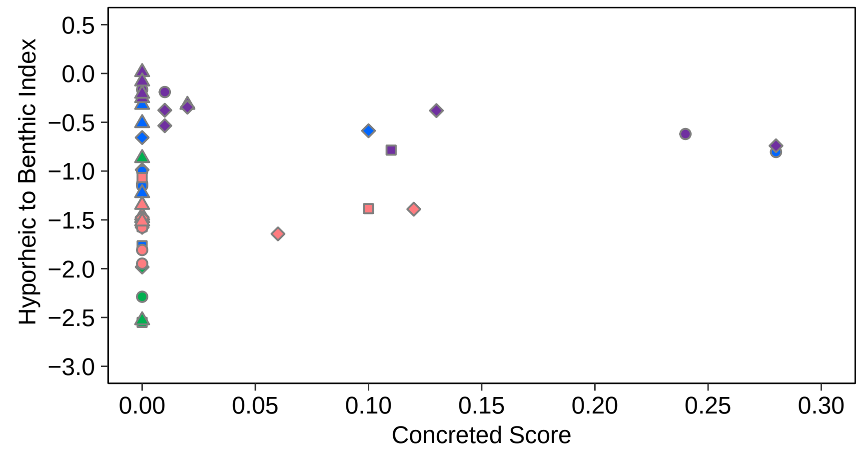
Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details).
Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

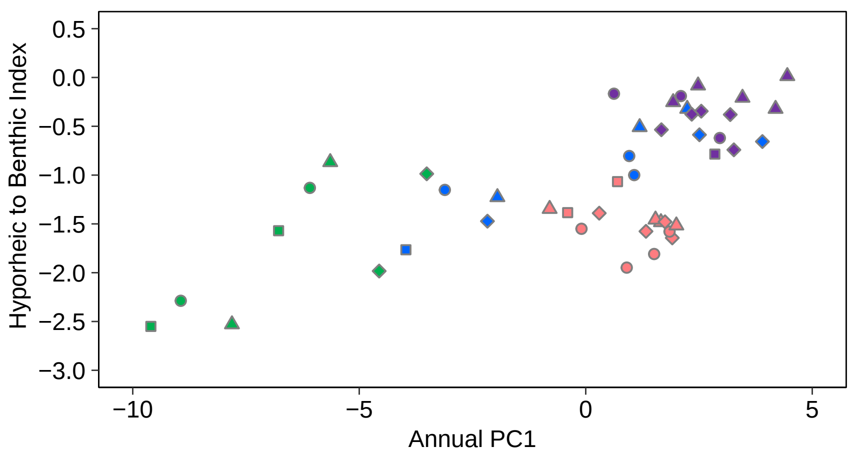
	Full	Upper	Middle	Lower
P−Value	0.0009	0.1434	0.0013	0.4636
Rho	−0.479	−0.503	−0.789	−0.213



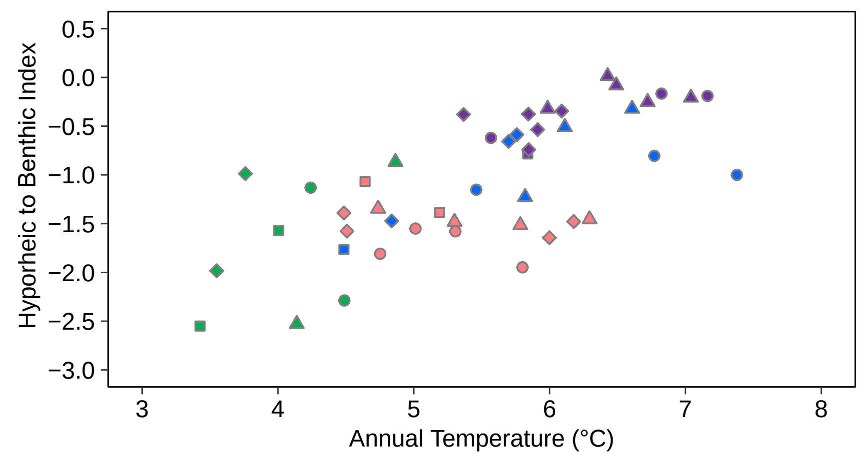
	Full	Upper	Middle	Lower
P−Value	0.0385	0.5002	0.0002	0.4957
Rho	0.306	0.242	−0.841	0.199



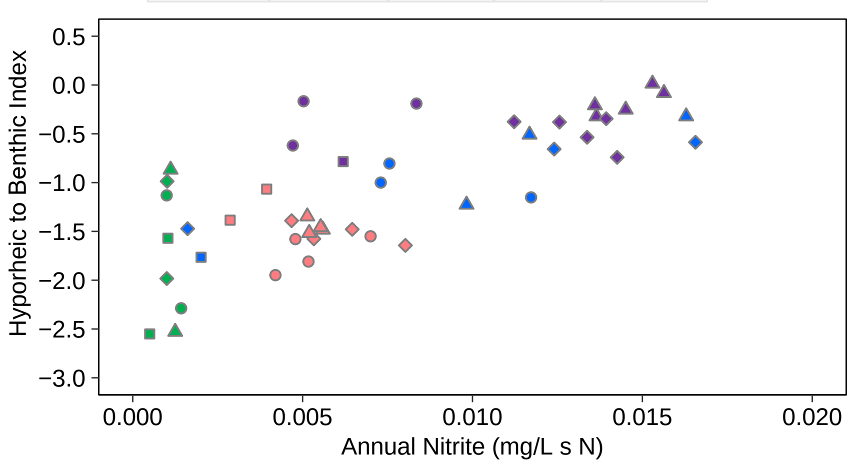
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0045	0.8557	0.0904
Rho	0.648	0.842	−0.0549	−0.473



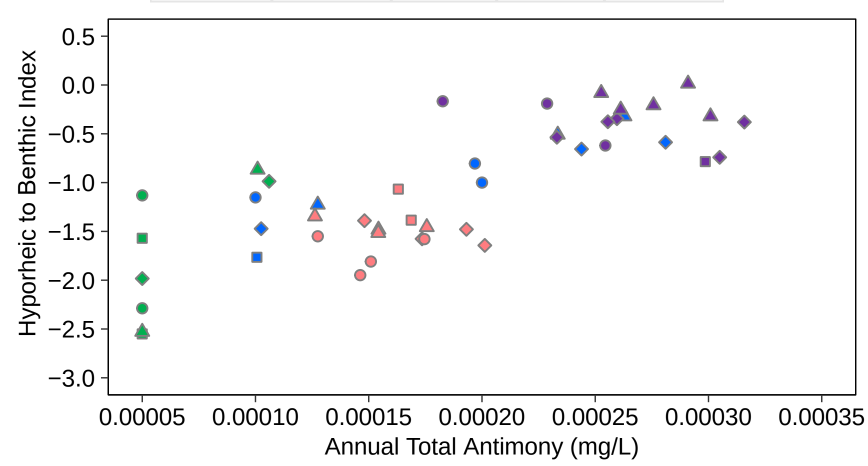
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0878	0.0013	0.2950
Rho	0.687	0.576	0.789	−0.301



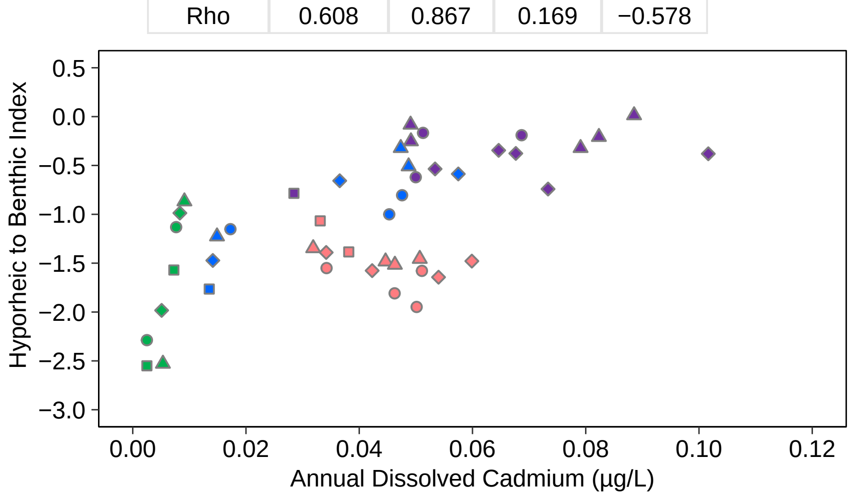
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0137	0.1602	0.2735
Rho	0.698	0.770	0.398	−0.314



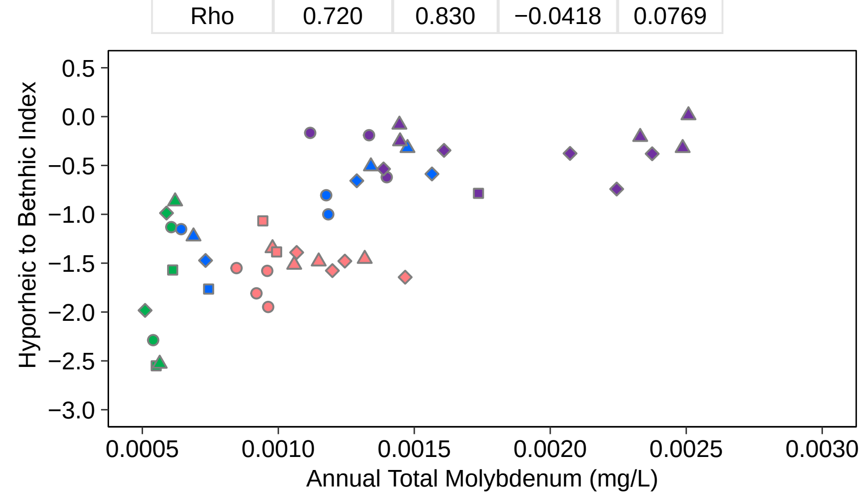
	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0035	0.1917	0.8319
Rho	0.756	0.855	−0.371	−0.0637



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0027	0.5629	0.0334
Rho	0.608	0.867	0.169	−0.578



	Full	Upper	Middle	Lower
P−Value	<0.0001	0.0056	0.8915	0.7966
Rho	0.720	0.830	−0.0418	0.0769



Reference Upper Middle Lower

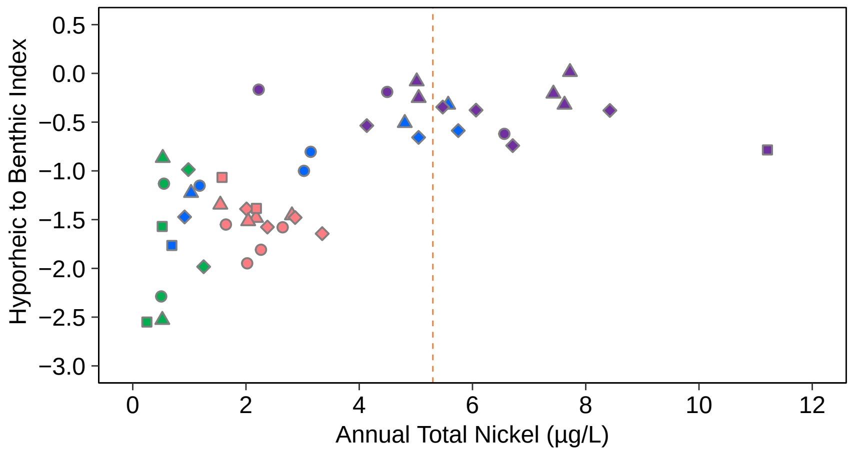
2018 2019 2020 2021

EVWQP Level 1 Benchmark EVWQP Level 2 Benchmark EVWQP Level 3 Benchmark

Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

	Full	Upper	Middle	Lower
P−Value	<0.0001	<0.0001	0.2398	0.1412
Rho	0.714	0.939	−0.336	−0.415



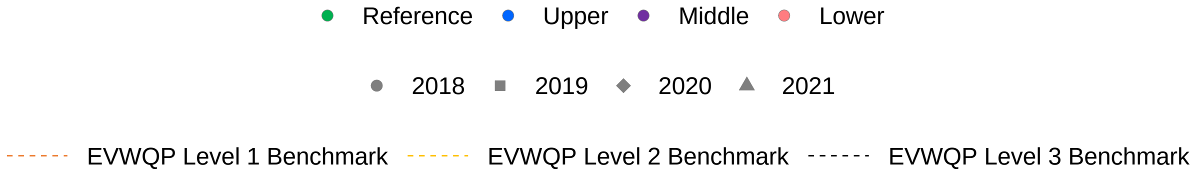


Figure F.5: Scatterplots of Spearman's Correlation Relationships Between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, 2018 to 2021

Notes: Only relationships with at least one relationship with a significant p−value and abs(rho) > 0.6 are displayed. The Full correlations included reference areas as well as the upper, middle, and lower areas. Annual = Averaged mean based on the previous year of water quality sampling (see methods for details). Elk Valley Water Quality Plan (EVWQP) benchmarks were not shown where measured water quality values were below benchmarks and for constituents that have no benchmarks. The dashed lines represent interim screening values for nickel and screening values for total dissolved solids. Endpoint residuals represent the residuals of multiple regression models predicting the expected benthic invertebrate community given habitat at mine−exposed sites (RAEMP 2020a).

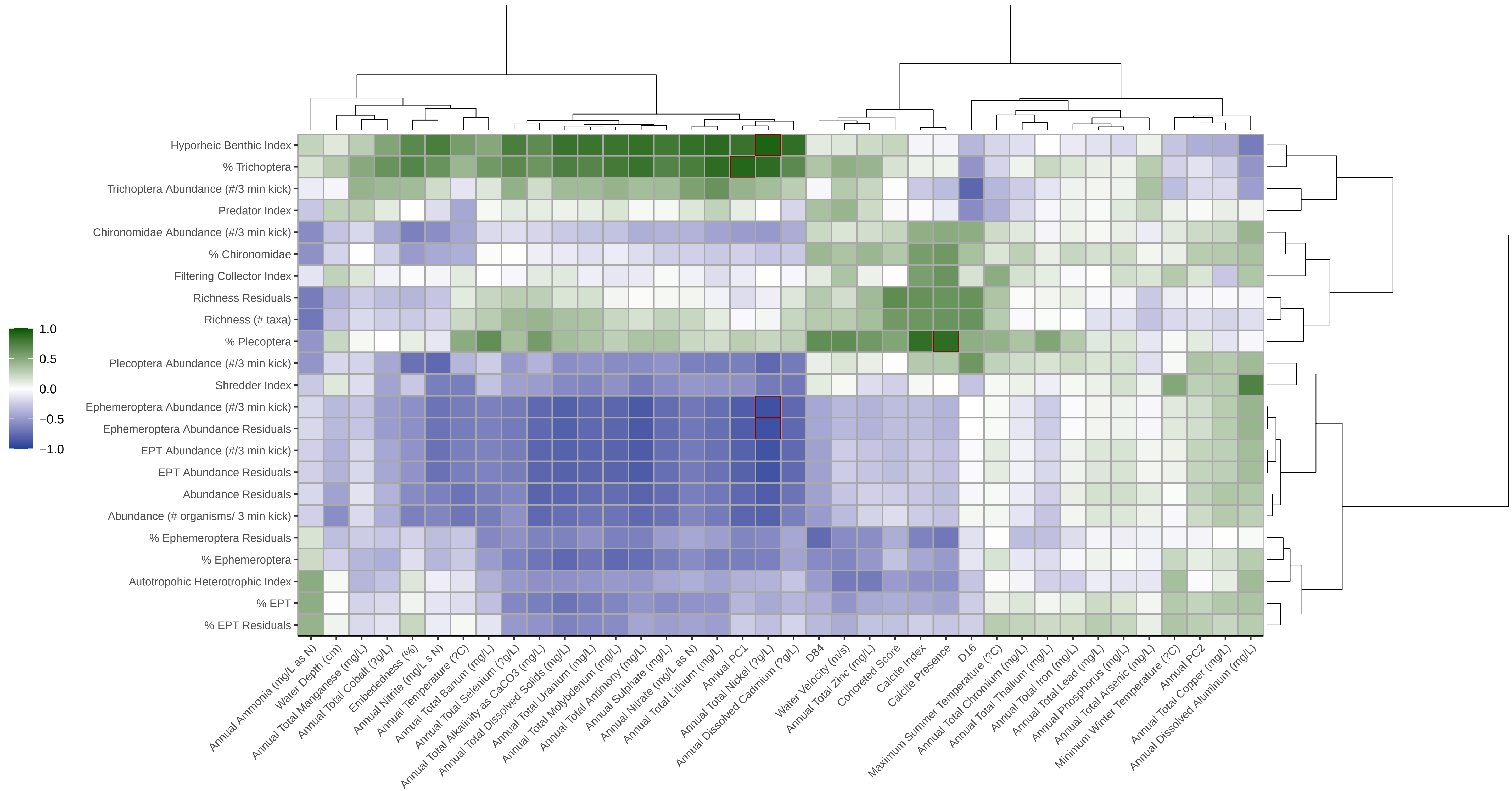


Figure F.6: Heatmap of Spearman Correlation Coefficients of Benthic Invertebrate Community Endpoints against Physical and Chemical Parameters, Upper Fording River, 2018 to 2021

Notes: Orange boxes show significant correlations (p−value < 0.05/38 for Bonferroni Correction), and red boxes show significant correlations with absolute coefficients > 0.6. Cluster diagrams on x− and y−axis represent similarities using Euclidean distances clustered according to Ward's minimum variance method.

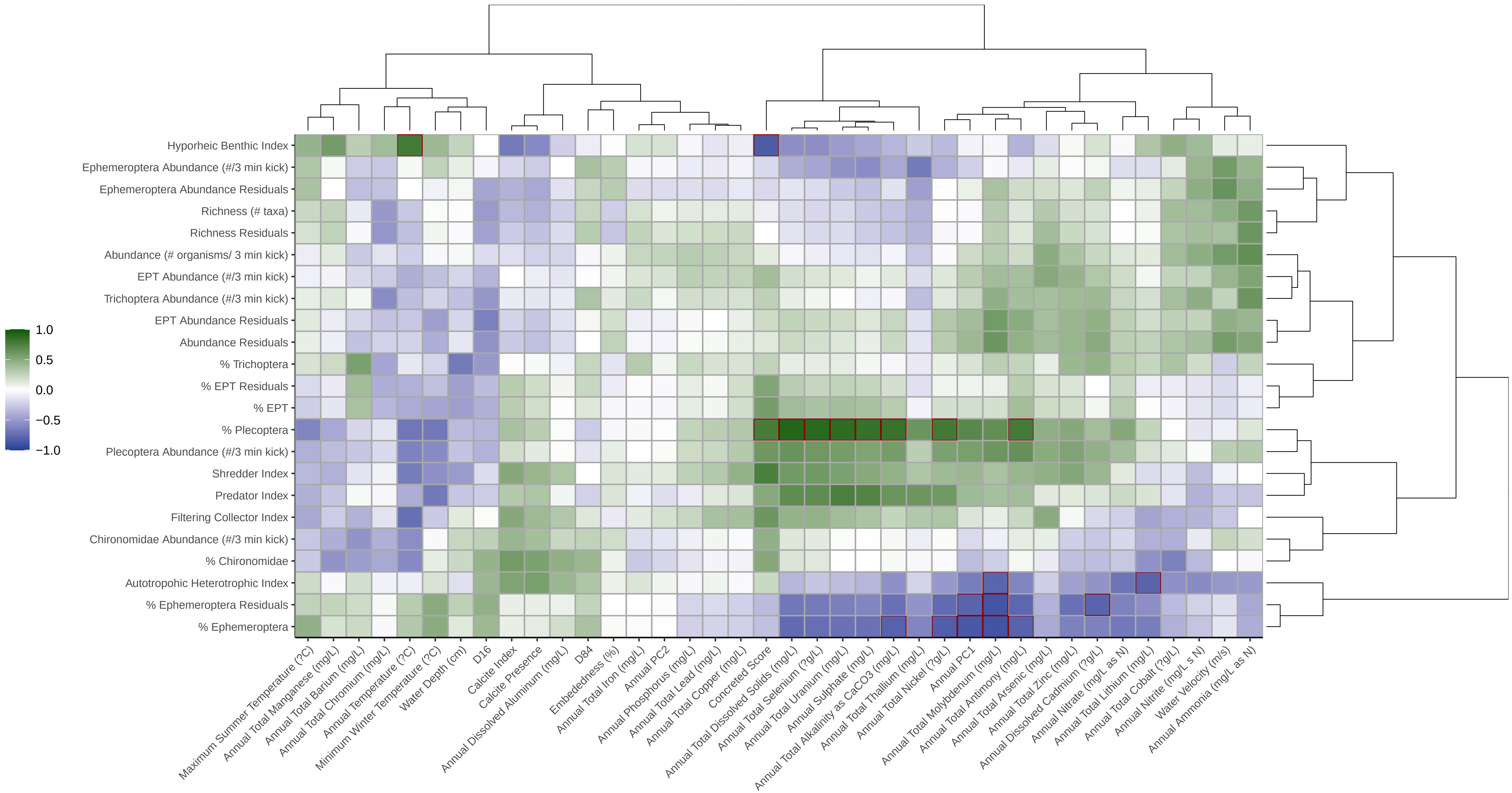


Figure F.7: **Heatmap of Spearman Correlation Coefficients of Benthic Invertebrate Community Endpoints against Physical and Chemical Parameters, Middle Fording River, 2018 to 2021**

Notes: Orange boxes show significant correlations (p−value < 0.05/38 for Bonferroni Correction), and red boxes show significant correlations with absolute coefficients > 0.6. Cluster diagrams on x− and y−axis represent similarities using Euclidean distances clustered according to Ward's minimum variance method.

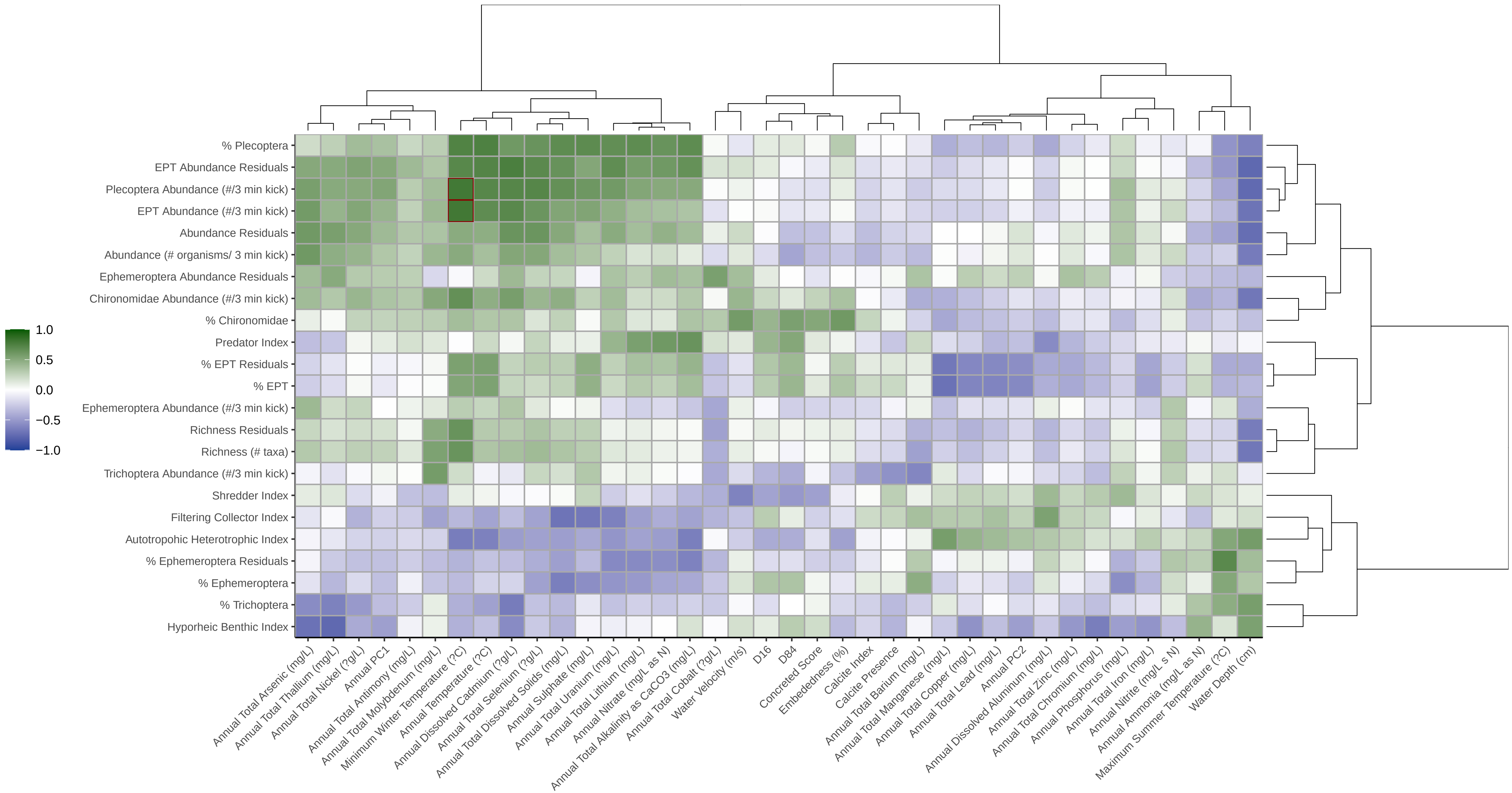


Figure F.8: **Heatmap of Spearman Correlation Coefficients of Benthic Invertebrate Community Endpoints against Physical and Chemical Parameters, Lower Fording River, 2018 to 2021**

Notes: Orange boxes show significant correlations (p−value < 0.05/38 for Bonferroni Correction), and red boxes show significant correlations with absolute coefficients > 0.6. Cluster diagrams on x− and y−axis represent similarities using Euclidean distances clustered according to Ward's minimum variance method.

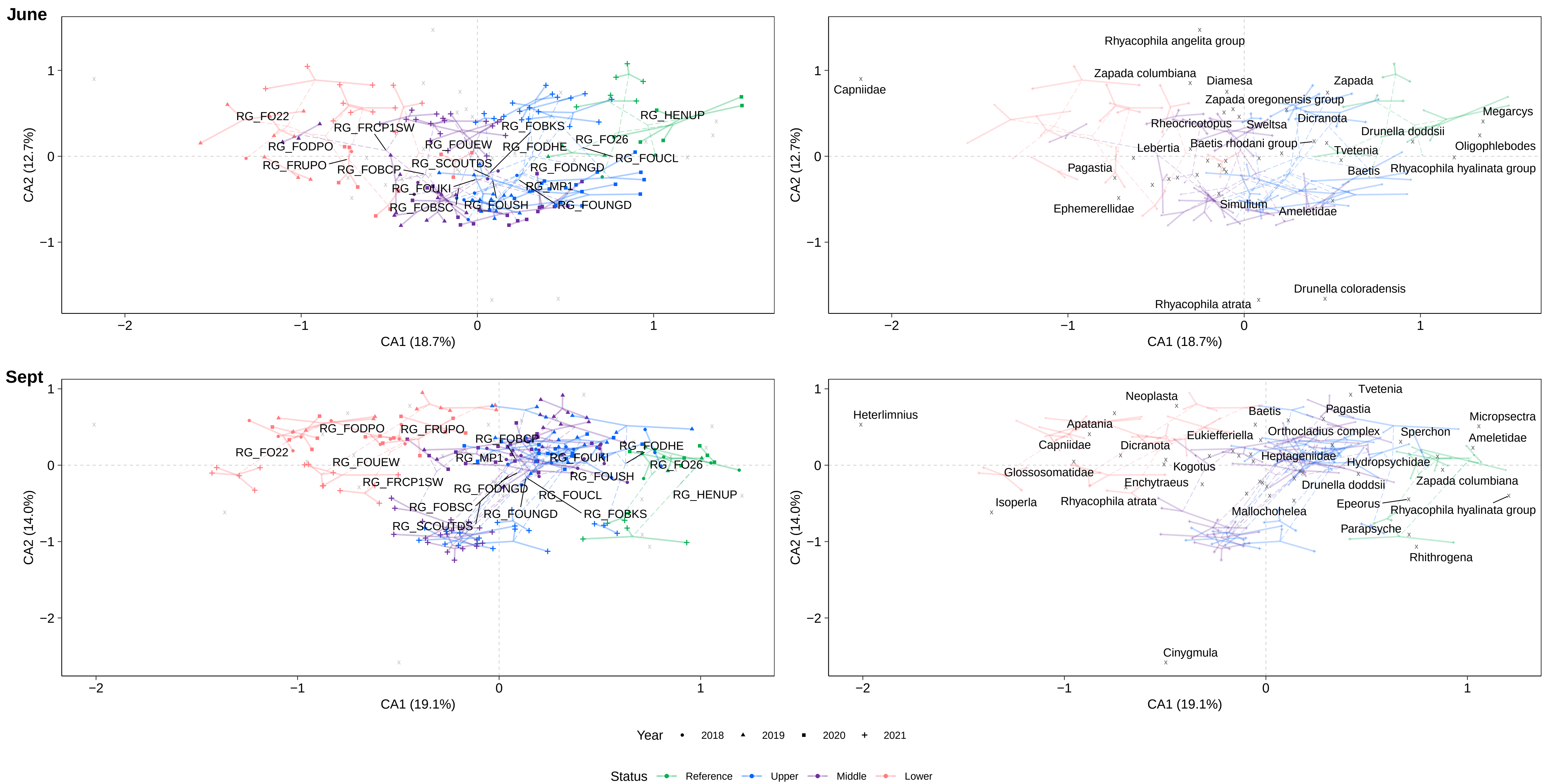


Figure F.9: Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

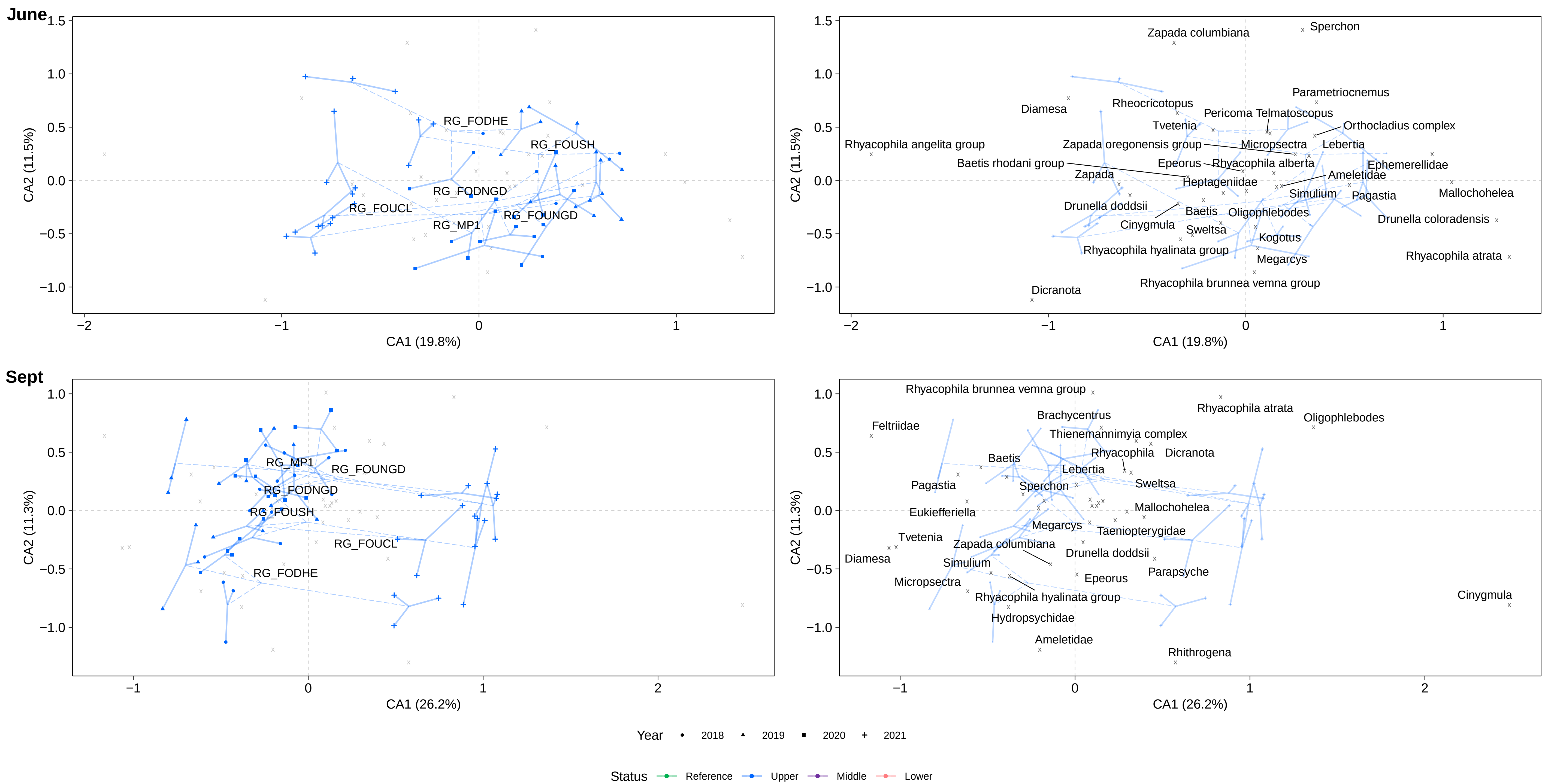


Figure F.9: Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

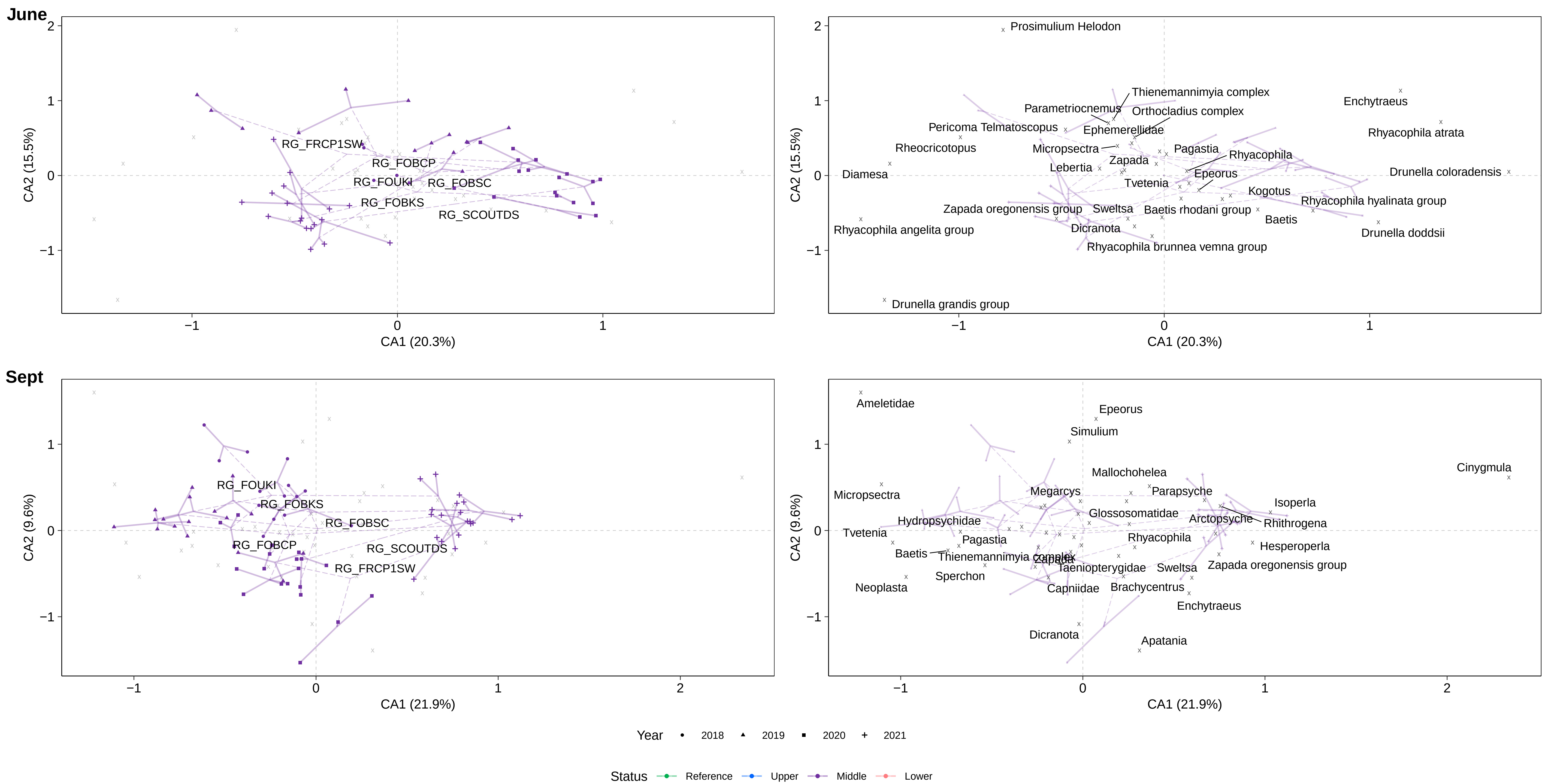


Figure F.9: Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

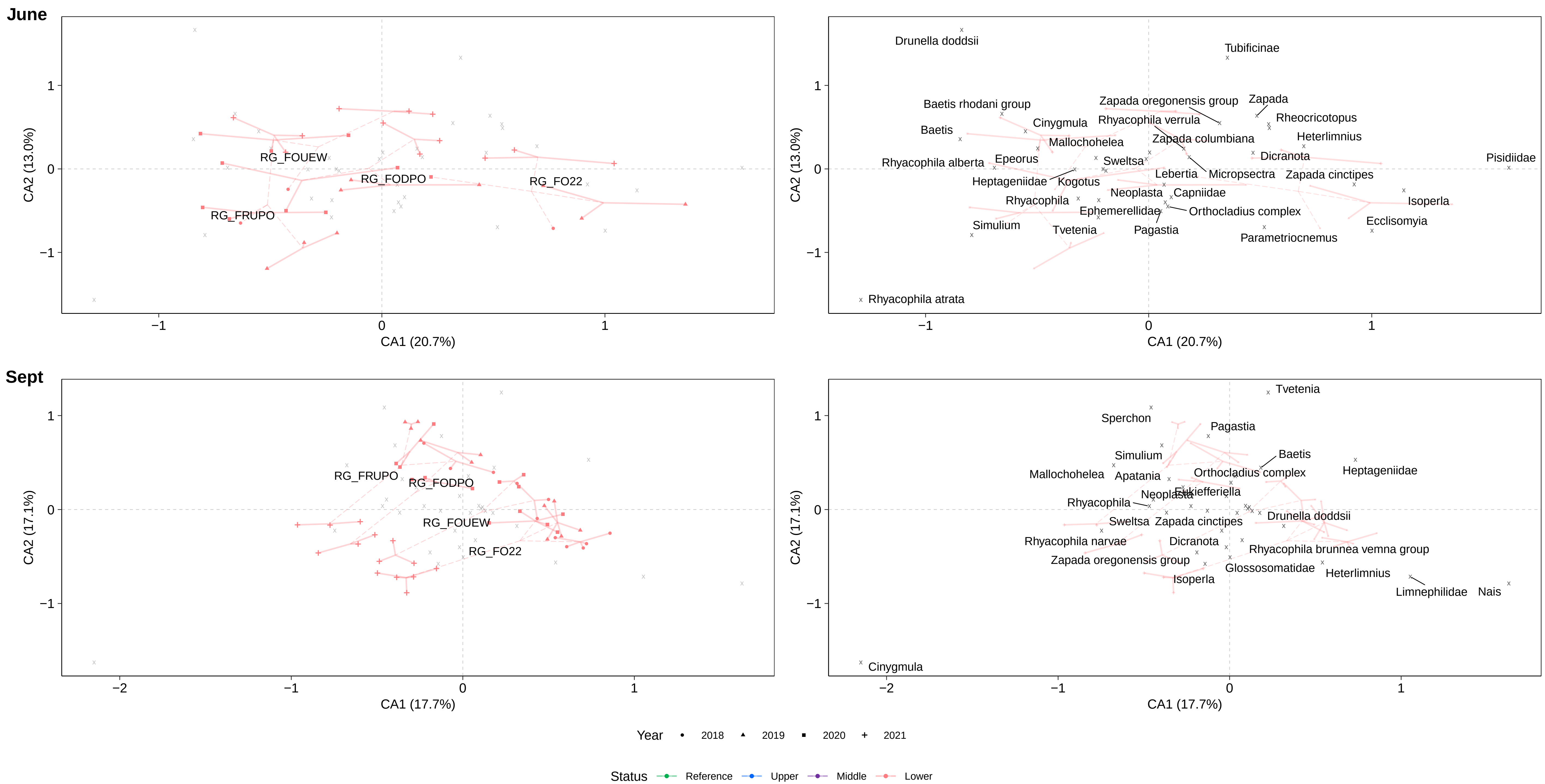


Figure F.9: Correspondence Analysis of Benthic Invertebrate Communities in June and September, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

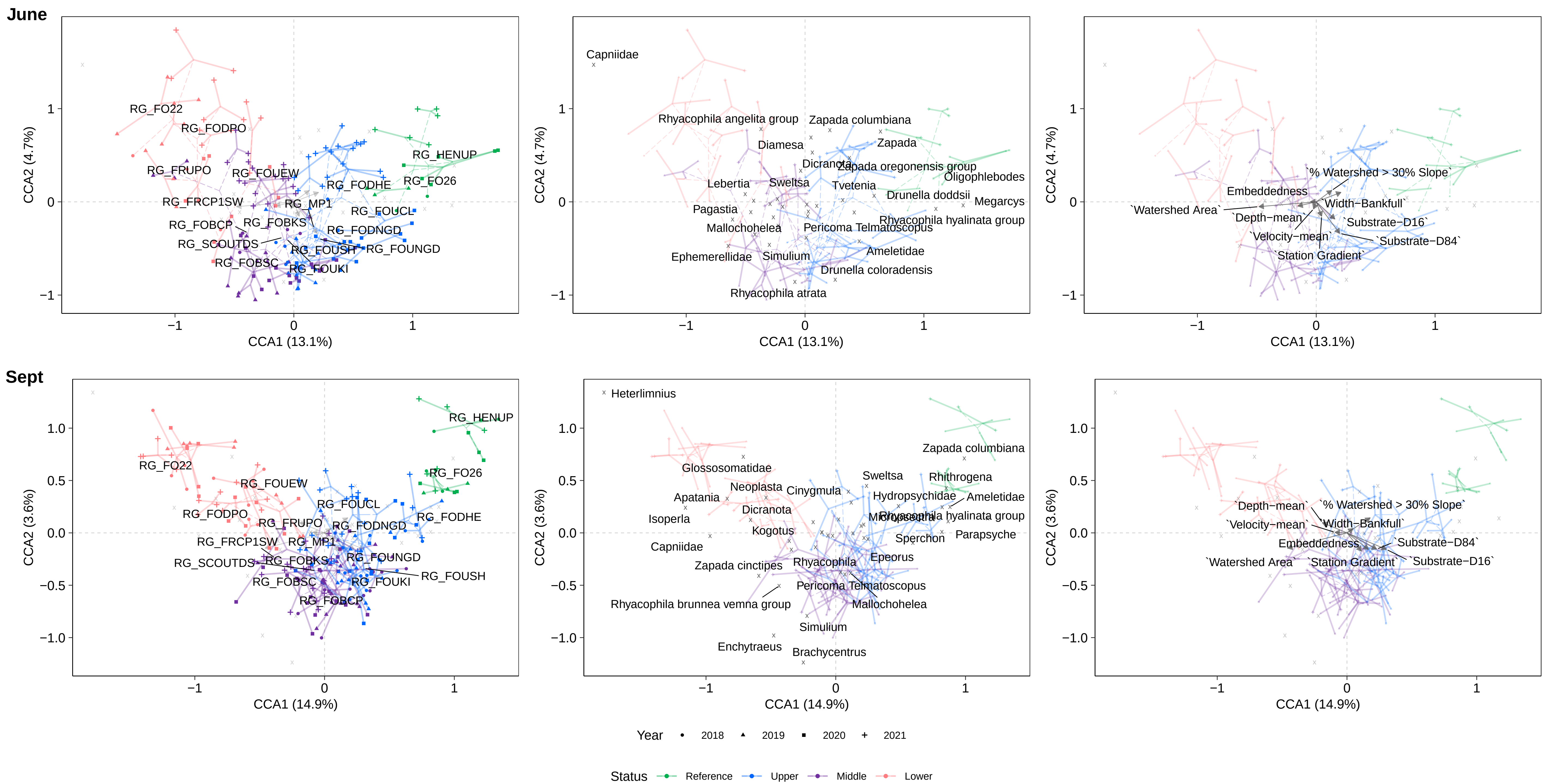


Figure F.10: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

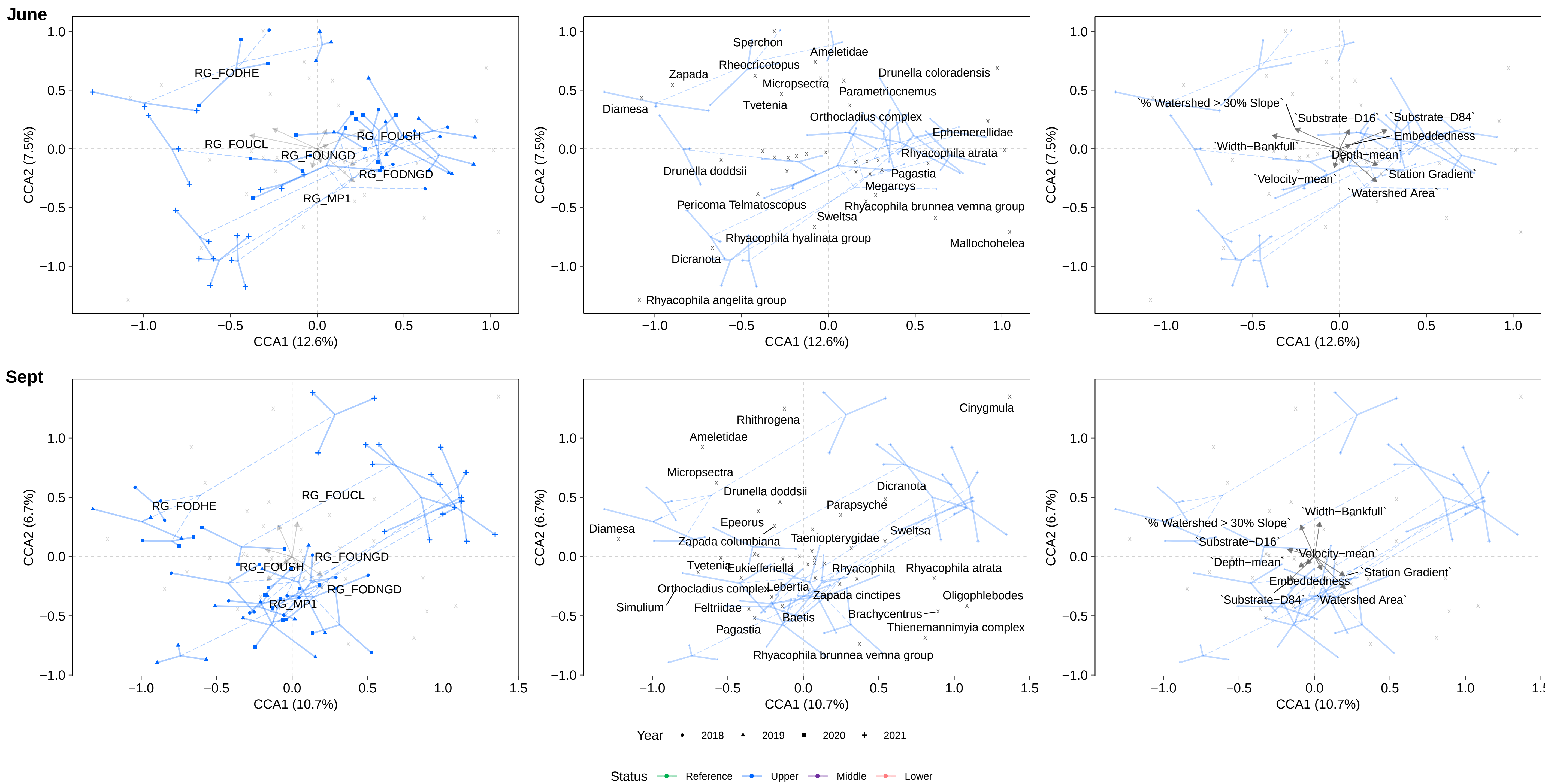


Figure F.10: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

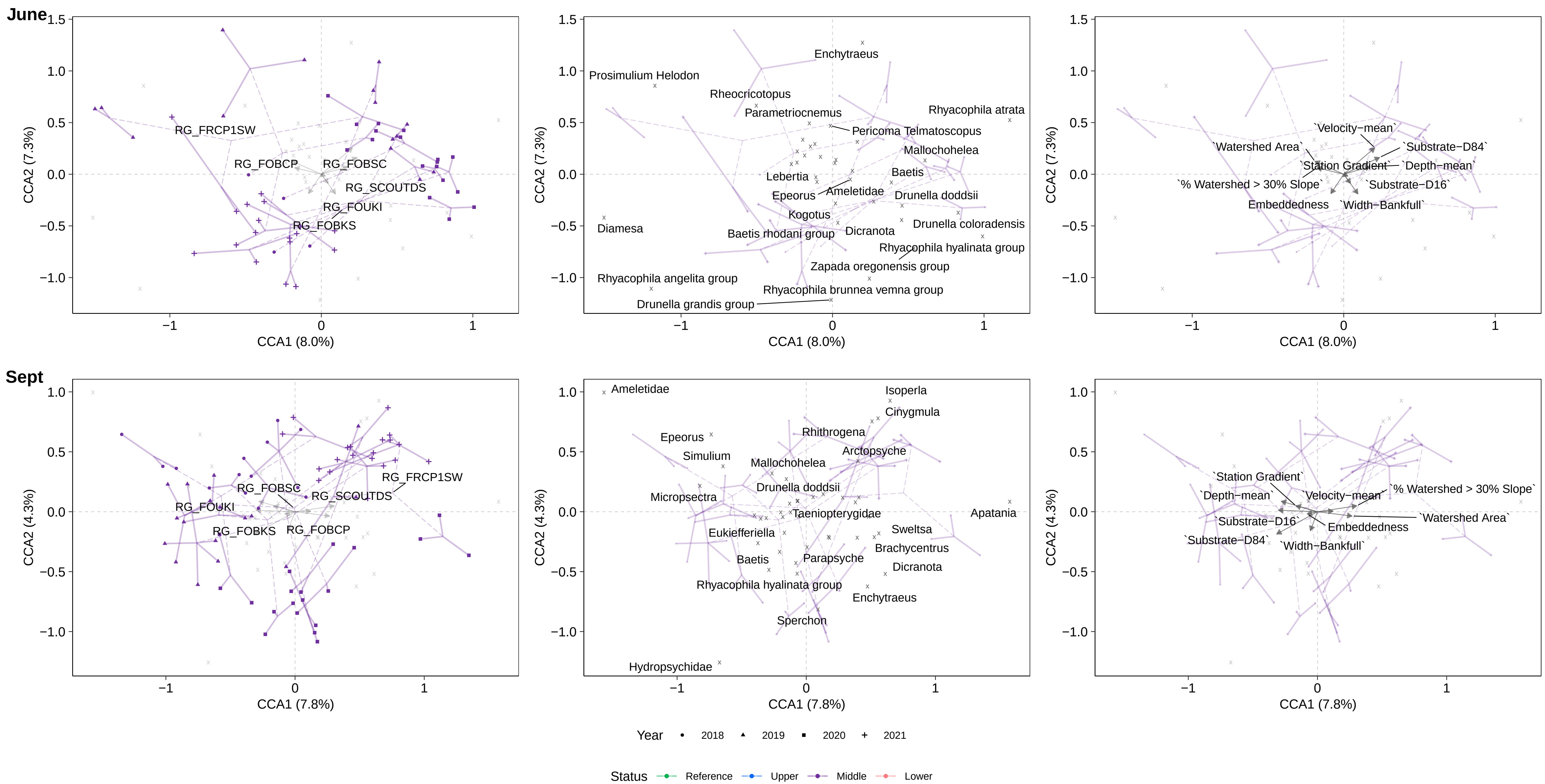


Figure F.10: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

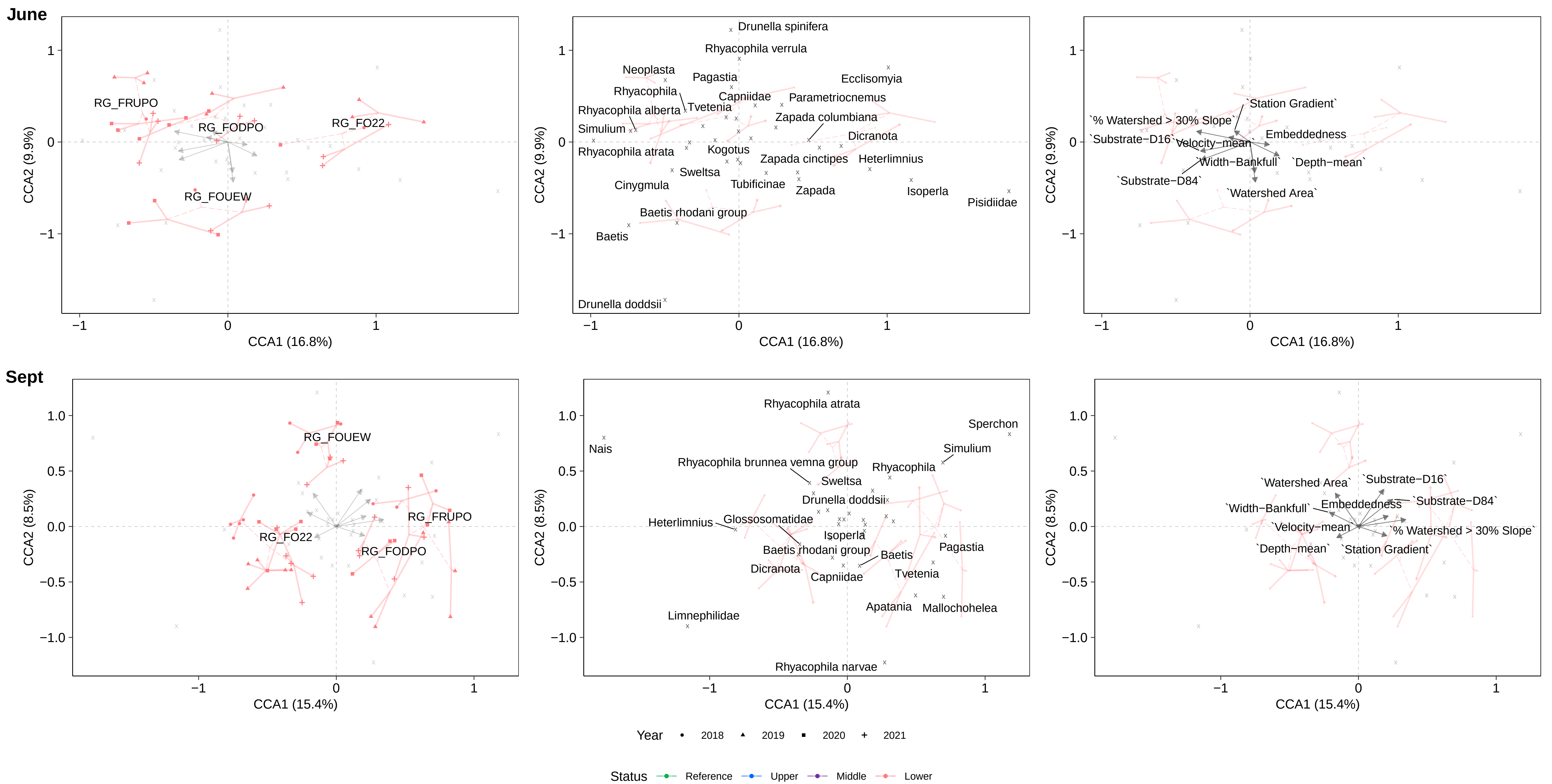


Figure F.10: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

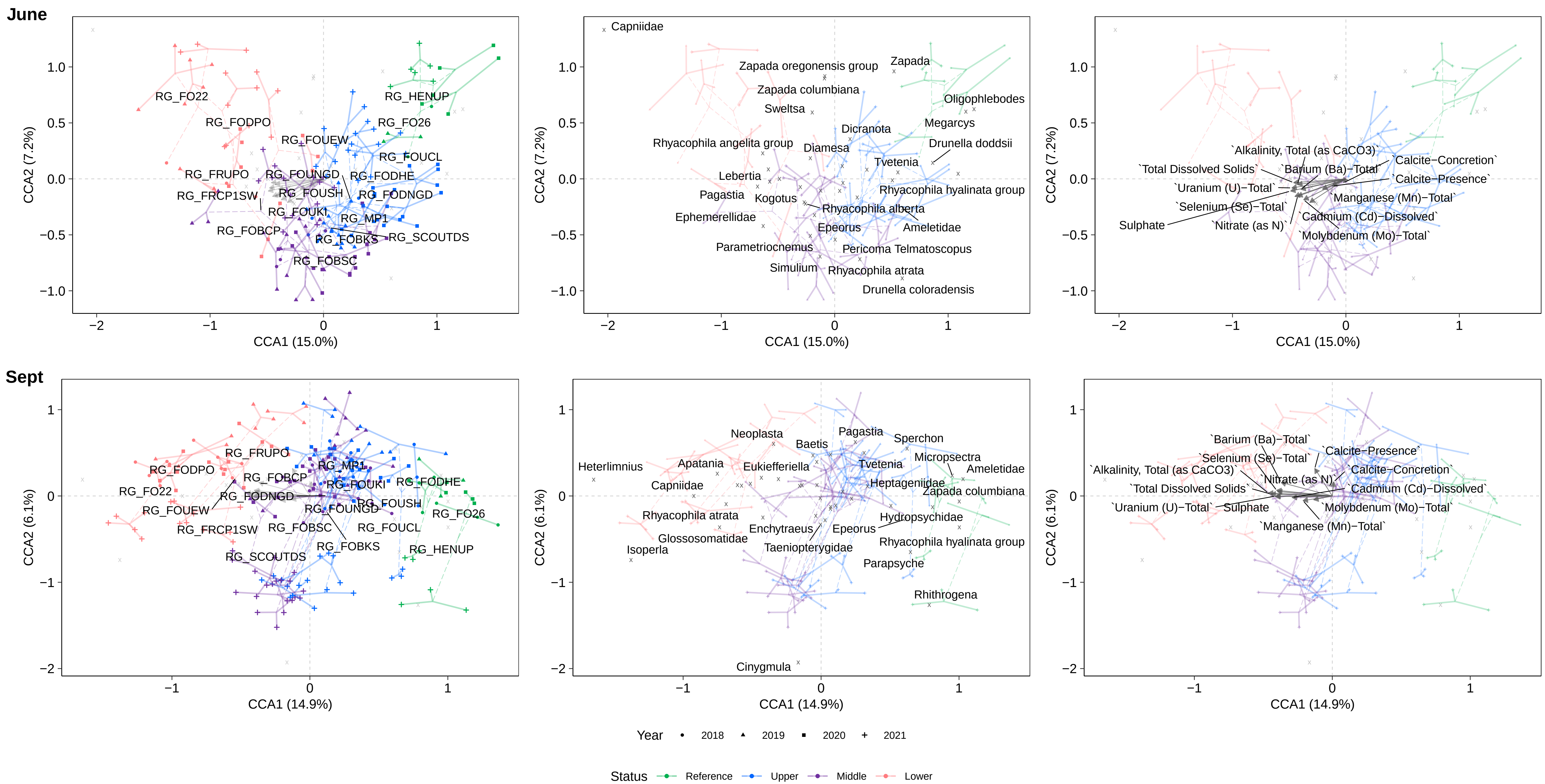


Figure F.11: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

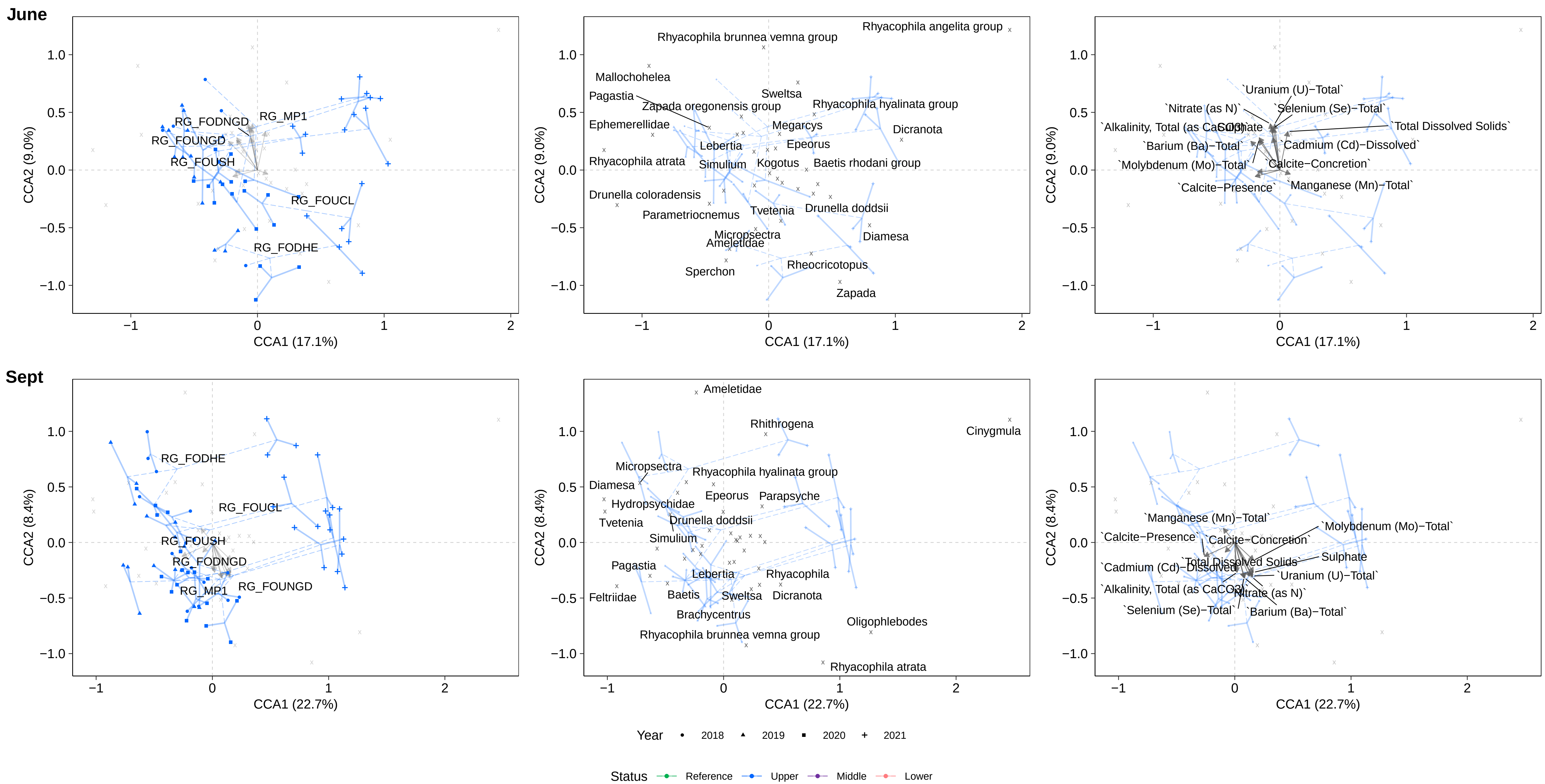


Figure F.11: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

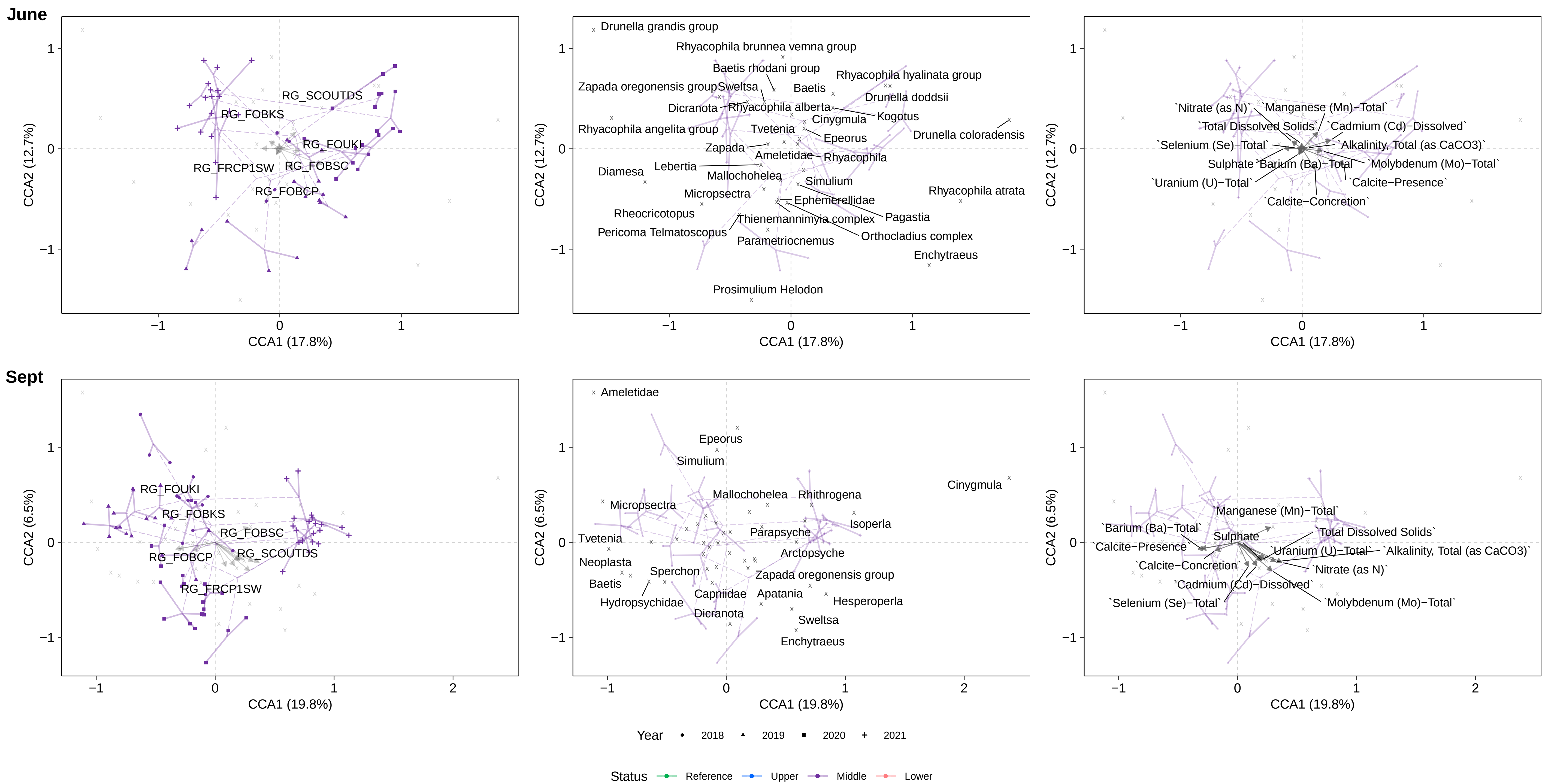


Figure F.11: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

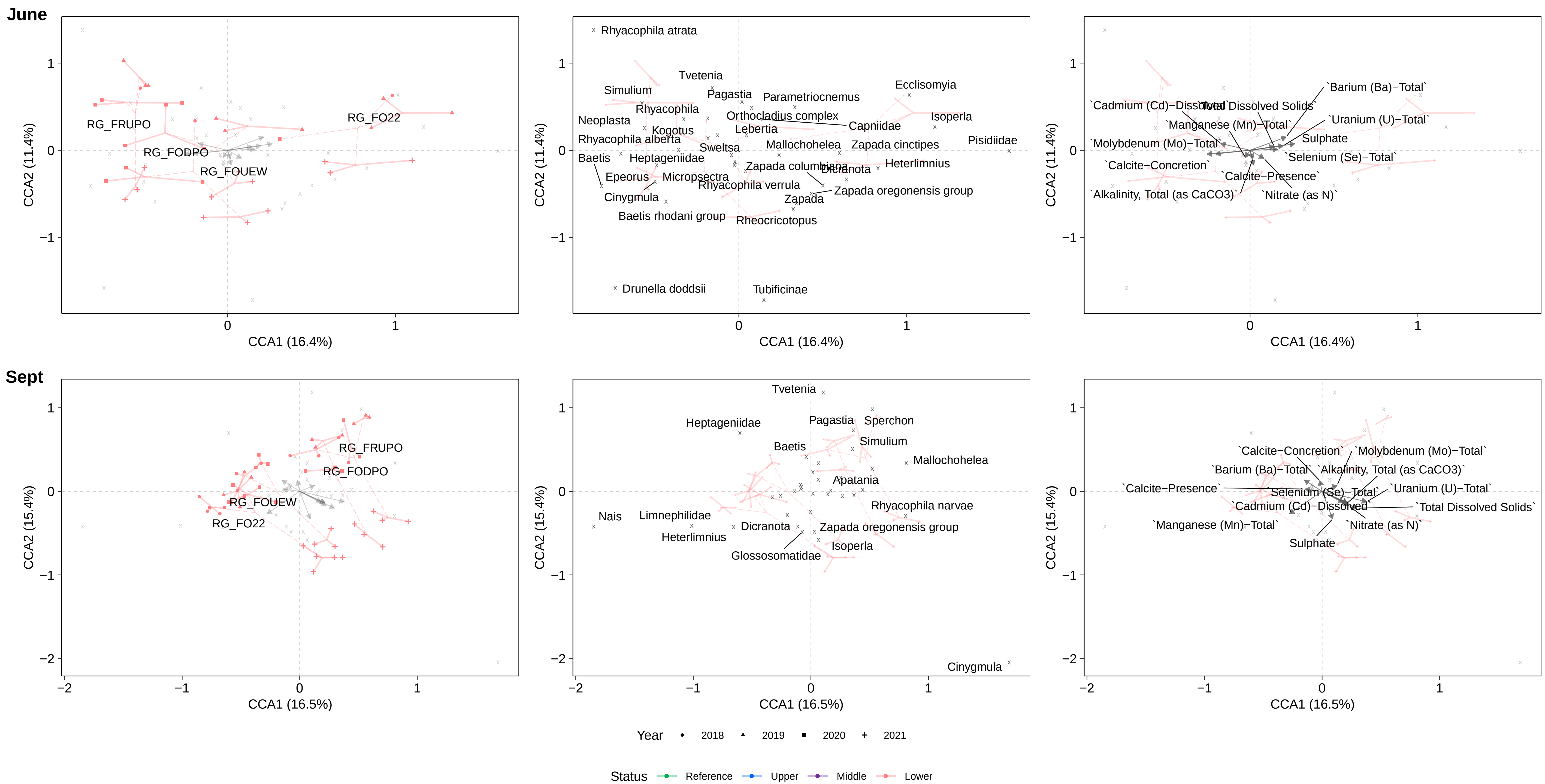


Figure F.11: Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

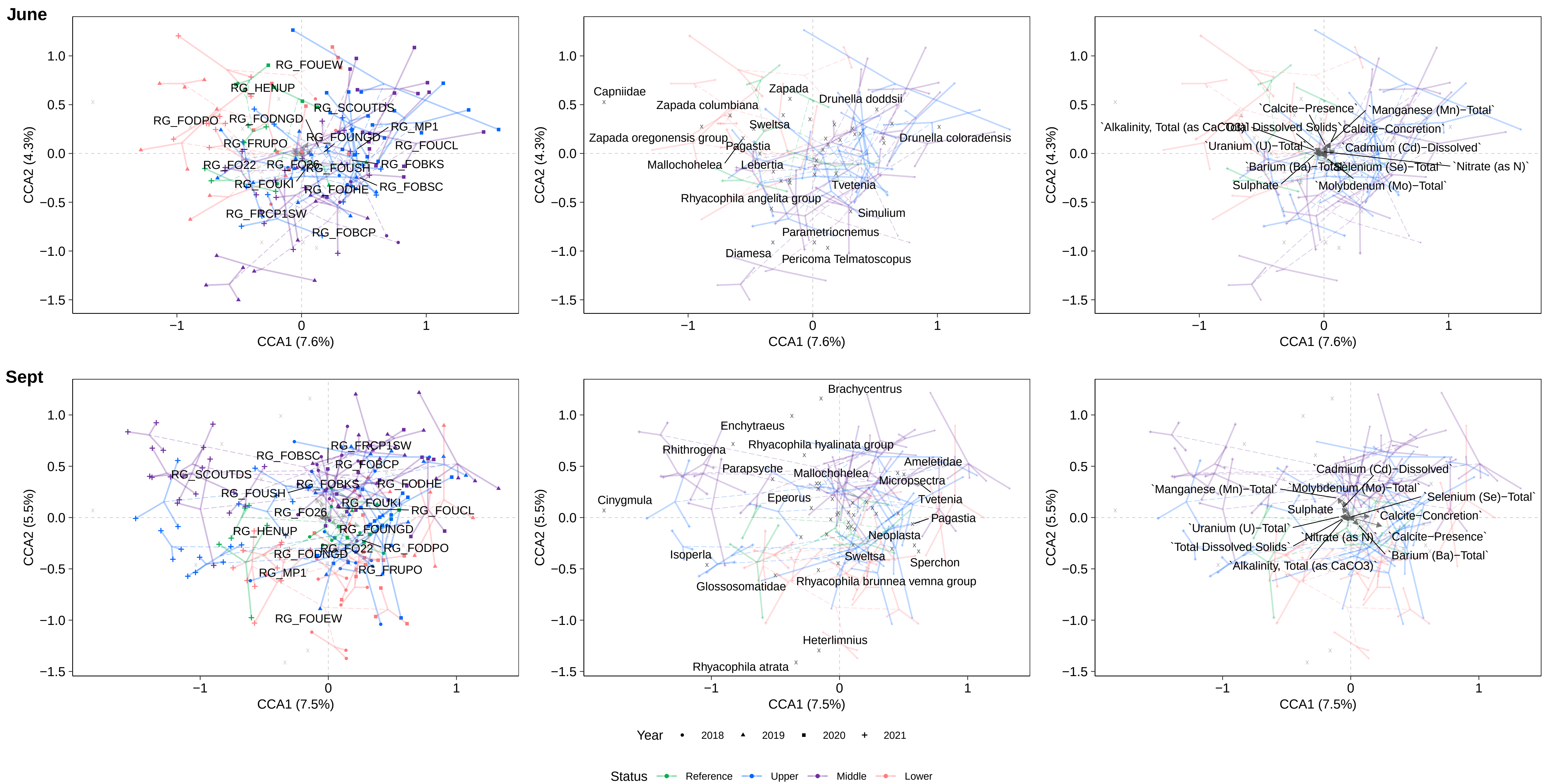


Figure F.12: Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables After Controlling for Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

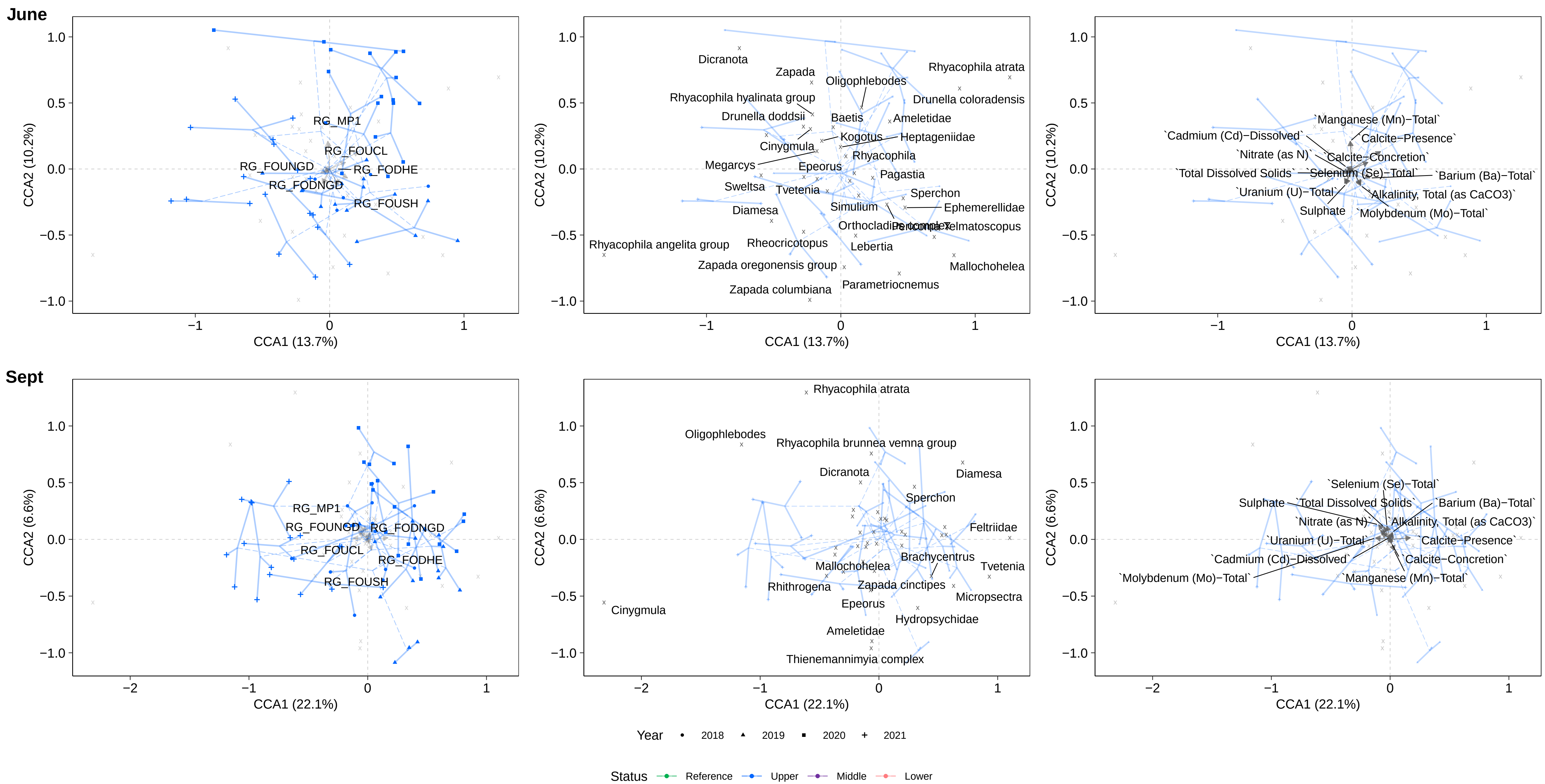


Figure F.12: Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables After Controlling for Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

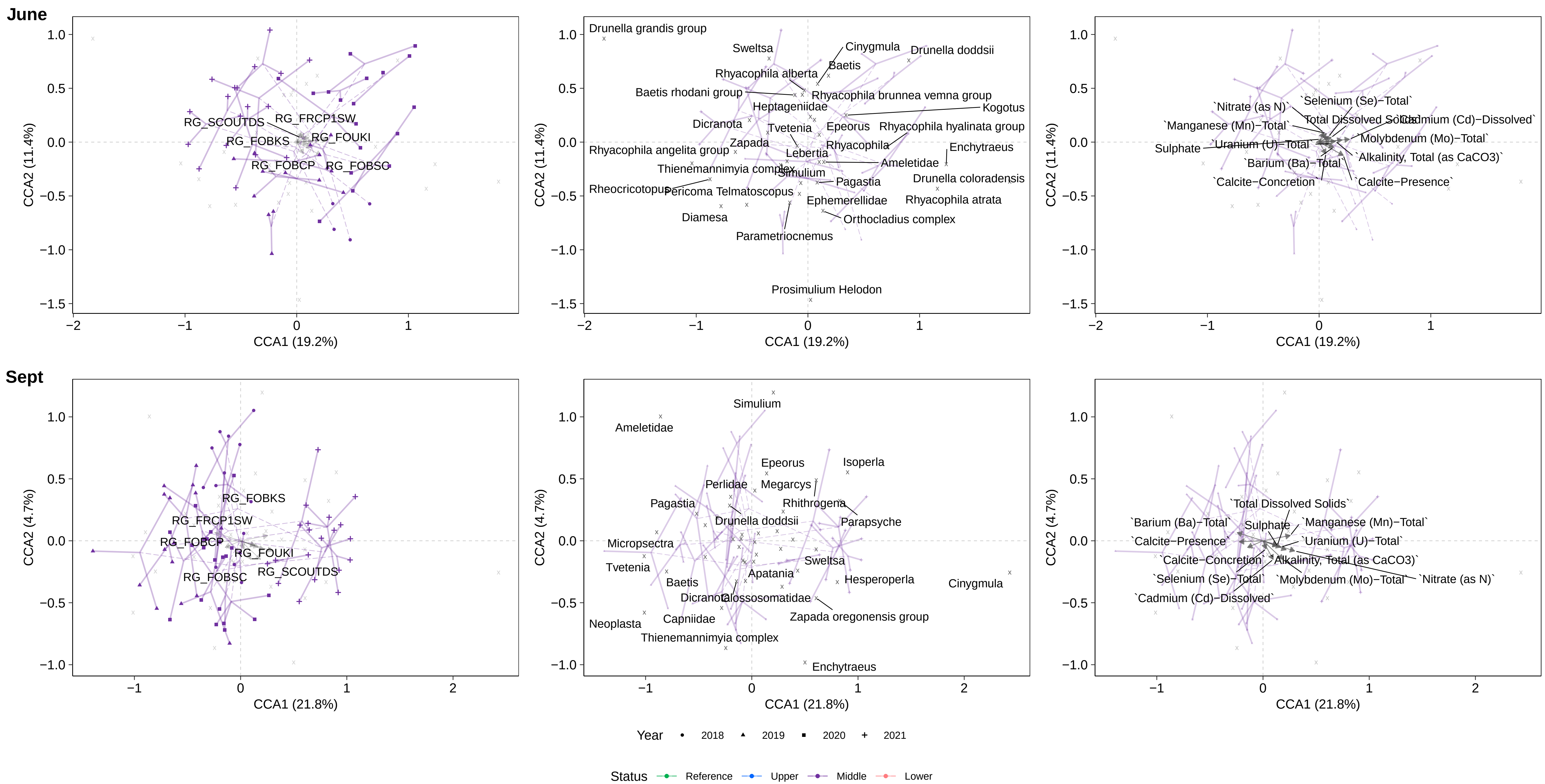


Figure F.12: Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables After Controlling for Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

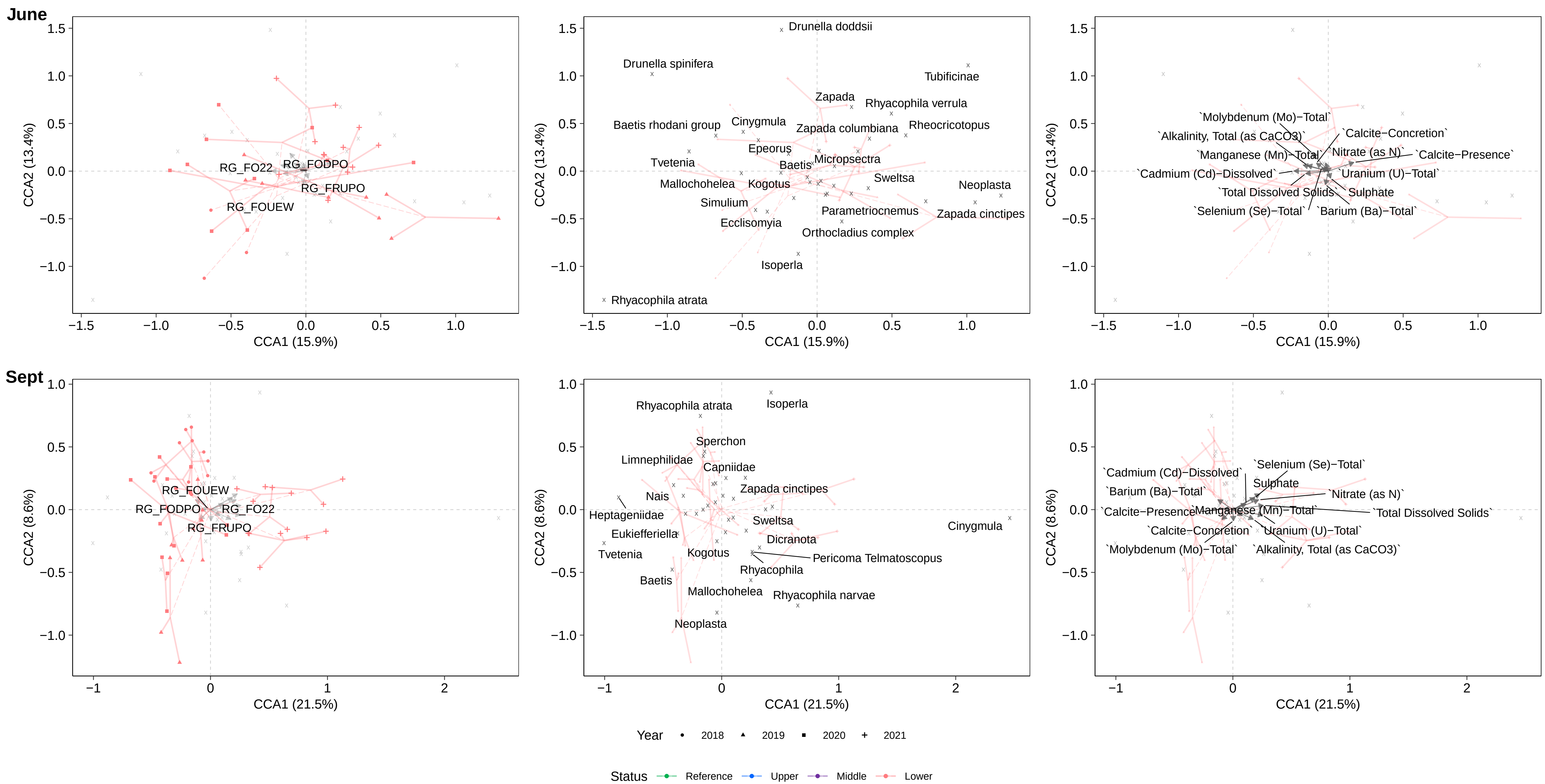


Figure F.12: Partial Canonical Correspondence Analysis of Benthic Invertebrate Communities in June and September Constrained by Water Chemistry and Calcite Variables After Controlling for Habitat Variables, FRO LAEMP, 2018 to 2021

Notes: Lowest Practical Level taxon abundances were ln(x+1) transformed prior to analysis. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Mine−exposed areas included in the FRO LAEMP were divided into three sections from upstream to downstream: Upper Study Area, Middle Study Area, and Lower Study Area.

TABLES

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	Abundance (# organisms/ 3 min kick)				Abundance Residuals				Richness (# taxa)			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.0327	-0.248	-0.152	-0.363	-0.151	-0.273	-0.257	-0.317	0.280	0.617	-0.341	-0.162
Calcite Presence	0.00929	-0.292	-0.222	-0.253	-0.0976	-0.322	-0.305	-0.213	0.319	0.632	-0.381	-0.198
Concretion Score	-0.254	-0.164	0.110	-0.309	-0.374	-0.242	0.124	-0.297	0.0373	0.599	-0.0849	0.0307
Embeddedness (%)	-0.232	-0.634	0.0731	-0.277	-0.321	-0.585	0.263	-0.170	-0.173	-0.257	-0.235	0.0864
D16	-0.168	0.0431	-0.166	-0.167	-0.314	-0.0431	-0.537	-0.0154	-0.0105	0.640	-0.494	0.0332
D84	-0.315	-0.494	-0.0407	-0.442	-0.363	-0.463	-0.00660	-0.310	-0.255	0.304	0.237	-0.0530
Water Velocity (m/s)	-0.0284	-0.333	0.592	0.125	0.0418	-0.285	0.582	0.213	0.0826	0.296	0.477	0.0927
Water Depth (cm)	-0.389	-0.565	0.0364	-0.666	-0.278	-0.456	-0.115	-0.736	-0.281	-0.297	0.0134	-0.689
Minimum Winter Temperature (°C)	0.0751	-0.0328	-0.0319	0.498	0.138	0.0197	-0.393	0.492	0.149	-0.187	0.0185	0.635
Maximum Summer Temperature (°C)	-0.171	0.0486	-0.0840	-0.223	-0.328	0.0365	0.0905	-0.451	0.0381	0.300	0.224	-0.173
Annual PC1	-0.351	-0.782	0.211	0.327	**-0.501**	-0.770	0.411	0.402	0.0269	-0.0309	-0.0245	0.258
Annual PC2	0.311	0.212	0.251	0.134	0.145	0.261	-0.0505	0.156	0.0391	-0.161	0.0714	-0.119
Annual Temperature (°C)	-0.282	-0.697	-0.233	0.371	-0.451	-0.709	-0.218	0.477	0.0803	0.222	-0.270	0.336
Annual Total Alkalinity as CaCO3 (mg/L)	-0.196	-0.770	-0.0528	0.112	-0.158	-0.794	0.222	0.389	0.200	0.432	-0.297	0.0552
Annual Nitrate (mg/L as N)	-0.116	-0.612	0.139	0.191	-0.0899	-0.648	0.279	0.455	0.199	0.228	-0.00669	0.0751
Annual Nitrite (mg/L s N)	-0.249	-0.612	0.482	0.213	**-0.479**	-0.636	0.376	0.0330	0.0689	-0.216	0.390	0.322
Annual Ammonia (mg/L as N)	-0.0453	-0.224	0.664	-0.253	-0.200	-0.188	0.525	-0.363	-0.0361	-0.685	0.604	-0.203
Annual Phosphorus (mg/L)	0.293	0.139	0.295	0.345	0.136	0.188	0.0242	0.336	0.120	-0.148	0.111	0.143
Annual Sulphate (mg/L)	-0.313	-0.721	-0.139	0.336	-0.302	-0.745	0.0901	0.371	0.0602	0.259	-0.256	0.298
Annual Total Dissolved Solids (mg/L)	-0.266	-0.733	-0.0418	0.380	-0.247	-0.782	0.218	0.508	0.130	0.358	-0.158	0.340
Annual Dissolved Aluminum (mg/L)	0.216	0.273	-0.207	0.00880	0.182	0.321	-0.169	-0.0418	-0.0752	-0.154	-0.236	-0.313
Annual Total Antimony (mg/L)	-0.403	-0.770	0.202	0.257	**-0.585**	-0.794	0.459	0.323	0.0122	0.173	0.140	0.132
Annual Total Arsenic (mg/L)	0.221	0.0788	0.486	0.604	0.121	0.115	0.393	0.600	0.108	-0.290	0.310	0.313
Annual Total Barium (mg/L)	-0.0895	-0.661	-0.260	-0.327	-0.124	-0.648	-0.301	-0.187	0.284	0.290	-0.105	-0.466
Annual Dissolved Cadmium (µg/L)	-0.221	-0.648	0.233	0.521	-0.370	-0.709	0.499	0.631	0.176	0.235	0.169	0.369
Annual Total Chromium (mg/L)	0.132	-0.127	-0.136	-0.0330	0.0515	-0.0909	-0.222	0.0637	-0.0402	-0.0247	-0.504	-0.214
Annual Total Cobalt (µg/L)	-0.197	-0.394	0.389	-0.169	-0.287	-0.370	0.336	0.0857	-0.0540	-0.235	0.386	-0.393
Annual Total Copper (mg/L)	0.262	0.309	0.235	-0.0596	0.149	0.333	0.0945	-0.00221	0.0939	-0.204	0.111	-0.310
Annual Total Iron (mg/L)	0.106	0.0545	0.235	0.125	-0.0495	0.0909	-0.0462	0.152	0.115	-0.00617	0.169	0.0243
Annual Total Lead (mg/L)	0.159	0.139	0.275	0.0505	0.0155	0.176	0.0418	0.0374	-0.00792	-0.142	0.107	-0.223
Annual Total Lithium (mg/L)	-0.313	-0.673	0.117	0.156	-0.370	-0.685	0.262	0.380	0.0704	0.111	0.0780	0.115
Annual Total Manganese (mg/L)	-0.239	-0.176	0.119	0.0110	-0.362	-0.139	-0.0813	-0.00659	-0.105	-0.179	0.256	-0.225
Annual Total Molybdenum (mg/L)	-0.339	-0.709	0.299	0.420	**-0.519**	-0.745	0.618	0.345	0.126	0.228	0.308	0.547
Annual Total Nickel (µg/L)	-0.401	-0.806	-0.0220	0.437	**-0.563**	-0.830	0.297	0.508	0.00817	0.0494	-0.00892	0.276
Annual Total Selenium (µg/L)	-0.246	-0.552	-0.0814	0.516	-0.231	-0.612	0.178	0.626	0.128	0.407	-0.196	0.400
Annual Total Thallium (mg/L)	-0.0646	-0.285	-0.275	0.475	-0.190	-0.224	-0.130	0.563	-0.0289	0.0185	-0.375	0.224
Annual Total Uranium (mg/L)	-0.348	-0.697	-0.110	0.262	-0.312	-0.745	0.143	0.495	0.0408	0.346	-0.183	0.135
Annual Total Zinc (mg/L)	-0.0585	-0.212	0.350	0.128	-0.235	-0.224	0.433	0.128	-0.0179	0.377	0.183	-0.103

Bold P-value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	Richness Residuals				% Ephemeroptera				% Ephemeroptera Residuals			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	0.123	0.648	-0.253	-0.121	-0.436	-0.430	0.0945	0.106	-0.446	-0.624	0.0901	-0.112
Calcite Presence	0.153	0.632	-0.301	-0.172	-0.432	-0.498	0.108	0.0990	-0.434	-0.687	0.0901	0.0154
Concreted Score	0.0135	0.683	0.00452	0.0765	-0.202	-0.303	-0.307	0.0520	-0.238	-0.398	-0.332	-0.229
Embeddedness (%)	-0.149	-0.357	-0.279	0.101	0.335	-0.160	0.0243	-0.118	0.341	-0.215	-0.00221	-0.241
D16	0.1000	0.646	-0.460	0.108	0.389	-0.123	0.411	0.335	0.352	-0.142	0.462	-0.167
D84	0.0703	0.311	0.295	0.0549	**0.608**	-0.585	0.356	0.341	**0.556**	-0.756	0.249	-0.152
Water Velocity (m/s)	0.147	0.188	0.367	0.0330	-0.0990	-0.612	-0.125	0.156	-0.134	-0.576	-0.156	0.0857
Water Depth (cm)	-0.293	-0.365	-0.0265	-0.662	-0.255	-0.225	0.135	0.327	-0.244	-0.316	0.269	0.385
Minimum Winter Temperature (°C)	0.126	-0.0852	0.0591	0.639	-0.449	0.229	0.489	-0.329	**-0.473**	-0.0459	0.496	-0.368
Maximum Summer Temperature (°C)	0.0186	0.340	0.170	-0.204	0.259	0.164	0.461	0.518	0.266	0.00608	0.258	0.701
Annual PC1	-0.203	-0.164	-0.0242	0.174	**-0.470**	-0.648	**-0.859**	-0.305	-0.461	-0.612	**-0.793**	-0.301
Annual PC2	0.00555	-0.0424	0.152	-0.196	0.277	0.103	-0.00659	-0.248	0.290	-0.0545	0.0154	-0.0637
Annual Temperature (°C)	-0.0748	0.115	-0.310	0.305	-0.166	-0.261	0.319	-0.213	-0.160	-0.273	0.297	-0.292
Annual Total Alkalinity as CaCO3 (mg/L)	-0.0985	0.273	-0.297	0.0242	**-0.924**	-0.697	**-0.807**	-0.420	**-0.924**	-0.624	-0.723	-0.626
Annual Nitrate (mg/L as N)	-0.0773	0.0545	-0.0110	0.0505	**-0.880**	-0.576	-0.684	-0.437	**-0.875**	-0.430	-0.626	-0.565
Annual Nitrite (mg/L s N)	-0.0828	-0.285	0.376	0.266	-0.187	-0.358	-0.288	0.196	-0.175	-0.321	-0.222	0.323
Annual Ammonia (mg/L as N)	-0.137	-0.661	0.622	-0.156	0.100	0.212	-0.398	0.0901	0.124	0.164	-0.424	0.288
Annual Phosphorus (mg/L)	0.00993	-0.0545	0.187	0.0769	-0.0342	0.0303	-0.226	-0.565	-0.0108	-0.0788	-0.204	-0.380
Annual Sulphate (mg/L)	-0.195	0.0424	-0.248	0.275	**-0.792**	-0.648	-0.719	-0.560	**-0.776**	-0.491	-0.613	-0.332
Annual Total Dissolved Solids (mg/L)	-0.135	0.152	-0.134	0.270	**-0.831**	-0.770	-0.754	-0.644	**-0.815**	-0.624	-0.688	-0.473
Annual Dissolved Aluminum (mg/L)	-0.0208	-0.0424	-0.174	-0.359	0.417	0.297	0.191	0.139	0.415	0.0303	0.0813	0.242
Annual Total Antimony (mg/L)	-0.184	0.0182	0.138	0.0418	-0.344	-0.733	**-0.798**	-0.0725	-0.337	-0.636	-0.776	-0.240
Annual Total Arsenic (mg/L)	0.0118	-0.261	0.385	0.231	-0.143	-0.0667	-0.415	-0.138	-0.135	-0.0667	-0.371	-0.0505
Annual Total Barium (mg/L)	0.0170	0.236	-0.0286	-0.367	**-0.792**	-0.491	0.218	0.481	**-0.797**	-0.600	0.209	0.305
Annual Dissolved Cadmium (µg/L)	-0.0353	0.139	0.169	0.301	**-0.496**	-0.455	-0.631	-0.209	**-0.506**	-0.430	**-0.793**	-0.314
Annual Total Chromium (mg/L)	-0.0986	0.0182	-0.521	-0.270	0.0994	-0.115	-0.0286	-0.174	0.107	-0.321	0.0418	-0.0286
Annual Total Cobalt (µg/L)	-0.197	-0.321	0.345	-0.464	-0.250	-0.394	-0.380	-0.275	-0.255	-0.273	-0.332	-0.349
Annual Total Copper (mg/L)	0.00908	-0.0303	0.226	-0.377	0.0572	0.176	-0.226	-0.113	0.0715	0.00606	-0.226	0.0728
Annual Total Iron (mg/L)	0.0112	0.0909	0.253	-0.0418	-0.159	-0.0424	-0.0198	-0.354	-0.157	-0.164	-0.00220	-0.262
Annual Total Lead (mg/L)	-0.124	-0.0303	0.209	-0.301	-0.0641	0.0667	-0.213	-0.147	-0.0472	-0.0545	-0.178	0.0681
Annual Total Lithium (mg/L)	-0.206	-0.0667	0.0242	0.0901	**-0.604**	-0.648	-0.653	-0.503	**-0.591**	-0.479	-0.560	-0.582
Annual Total Manganese (mg/L)	-0.236	-0.248	0.262	-0.305	-0.182	-0.358	0.169	-0.222	-0.170	-0.248	0.248	-0.0418
Annual Total Molybdenum (mg/L)	-0.0829	0.0545	0.284	0.490	-0.413	-0.758	**-0.886**	-0.288	-0.402	-0.636	**-0.877**	-0.314
Annual Total Nickel (µg/L)	-0.185	-0.0788	-0.0374	0.196	-0.361	-0.636	**-0.829**	-0.178	-0.357	-0.588	-0.754	-0.301
Annual Total Selenium (µg/L)	-0.136	0.285	-0.182	0.341	**-0.812**	-0.624	-0.732	-0.464	**-0.807**	-0.552	-0.670	-0.398
Annual Total Thallium (mg/L)	-0.0836	0.0545	-0.363	0.161	0.0314	-0.164	-0.613	-0.351	0.0234	-0.309	-0.530	-0.258
Annual Total Uranium (mg/L)	-0.202	0.176	-0.174	0.0681	**-0.771**	-0.697	-0.719	-0.525	**-0.773**	-0.552	-0.640	-0.587
Annual Total Zinc (mg/L)	-0.0679	0.394	0.222	-0.187	-0.0229	-0.515	-0.631	-0.0770	-0.0284	-0.564	-0.723	0.117

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: **Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021**

Parameter	Correlation Rho											
	% Plecoptera				% Trichoptera				% EPT			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	0.333	0.867	0.358	-0.0286	0.0421	0.0788	-0.0110	-0.222	-0.175	-0.418	0.288	0.211
Calcite Presence	0.296	**0.875**	0.288	-0.0110	0.0452	0.0729	0.0286	-0.334	-0.176	-0.456	0.196	0.222
Concreted Score	0.194	0.528	**0.778**	0.0336	0.0682	0.164	0.260	0.0581	-0.272	-0.398	0.579	0.125
Embeddedness (%)	-0.385	0.0985	-0.0376	0.299	0.0257	0.720	-0.128	-0.194	-0.0135	0.0615	-0.0420	0.337
D16	-0.426	0.474	-0.354	0.110	-0.310	-0.529	-0.504	-0.161	-0.120	-0.240	-0.387	0.295
D84	**-0.525**	0.671	-0.246	0.125	-0.115	0.335	0.238	-0.00220	0.108	-0.396	0.139	0.424
Water Velocity (m/s)	0.111	0.673	-0.0769	-0.121	-0.00222	0.467	-0.235	-0.0286	-0.152	-0.527	-0.169	-0.174
Water Depth (cm)	0.212	0.231	-0.329	-0.631	0.0824	0.310	-0.670	0.569	-0.147	0.0122	-0.479	-0.345
Minimum Winter Temperature (°C)	**0.459**	0.0328	-0.680	0.739	-0.110	-0.216	-0.209	-0.386	0.0875	0.308	-0.437	0.527
Maximum Summer Temperature (°C)	**-0.498**	0.450	-0.611	-0.529	0.0461	-0.207	0.166	0.482	-0.358	0.0912	-0.236	-0.367
Annual PC1	0.172	0.285	0.705	0.358	0.172	**0.915**	0.160	-0.319	**-0.647**	-0.358	0.182	-0.108
Annual PC2	-0.313	0.115	-0.0110	-0.240	-0.0270	-0.139	0.0593	-0.165	-0.0422	0.248	-0.0374	-0.591
Annual Temperature (°C)	-0.125	0.491	-0.692	0.749	-0.0887	0.418	-0.116	-0.464	-0.433	-0.164	-0.411	0.547
Annual Total Alkalinity as CaCO3 (mg/L)	**0.770**	0.588	**0.842**	0.684	0.170	0.624	-0.0462	-0.218	-0.419	-0.648	0.301	0.380
Annual Nitrate (mg/L as N)	**0.699**	0.224	0.516	0.640	0.139	0.770	0.297	-0.262	-0.348	-0.539	0.301	0.266
Annual Nitrite (mg/L s N)	-0.164	-0.115	-0.121	-0.116	0.114	0.636	0.204	0.112	**-0.560**	-0.127	-0.125	-0.240
Annual Ammonia (mg/L as N)	-0.293	-0.527	0.143	-0.0462	0.162	0.164	0.244	0.336	-0.141	0.479	-0.0901	0.222
Annual Phosphorus (mg/L)	0.0297	0.152	0.248	0.204	0.0559	0.0788	0.226	-0.178	-0.0308	0.152	0.108	-0.231
Annual Sulphate (mg/L)	**0.654**	0.345	**0.846**	0.688	0.0794	0.733	0.0505	-0.116	-0.444	-0.576	0.358	0.455
Annual Total Dissolved Solids (mg/L)	**0.684**	0.382	**0.916**	0.684	0.0809	0.758	0.103	-0.336	-0.446	-0.709	0.393	0.262
Annual Dissolved Aluminum (mg/L)	-0.373	-0.0424	0.0198	-0.416	-0.172	-0.527	-0.0681	-0.119	0.0995	0.345	0.0110	-0.392
Annual Total Antimony (mg/L)	0.0532	0.345	**0.793**	0.226	0.145	0.842	0.248	-0.244	**-0.632**	-0.527	0.380	-0.0154
Annual Total Arsenic (mg/L)	0.0953	-0.115	0.473	0.200	-0.0438	0.297	0.103	-0.574	-0.197	0.0545	0.209	-0.235
Annual Total Barium (mg/L)	**0.611**	0.661	-0.200	-0.103	0.303	0.600	0.560	-0.231	-0.299	-0.309	0.354	0.0857
Annual Dissolved Cadmium (µg/L)	0.207	0.273	0.380	0.604	0.0604	0.697	0.451	-0.657	**-0.586**	-0.358	0.0505	0.240
Annual Total Chromium (mg/L)	-0.128	0.345	-0.130	-0.103	-0.197	0.0667	-0.442	-0.310	-0.0876	0.139	-0.349	-0.345
Annual Total Cobalt (µg/L)	0.00537	-0.00606	-0.00659	0.0286	0.193	0.636	0.345	-0.253	-0.413	-0.176	-0.0549	-0.279
Annual Total Copper (mg/L)	-0.107	-0.127	0.319	-0.311	-0.0935	-0.236	0.160	-0.152	-0.124	0.321	0.191	-0.611
Annual Total Iron (mg/L)	0.0514	0.309	-0.0286	-0.0637	0.0817	0.152	0.305	-0.138	-0.273	0.103	-0.0286	-0.459
Annual Total Lead (mg/L)	0.00999	0.127	0.284	-0.358	0.0817	0.0909	0.165	-0.0242	-0.204	0.212	0.0549	-0.618
Annual Total Lithium (mg/L)	0.297	0.200	0.244	0.684	0.186	0.879	0.240	-0.226	**-0.535**	-0.539	-0.0110	0.305
Annual Total Manganese (mg/L)	-0.0918	0.0424	-0.429	-0.393	0.221	0.503	0.213	0.116	**-0.542**	-0.212	-0.121	-0.714
Annual Total Molybdenum (mg/L)	0.103	0.273	0.662	0.284	0.176	0.794	0.279	0.0989	**-0.663**	-0.612	0.178	0.0198
Annual Total Nickel (µg/L)	0.0897	0.236	**0.798**	0.389	0.119	0.879	0.0945	-0.503	**-0.622**	-0.418	0.178	0.0330
Annual Total Selenium (µg/L)	**0.694**	0.370	**0.899**	0.635	0.0736	0.697	0.103	-0.297	-0.435	-0.600	0.349	0.213
Annual Total Thallium (mg/L)	-0.0617	0.527	0.626	0.272	-0.168	0.224	-0.108	-0.629	-0.239	0.0545	-0.0549	-0.166
Annual Total Uranium (mg/L)	**0.624**	0.345	**0.881**	0.666	0.0636	0.721	0.108	-0.297	**-0.489**	-0.648	0.380	0.222
Annual Total Zinc (mg/L)	-0.0920	0.600	0.508	-0.209	0.0685	0.430	0.415	-0.253	-0.329	-0.418	0.196	-0.422

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	% EPT Residuals				% Chironomidae				Ephemeroptera Abundance (#/3 min kick)			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.187	-0.236	0.297	0.112	0.265	0.576	0.591	0.240	-0.363	-0.321	-0.191	-0.183
Calcite Presence	-0.187	-0.280	0.204	0.132	0.275	0.608	0.547	0.0638	-0.352	-0.365	-0.244	-0.0506
Concreted Score	-0.282	-0.303	0.531	0.0459	0.116	0.320	0.509	0.517	-0.241	-0.320	-0.185	-0.205
Embeddedness (%)	0.0165	0.234	-0.0885	0.284	-0.210	-0.492	0.0730	0.603	0.220	-0.554	0.288	-0.201
D16	-0.0893	-0.234	-0.325	0.324	0.218	0.363	0.442	0.430	0.202	0	-0.0530	-0.0419
D84	0.120	-0.341	0.231	0.411	0.168	0.415	0.422	0.556	0.387	-0.433	0.365	-0.231
Water Velocity (m/s)	-0.140	-0.406	-0.174	-0.138	0.321	0.345	0.00659	0.587	-0.0248	-0.345	0.587	0.0813
Water Depth (cm)	-0.169	0.0608	-0.467	-0.411	0.0227	-0.213	0.218	-0.301	-0.431	-0.340	0.0992	-0.398
Minimum Winter Temperature (°C)	0.0823	0.334	-0.307	0.556	0.266	0.0852	0.102	0.381	-0.333	0.125	0.252	0.287
Maximum Summer Temperature (°C)	-0.317	0.298	-0.179	-0.412	-0.266	0.152	-0.258	-0.208	0.192	0.0304	0.333	0.150
Annual PC1	**-0.639**	-0.248	0.0637	-0.0725	-0.355	-0.224	-0.323	0.253	**-0.477**	-0.830	-0.226	-0.00659
Annual PC2	-0.0279	0.285	-0.0286	-0.560	-0.105	0.297	-0.200	-0.244	0.342	0.188	-0.0374	-0.134
Annual Temperature (°C)	-0.397	0.0424	-0.385	0.556	-0.337	-0.394	-0.587	0.327	-0.214	-0.661	0.0418	0.240
Annual Total Alkalinity as CaCO3 (mg/L)	-0.424	-0.539	0.178	0.437	-0.0457	-0.0788	0.0286	0.341	**-0.820**	-0.770	-0.429	-0.270
Annual Nitrate (mg/L as N)	-0.371	-0.455	0.231	0.345	-0.100	-0.224	-0.275	0.134	**-0.742**	-0.685	-0.156	-0.182
Annual Nitrite (mg/L s N)	**-0.547**	-0.0909	-0.121	-0.248	-0.364	-0.418	-0.341	0.0945	-0.184	-0.709	0.433	0.319
Annual Ammonia (mg/L as N)	-0.131	0.442	-0.0857	0.169	-0.288	-0.552	-0.0330	-0.279	0.123	-0.188	0.429	-0.0418
Annual Phosphorus (mg/L)	-0.0224	0.236	0.0989	-0.200	-0.136	0.212	-0.125	-0.332	0.0685	0.0667	-0.0901	-0.130
Annual Sulphate (mg/L)	**-0.468**	-0.479	0.240	0.477	-0.247	-0.236	-0.00220	0.0286	**-0.747**	-0.745	-0.569	0.0593
Annual Total Dissolved Solids (mg/L)	**-0.466**	-0.624	0.288	0.284	-0.154	-0.103	0.147	0.262	**-0.742**	-0.818	-0.402	0.0242
Annual Dissolved Aluminum (mg/L)	0.108	0.297	0.0549	-0.418	0.0841	0.358	0.468	-0.326	0.432	0.430	0.00220	0.0880
Annual Total Antimony (mg/L)	**-0.618**	-0.442	0.292	-0.0374	-0.351	-0.164	0.0462	0.266	-0.383	-0.855	-0.108	0.0681
Annual Total Arsenic (mg/L)	-0.196	0.0909	0.165	-0.209	-0.0985	0.0545	-0.0945	0.0901	0.0223	-0.0424	0.103	0.411
Annual Total Barium (mg/L)	-0.306	-0.127	0.385	0.108	-0.0554	0.0182	-0.486	-0.209	**-0.684**	-0.636	-0.244	0.0725
Annual Dissolved Cadmium (µg/L)	**-0.569**	-0.212	0.00659	0.248	-0.352	-0.261	-0.323	0.336	-0.406	-0.770	0.0462	0.332
Annual Total Chromium (mg/L)	-0.0731	0.248	-0.393	-0.341	-0.0150	0.273	-0.424	-0.121	0.111	-0.115	-0.270	-0.130
Annual Total Cobalt (µg/L)	-0.418	-0.139	-0.0901	-0.297	-0.265	-0.236	-0.631	0.310	-0.245	-0.491	0.112	-0.433
Annual Total Copper (mg/L)	-0.129	0.236	0.191	-0.598	-0.0200	0.309	-0.0637	-0.325	0.162	0.297	-0.0637	-0.148
Annual Total Iron (mg/L)	-0.265	0.212	-0.0154	-0.437	-0.150	0.236	-0.257	-0.160	-0.0953	-0.0182	-0.0418	-0.222
Annual Total Lead (mg/L)	-0.214	0.297	0.0418	-0.591	-0.130	0.176	-0.0549	-0.301	-0.0173	0.0545	-0.103	-0.160
Annual Total Lithium (mg/L)	**-0.534**	-0.479	-0.0857	0.363	-0.417	-0.261	-0.547	0.138	**-0.597**	-0.733	-0.160	-0.222
Annual Total Manganese (mg/L)	**-0.531**	-0.176	-0.103	-0.684	-0.456	-0.00606	-0.530	-0.429	-0.241	-0.285	0.0418	-0.297
Annual Total Molybdenum (mg/L)	**-0.650**	-0.576	0.0813	0.0374	-0.343	-0.0909	-0.235	0.284	-0.397	-0.782	-0.0286	0.125
Annual Total Nickel (µg/L)	**-0.613**	-0.309	0.0593	0.0110	-0.363	-0.285	-0.0242	0.253	-0.403	**-0.903**	-0.385	0.244
Annual Total Selenium (µg/L)	-0.452	-0.503	0.240	0.292	-0.147	0.00606	0.134	0.147	**-0.740**	-0.673	-0.442	0.125
Annual Total Thallium (mg/L)	-0.217	0.212	-0.147	-0.130	-0.153	0.0909	-0.0286	0.0287	0.0275	-0.248	-0.670	0.201
Annual Total Uranium (mg/L)	**-0.506**	-0.588	0.262	0.266	-0.208	-0.152	0.00659	0.319	**-0.755**	-0.770	-0.547	-0.156
Annual Total Zinc (mg/L)	-0.329	-0.297	0.147	-0.422	-0.233	0.418	-0.310	-0.145	0.0311	-0.370	-0.0154	0.0176

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

P-value < 0.05/38 and $r_s \le -0.6$ or $r_s \ge 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	Ephemeroptera Abundance Residuals				Plecoptera Abundance (#/3 min Kick)				Trichoptera Abundance (#/3 min kick)			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.345	-0.321	-0.376	-0.0396	0.272	0.309	0.196	-0.207	0.0256	-0.261	-0.0949	-0.470
Calcite Presence	-0.314	-0.365	-0.429	0.0352	0.272	0.316	0.114	-0.130	0.0460	-0.328	-0.121	-0.544
Concreted Score	-0.379	-0.320	-0.185	-0.132	-0.0183	0.00865	0.611	-0.150	-0.116	0.00865	0.272	-0.0520
Embeddedness (%)	0.0339	-0.554	0.299	0.00894	**-0.518**	-0.720	0.0975	0.0983	-0.113	0.388	0.116	-0.292
D16	-0.0320	0	-0.444	0.112	-0.413	0.615	-0.369	-0.0198	-0.404	-0.775	-0.517	-0.359
D84	0.133	-0.433	0.235	-0.00659	**-0.620**	0.0915	-0.128	-0.134	-0.372	-0.0427	0.343	-0.405
Water Velocity (m/s)	0.117	-0.345	0.635	0.380	0.0858	0.152	0.282	0.0637	-0.0260	0.309	0.254	-0.174
Water Depth (cm)	-0.279	-0.340	0.0441	-0.349	-0.0374	-0.195	-0.290	-0.758	-0.174	-0.0486	-0.308	-0.0968
Minimum Winter Temperature (°C)	-0.174	0.125	-0.0682	-0.0287	0.377	0.0328	-0.583	**0.800**	0.0320	-0.321	-0.210	0.199
Maximum Summer Temperature (°C)	-0.0340	0.0304	0.355	-0.323	**-0.466**	0.261	-0.385	-0.431	-0.115	-0.353	0.0998	0.177
Annual PC1	**-0.583**	-0.830	0.0813	0.297	-0.122	-0.648	0.568	0.530	-0.0645	0.442	0.227	0.0484
Annual PC2	0.268	0.188	-0.169	0.270	-0.0641	0.345	0.0220	0.00659	0.129	-0.176	0.0464	-0.0418
Annual Temperature (°C)	-0.424	-0.661	0.00220	0.209	-0.319	-0.358	-0.627	0.714	-0.210	-0.127	-0.320	-0.0572
Annual Total Alkalinity as CaCO3 (mg/L)	**-0.627**	-0.770	-0.143	0.363	**0.510**	-0.370	0.581	0.503	0.107	0.200	-0.0419	-0.0132
Annual Nitrate (mg/L as N)	**-0.526**	-0.685	0.0637	0.393	**0.459**	-0.636	0.385	0.503	0.131	0.552	0.236	0.0242
Annual Nitrite (mg/L s N)	-0.405	-0.709	0.481	-0.240	-0.360	-0.770	0.0242	0.108	-0.0941	0.200	0.479	0.271
Annual Ammonia (mg/L as N)	-0.0511	-0.188	0.477	-0.279	-0.298	-0.527	0.308	-0.209	0.0149	-0.0909	0.625	0.0792
Annual Phosphorus (mg/L)	0.0150	0.0667	-0.160	-0.0725	0.156	0.176	0.213	0.380	0.267	0.0667	0.188	0.260
Annual Sulphate (mg/L)	**-0.666**	-0.745	-0.301	-0.0505	0.312	-0.539	0.541	0.613	-0.0728	0.394	-0.0728	0.321
Annual Total Dissolved Solids (mg/L)	**-0.626**	-0.818	-0.130	0.240	0.366	-0.564	0.636	0.657	-0.0133	0.394	0.0949	0.176
Annual Dissolved Aluminum (mg/L)	0.371	0.430	-0.143	0.0330	-0.130	0.394	0.0132	-0.249	-0.0440	-0.479	-0.0949	-0.172
Annual Total Antimony (mg/L)	**-0.574**	-0.855	0.200	0.275	-0.243	-0.576	0.653	0.292	-0.120	0.382	0.377	0.0132
Annual Total Arsenic (mg/L)	-0.00870	-0.0424	0.187	0.393	0.140	-0.152	0.495	0.565	0.159	0.358	0.373	-0.0528
Annual Total Barium (mg/L)	**-0.482**	-0.636	-0.314	0.345	0.429	-0.248	-0.279	-0.244	0.240	0.139	0.0508	-0.605
Annual Dissolved Cadmium (µg/L)	**-0.531**	-0.770	0.266	0.407	-0.0169	-0.673	0.460	0.719	-0.0648	0.285	0.413	-0.112
Annual Total Chromium (mg/L)	0.140	-0.115	-0.297	0.288	-0.0383	0.200	-0.187	0.00220	-0.100	-0.248	-0.567	-0.321
Annual Total Cobalt (µg/L)	-0.257	-0.491	0.244	0.560	-0.115	-0.430	0.123	0.0154	-0.00265	0.406	0.373	-0.420
Annual Total Copper (mg/L)	0.182	0.297	-0.112	0.285	0.0734	0.309	0.308	-0.170	0.0806	-0.176	0.170	-0.177
Annual Total Iron (mg/L)	-0.117	-0.0182	-0.165	0.0462	0.0781	0.212	-0.00220	0.116	0.143	0.0667	0.219	0.0528
Annual Total Lead (mg/L)	0.0212	0.0545	-0.174	0.209	0.0729	0.152	0.224	-0.112	0.173	0.0545	0.183	-0.0220
Annual Total Lithium (mg/L)	**-0.581**	-0.733	0.0989	0.284	0.0265	-0.661	0.172	0.525	0.00944	0.636	0.174	0.0814
Annual Total Manganese (mg/L)	-0.351	-0.285	-0.00659	0.0198	-0.200	-0.212	-0.323	-0.174	0.0114	0.442	0.139	0.117
Annual Total Molybdenum (mg/L)	**-0.597**	-0.782	0.354	-0.187	-0.173	-0.576	0.625	0.385	-0.0451	0.442	0.466	0.585
Annual Total Nickel (µg/L)	**-0.577**	**-0.903**	-0.0110	0.310	-0.235	-0.770	0.552	0.503	-0.137	0.382	0.130	-0.0286
Annual Total Selenium (µg/L)	**-0.613**	-0.673	-0.169	0.248	0.372	-0.503	0.607	0.719	-0.0171	0.455	0.0596	0.233
Annual Total Thallium (mg/L)	-0.0817	-0.248	-0.473	0.501	-0.130	0.164	0.282	0.501	-0.171	-0.127	-0.320	-0.137
Annual Total Uranium (mg/L)	**-0.633**	-0.770	-0.257	0.349	0.275	-0.539	0.583	0.596	-0.114	0.394	-0.0110	0.0594
Annual Total Zinc (mg/L)	-0.105	-0.370	0.143	0.356	-0.150	0.0909	0.539	0.0242	0.000987	0.236	0.395	-0.203

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	EPT Abundance (#/3 min kick)				EPT Abundance Residuals				Chironomidae Abundance (#/3 min kick)			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.0583	-0.261	-0.00220	-0.194	-0.206	-0.261	-0.213	-0.154	0.174	0.467	0.425	-0.0176
Calcite Presence	-0.0256	-0.304	-0.0857	-0.123	-0.156	-0.304	-0.279	-0.103	0.199	0.492	0.376	-0.101
Concreted Score	-0.278	-0.320	0.380	-0.107	-0.410	-0.320	0.208	-0.0948	-0.0181	0.242	0.462	0.254
Embeddedness (%)	-0.229	-0.535	0.0597	0.0291	-0.260	-0.535	0.184	0.150	-0.214	-0.634	0.194	0.355
D16	-0.192	-0.0246	-0.362	0.0264	-0.279	-0.0246	-0.634	0.117	0.106	0.480	0.269	0.225
D84	-0.242	-0.463	-0.0110	-0.121	-0.263	-0.463	0.0462	-0.0330	-0.00827	0.220	0.260	0.134
Water Velocity (m/s)	-0.0891	-0.248	0.433	0.00659	-0.0157	-0.248	0.468	0.174	0.191	0.152	0.242	0.429
Water Depth (cm)	-0.347	-0.371	-0.207	-0.705	-0.271	-0.371	-0.198	-0.767	-0.213	-0.286	0.236	-0.688
Minimum Winter Temperature (°C)	0.144	0.0721	-0.307	**0.803**	0.150	0.0721	-0.478	0.708	0.216	0.125	-0.0307	0.657
Maximum Summer Temperature (°C)	-0.265	0.109	-0.0728	-0.332	-0.333	0.109	0.121	-0.513	-0.258	0.207	-0.270	-0.354
Annual PC1	**-0.517**	-0.806	0.292	0.437	**-0.589**	-0.806	0.385	0.512	-0.430	-0.491	-0.176	0.345
Annual PC2	0.216	0.248	0.169	-0.0725	0.115	0.248	-0.0725	-0.0154	0.101	0.212	-0.130	-0.134
Annual Temperature (°C)	-0.379	-0.648	-0.393	0.679	**-0.480**	-0.648	-0.275	0.727	-0.354	-0.430	-0.565	0.473
Annual Total Alkalinity as CaCO3 (mg/L)	-0.260	-0.782	0.121	0.341	-0.242	-0.782	0.235	0.653	-0.141	-0.200	0.0396	0.319
Annual Nitrate (mg/L as N)	-0.173	-0.673	0.204	0.363	-0.179	-0.673	0.275	0.604	-0.189	-0.370	-0.191	0.209
Annual Nitrite (mg/L s N)	-0.435	-0.721	0.257	0.213	**-0.556**	-0.721	0.253	-0.0418	-0.394	-0.564	-0.106	0.160
Annual Ammonia (mg/L as N)	-0.159	-0.224	0.534	-0.200	-0.217	-0.224	0.424	-0.314	-0.245	-0.576	0.178	-0.415
Annual Phosphorus (mg/L)	0.220	0.164	0.279	0.341	0.107	0.164	0.0286	0.226	0.0529	0.0909	-0.0770	-0.0549
Annual Sulphate (mg/L)	-0.375	-0.733	0.0637	0.534	-0.366	-0.733	0.138	0.521	-0.347	-0.370	-0.00440	0.266
Annual Total Dissolved Solids (mg/L)	-0.325	-0.806	0.182	0.530	-0.316	-0.806	0.257	0.644	-0.258	-0.261	0.141	0.473
Annual Dissolved Aluminum (mg/L)	0.216	0.382	-0.121	-0.187	0.183	0.382	-0.143	-0.198	0.221	0.430	0.231	-0.205
Annual Total Antimony (mg/L)	**-0.567**	-0.842	0.371	0.262	**-0.667**	-0.842	0.490	0.402	-0.443	-0.394	0.103	0.314
Annual Total Arsenic (mg/L)	0.111	0.0545	0.503	0.591	0.0512	0.0545	0.371	0.508	0.0319	-0.0909	0.0968	0.393
Annual Total Barium (mg/L)	-0.141	-0.624	-0.182	-0.196	-0.214	-0.624	-0.204	-0.152	-0.125	-0.176	-0.530	-0.398
Annual Dissolved Cadmium (µg/L)	-0.382	-0.758	0.327	0.705	**-0.462**	-0.758	0.464	0.763	-0.362	-0.406	-0.275	0.569
Annual Total Chromium (mg/L)	0.0847	-0.0667	-0.248	-0.0725	0.0421	-0.0667	-0.292	0.00659	0.0615	0.127	-0.392	-0.130
Annual Total Cobalt (µg/L)	-0.348	-0.430	0.248	-0.138	-0.346	-0.430	0.270	0.160	-0.315	-0.430	-0.385	0.0330
Annual Total Copper (mg/L)	0.186	0.273	0.262	-0.227	0.103	0.273	0.0857	-0.161	0.0857	0.236	-0.0264	-0.307
Annual Total Iron (mg/L)	-0.00771	0.0667	0.152	0.0725	-0.107	0.0667	-0.0813	0.0154	-0.0748	0.0788	-0.156	-0.0901
Annual Total Lead (mg/L)	0.0579	0.139	0.257	-0.196	-0.0292	0.139	-0.00220	-0.116	-0.0188	0.0424	0.0528	-0.231
Annual Total Lithium (mg/L)	-0.432	-0.721	0.0505	0.380	-0.433	-0.721	0.196	0.578	**-0.481**	-0.455	-0.381	0.196
Annual Total Manganese (mg/L)	-0.410	-0.188	-0.0593	-0.226	-0.425	-0.188	-0.0901	-0.244	-0.446	-0.188	-0.394	-0.385
Annual Total Molybdenum (mg/L)	**-0.520**	-0.794	0.385	0.411	**-0.620**	-0.794	0.591	0.332	-0.404	-0.297	-0.0770	0.508
Annual Total Nickel (µg/L)	**-0.555**	-0.891	0.138	0.525	**-0.649**	-0.891	0.314	0.538	-0.454	-0.503	0.0220	0.429
Annual Total Selenium (µg/L)	-0.303	-0.661	0.147	0.626	-0.304	-0.661	0.222	0.697	-0.245	-0.164	0.117	0.424
Annual Total Thallium (mg/L)	-0.122	-0.188	-0.165	0.439	-0.207	-0.188	-0.147	0.501	-0.104	-0.0545	-0.0880	0.320
Annual Total Uranium (mg/L)	-0.410	-0.782	0.125	0.464	-0.378	-0.782	0.200	0.675	-0.333	-0.297	0.0198	0.389
Annual Total Zinc (mg/L)	-0.182	-0.285	0.442	-0.0682	-0.271	-0.285	0.424	0.0352	-0.207	0.188	-0.231	-0.0836

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

(shaded) P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho											
	Autotrophic Heterotrophic Index				Shredder Index				Filtering Collector Index			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.140	-0.552	0.538	-0.0594	0.307	0.0424	0.508	0.0220	0.187	0.564	0.508	0.207
Calcite Presence	-0.0901	-0.559	0.565	-0.0198	0.346	0.00608	0.433	0.277	0.188	0.632	0.407	0.242
Concreted Score	-0.240	-0.493	0.219	-0.144	-0.192	-0.225	0.764	-0.468	0.0292	-0.00865	0.619	-0.223
Embeddedness (%)	-0.00798	0.142	0.0796	-0.463	-0.450	-0.265	0.153	-0.0894	-0.262	-0.0185	-0.104	-0.150
D16	0.0359	-0.283	0.415	-0.414	-0.410	-0.289	-0.170	-0.454	0.0117	0.166	0.0177	0.289
D84	0.225	-0.494	0.337	-0.402	-0.421	0.110	0	-0.508	-0.0769	0.116	0.139	0.0989
Water Velocity (m/s)	-0.196	-0.673	-0.512	-0.235	-0.103	0.0424	-0.0725	-0.622	-0.0915	0.345	-0.266	-0.292
Water Depth (cm)	0.159	0.0365	-0.154	0.582	0.0888	0.134	-0.496	0.0945	0.130	0.261	0.121	0.187
Minimum Winter Temperature (°C)	-0.186	0.374	0.159	-0.653	0.389	0.518	-0.557	0.0970	0.0460	0.308	-0.257	-0.346
Maximum Summer Temperature (°C)	0.0748	0.0182	0.205	0.518	-0.433	0.0426	-0.342	0.155	-0.105	0.486	-0.426	0.128
Annual PC1	-0.462	-0.382	-0.653	-0.222	-0.329	-0.552	0.420	-0.0637	-0.0871	-0.0909	0.147	-0.226
Annual PC2	0.175	-0.0182	0.0637	0.349	-0.0297	0.273	0.121	0.187	0.118	0.152	0.174	0.262
Annual Temperature (°C)	-0.435	-0.139	-0.0813	-0.631	**-0.563**	-0.648	-0.657	0.0549	-0.377	0.115	-0.727	-0.451
Annual Total Alkalinity as CaCO3 (mg/L)	**-0.572**	-0.552	-0.556	-0.644	0.209	-0.491	0.459	-0.345	0.128	0.115	0.244	-0.455
Annual Nitrate (mg/L as N)	**-0.514**	-0.394	-0.701	-0.486	0.221	-0.515	0.121	-0.235	-0.0397	-0.0667	-0.226	-0.402
Annual Nitrite (mg/L s N)	-0.318	-0.0788	-0.578	0.178	**-0.509**	-0.648	-0.319	0.0593	-0.286	-0.0545	-0.367	-0.121
Annual Ammonia (mg/L as N)	-0.103	0.491	-0.499	0.235	-0.399	-0.261	-0.00659	0.222	-0.346	-0.127	0.00659	-0.301
Annual Phosphorus (mg/L)	-0.00278	-0.127	-0.0374	0.165	0.124	0.176	0.270	0.402	0.106	0.188	0.235	-0.0330
Annual Sulphate (mg/L)	**-0.495**	-0.430	-0.358	-0.424	0.0884	-0.576	0.503	0.244	0.0270	0.0303	0.345	-0.679
Annual Total Dissolved Solids (mg/L)	**-0.507**	-0.552	-0.354	-0.477	0.148	-0.588	0.596	0.0242	0.0678	0.127	0.446	-0.701
Annual Dissolved Aluminum (mg/L)	0.385	0.394	0.420	0.317	0.131	0.745	0.341	0.407	0.233	0.333	0.323	0.548
Annual Total Antimony (mg/L)	-0.457	-0.515	-0.613	-0.182	**-0.483**	-0.673	0.433	-0.301	-0.123	-0.103	0.226	-0.244
Annual Total Arsenic (mg/L)	-0.193	-0.115	-0.231	-0.0505	0.00487	0.0667	0.464	0.108	0.170	0.152	0.495	-0.125
Annual Total Barium (mg/L)	-0.344	-0.382	0.182	0.0681	0.306	-0.297	-0.134	0.0725	0.0852	-0.00606	-0.376	0.367
Annual Dissolved Cadmium (µg/L)	**-0.572**	-0.285	-0.530	-0.486	-0.285	-0.685	0.420	-0.0330	-0.158	-0.0424	-0.182	-0.323
Annual Total Chromium (mg/L)	0.0763	-0.0545	-0.0725	0.169	0.00241	0.0788	-0.0681	0.301	0.0952	0.176	-0.138	0.226
Annual Total Cobalt (µg/L)	-0.387	-0.297	-0.556	-0.0286	-0.382	-0.455	-0.134	-0.393	-0.123	-0.0667	-0.385	-0.367
Annual Total Copper (mg/L)	0.118	0.103	-0.0286	0.439	0.159	0.309	0.451	0.254	0.161	-0.273	0.376	0.302
Annual Total Iron (mg/L)	-0.0764	-0.224	0.147	0.292	0.0213	0.0424	0.116	0.147	0.140	-0.0303	0.116	0.0989
Annual Total Lead (mg/L)	0.0535	-0.0909	0.0637	0.398	0.0660	0.0788	0.314	0.240	0.190	0.00606	0.363	0.363
Annual Total Lithium (mg/L)	**-0.575**	-0.455	**-0.793**	-0.459	-0.261	-0.539	-0.169	-0.147	-0.191	-0.164	-0.446	-0.473
Annual Total Manganese (mg/L)	-0.143	-0.358	-0.0286	0.574	-0.265	-0.164	-0.385	0.200	0.161	0.139	-0.248	0.305
Annual Total Molybdenum (mg/L)	**-0.479**	-0.503	**-0.789**	-0.213	-0.417	-0.552	0.354	-0.323	-0.153	-0.115	0.0989	-0.455
Annual Total Nickel (µg/L)	-0.416	-0.370	-0.508	-0.209	-0.441	-0.673	0.402	-0.169	-0.0784	0.00606	0.341	-0.376
Annual Total Selenium (µg/L)	**-0.503**	-0.503	-0.284	-0.464	0.137	-0.467	0.604	-0.0198	0.0574	-0.0424	0.455	-0.455
Annual Total Thallium (mg/L)	-0.183	-0.224	-0.213	-0.117	-0.267	-0.0788	0.336	0.139	0.0675	0.103	0.319	-0.0287
Annual Total Uranium (mg/L)	**-0.534**	-0.527	-0.319	-0.525	-0.00302	-0.612	0.552	-0.240	0.0246	-0.0788	0.389	-0.631
Annual Total Zinc (mg/L)	-0.192	-0.673	-0.468	0.255	-0.204	-0.164	0.521	0.233	0.0336	0.0788	0.0374	0.255

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

(shaded) P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.1: Spearman's Correlation Relationships between Benthic Invertebrate Community Metrics and Physical and Chemical Parameters, Fording River, September 2018 to 2021

Parameter	Correlation Rho							
	Hyporheic Benthic Index				Predator Index			
	Full	Upper	Middle	Lower	Full	Upper	Middle	Lower
Calcite Index	-0.0279	-0.0545	-0.670	-0.205	0.356	-0.0182	0.310	-0.134
Calcite Presence	-0.0767	-0.0547	-0.596	-0.365	0.335	-0.0973	0.341	-0.275
Concreted Score	0.306	0.242	**-0.841**	0.199	0.190	0.0259	0.506	0.125
Embeddedness (%)	**0.496**	0.702	-0.00885	-0.331	-0.267	-0.00615	0.148	0.0603
D16	0.253	-0.351	0.00663	0.110	-0.183	-0.579	-0.248	0.430
D84	0.179	0.116	-0.0836	0.292	-0.309	0.360	-0.222	0.516
Water Velocity (m/s)	-0.0503	0.139	0.112	0.178	0.0767	0.430	-0.266	0.125
Water Depth (cm)	-0.177	0.134	0.251	0.552	0.123	0.267	-0.280	-0.0374
Minimum Winter Temperature (°C)	**-0.459**	-0.282	0.409	-0.381	0.163	0.0721	-0.675	-0.0110
Maximum Summer Temperature (°C)	**0.598**	-0.201	0.439	0.157	-0.196	-0.395	-0.386	-0.104
Annual PC1	**0.648**	0.842	-0.0549	-0.473	0.195	0.103	0.402	0.112
Annual PC2	0.175	-0.394	0.169	-0.477	-0.187	0.0303	-0.156	-0.305
Annual Temperature (°C)	**0.687**	0.576	**0.789**	-0.301	-0.0723	-0.430	-0.402	0.213
Annual Total Alkalinity as CaCO3 (mg/L)	0.0558	0.685	-0.358	0.160	**0.550**	0.103	0.631	0.635
Annual Nitrate (mg/L as N)	-0.0166	0.855	-0.0286	-0.00659	0.450	0.139	0.218	0.604
Annual Nitrite (mg/L s N)	**0.698**	0.770	0.398	-0.314	-0.0998	-0.164	-0.376	-0.0989
Annual Ammonia (mg/L as N)	**0.543**	0.248	0.0901	0.442	-0.123	-0.273	-0.284	0.0374
Annual Phosphorus (mg/L)	0.0723	-0.188	-0.0374	-0.477	0.0107	0.127	-0.0901	-0.182
Annual Sulphate (mg/L)	0.220	0.806	-0.433	-0.0505	0.384	0.0424	0.732	0.0857
Annual Total Dissolved Solids (mg/L)	0.153	0.842	-0.560	-0.367	0.414	0.0788	0.684	0.0989
Annual Dissolved Aluminum (mg/L)	-0.0313	-0.661	-0.231	-0.264	-0.215	0.0545	0.0549	-0.579
Annual Total Antimony (mg/L)	**0.756**	0.855	-0.371	-0.0637	0.0798	0.0424	0.385	0.174
Annual Total Arsenic (mg/L)	0.169	0.0788	-0.165	-0.714	-0.00413	0.236	0.130	-0.314
Annual Total Barium (mg/L)	-0.0319	0.515	0.284	-0.0462	**0.466**	0.0424	0.0330	0.218
Annual Dissolved Cadmium (µg/L)	**0.608**	0.867	0.169	-0.578	0.0791	-0.200	0.147	0.0418
Annual Total Chromium (mg/L)	0.0691	-0.152	0.393	-0.648	-0.140	-0.176	-0.0374	-0.248
Annual Total Cobalt (µg/L)	**0.536**	0.527	0.468	-0.0198	0.0373	0.115	-0.130	0.174
Annual Total Copper (mg/L)	0.0549	-0.406	-0.0813	-0.541	0.0381	0.0909	0.147	-0.223
Annual Total Iron (mg/L)	0.194	-0.103	0.169	-0.530	0.0293	0.0667	-0.0681	-0.103
Annual Total Lead (mg/L)	0.137	-0.139	-0.125	-0.310	-0.0228	0.0303	0.134	-0.349
Annual Total Lithium (mg/L)	**0.531**	0.891	0.336	-0.0593	0.321	0.261	0.156	0.560
Annual Total Manganese (mg/L)	**0.570**	0.285	0.587	-0.257	-0.0270	0.285	-0.284	-0.165
Annual Total Molybdenum (mg/L)	**0.720**	0.830	-0.0418	0.0769	0.130	0.152	0.371	0.134
Annual Total Nickel (µg/L)	**0.714**	**0.939**	-0.336	-0.415	0.0980	-0.00606	0.604	0.0505
Annual Total Selenium (µg/L)	0.144	0.770	-0.560	-0.262	0.433	0.115	0.684	0.244
Annual Total Thallium (mg/L)	0.381	-0.00606	-0.257	-0.766	-0.0895	-0.0424	0.618	-0.276
Annual Total Uranium (mg/L)	0.249	0.830	-0.495	-0.0813	0.412	0.103	0.758	0.433
Annual Total Zinc (mg/L)	0.454	0.212	0.0330	-0.515	-0.141	0.212	0.121	-0.359

Bold value < 0.05/38 (0.05 Bonferroni Corrected for 38 independent comparisons)

[shaded] P-value < 0.05/38 and $r_s \leq -0.6$ or $r_s \geq 0.6$

Table F.2: **Pseudo F-Statistics from Permutation Based ANOVA Analysis on Canonical Correspondence Analysis of Benthic Invertebrate Community Data Constrained by Habitat and Stressor Variables, FRO LAEMP, 2018 to 2021**

Model	Term	Season	Full		Upper		Middle		Lower	
			Single	Marginal	Single	Marginal	Single	Marginal	Single	Marginal
Habitat	Substrate-D16	June	4.88	1.02	1.74	1.4	0.932	1.08	3.22	0.974
		Sept	13.7	5.72	2.46	2.05	3.2	1.23	4.85	1.92
	Substrate-D84	June	9.46	5.81	3.88	2.27	2.36	2.18	3.36	1.08
		Sept	9.42	3.82	2.97	3.12	3.94	2.28	4.65	0.718
	Embeddedness	June	1.37	1.61	0.994	0.929	1.65	1.14	0.817	0.955
		Sept	5.17	1.83	1.3	1.21	0.645	0.776	2.8	0.959
	Depth-mean	June	3.42	1.87	1.21	1.42	1.66	1.18	1.63	0.757
		Sept	7.54	4.4	1.68	1.1	3.3	1.97	2.72	1.68
	Velocity-mean	June	2.78	3.16	1.88	2.01	2.86	2.79	1.36	1.39
		Sept	2.08	1.41	0.998	1	1.87	1.25	0.801	0.854
	Width-Bankfull	June	6.29	3.74	5.71	2.32	1.92	1.16	2.28	1.4
		Sept	2.46	2.83	3.1	4.46	1.89	1.85	2.99	0.989
	% Watershed > 30% Slope	June	3.87	2.18	3.63	1.09	1.72	1.29	3.72	2.28
		Sept	6.95	2.83	2.97	0.709	3.27	1.48	5.76	2.5
	Station Gradient	June	2.7	2.44	3.15	1.93	1.32	2.75	1.87	2.32
		Sept	4.39	3.09	3.13	1.44	2.36	2.4	3.2	3.39
	Watershed Area	June	21.8	17.7	4.19	1.83	2.31	3.09	3.36	2.52
		Sept	28.8	18.5	4.38	3.82	3.13	2.7	4.26	1.39
Stressor	Calcite-Presence	June	5.79	4.91	2.69	2.25	5.59	1.01	1.14	4.3
		Sept	10.6	7.65	5.71	1.98	6.65	1.19	1.59	2.35
Stressor after Habitat		June	4.7	4.47	3.76	1.31	4.58	1.45	1.51	0.889
		Sept	9.48	7.79	3.69	1.58	5.9	1.14	1.65	1.01
Stressor	Calcite-Concretion	June	1.43	0.949	1.76	0.975	2.2	0.916	2.05	0.825
		Sept	3.6	2.31	1.26	1.29	3.03	1.75	1.25	1.27
Stressor after Habitat		June	1.65	1.2	1.36	1.03	1.52	1.18	1.25	0.913
		Sept	3.14	2.13	1.1	2.43	2.78	1.72	1.27	0.631
Stressor	Barium (Ba)-Total	June	16.4	3.89	4.69	2.1	2.32	2.22	1.95	1.02
		Sept	21	3.08	4.63	1.76	5.68	1.89	3.67	3.27
Stressor after Habitat		June	3.04	2.66	2.88	1.51	3.11	2.41	1.33	1.02
		Sept	4.15	2.4	2.22	1.97	5.83	2.49	3.16	1.97
Stressor	Manganese (Mn)-Total	June	6.62	2.01	2.12	1.52	1.92	1.77	0.969	5.04
		Sept	11.3	6.38	3.72	3.91	5.15	0.918	7.02	5.44
Stressor after Habitat		June	2.88	1.62	2.68	1.49	1.29	1.64	1.67	1.36
		Sept	8.68	6.24	2.37	1.89	5.58	1.18	2.84	1.82
Stressor	Molybdenum (Mo)-Total	June	16.4	3.2	4.28	1.74	2.5	1.79	2.42	5.61
		Sept	6.9	2.44	4.09	2.5	6.99	1.79	3.05	1.95
Stressor after Habitat		June	2.22	2.36	2.86	1.58	3.89	1.69	2.58	0.74
		Sept	4.86	2.39	3.65	1.3	4.66	1.95	1.17	0.996
Stressor	Nitrate (as N)	June	20.2	2.11	4.97	1.94	2.21	3.59	1.91	1.43
		Sept	22.6	7.32	5.62	3.61	8.79	3.1	4.86	4.58
Stressor after Habitat		June	2.14	0.885	2.45	1.1	1.81	2.81	1.75	1.04
		Sept	2.73	5.64	5.43	2.2	7.47	2.77	5.6	0.999
Stressor	Selenium (Se)-Total	June	22.2	3.7	4.23	1.22	2.22	3.54	2.12	2.91
		Sept	23.9	6.58	4.81	6.73	3.57	2.48	4.18	2.42
Stressor after Habitat		June	1.65	2.38	2.22	1.5	2.13	1.78	1.69	1.04
		Sept	1.33	5.62	3.09	5.02	1.87	2.24	4.57	1.74
Stressor	Sulphate	June	25	2.4	4.82	1.9	2.61	2.17	3.01	2.1
		Sept	24.6	4.05	5.17	7.07	4.61	1.47	5.84	2.22
Stressor after Habitat		June	5.32	2.57	3.34	1.12	0.996	2.02	1.6	0.732
		Sept	5.16	3.75	4.39	2.34	3.36	1.72	6.43	1.3
Stressor	Uranium (U)-Total	June	23.6	1.86	4.99	1.82	1.82	2.83	2.19	1.45
		Sept	24.4	3.75	5.57	2.59	4.8	1.4	7.33	2.81
Stressor after Habitat		June	4.04	2.2	3.48	1.37	1.96	2.72	1.78	0.83
		Sept	5.38	2.71	5.39	1.85	3.69	1.21	7.83	1.76
Stressor	Alkalinity, Total (as CaCO3)	June	18.5	1.51	4.28	1.55	1.58	1.24	1.51	3.34
		Sept	29.9	4.86	4.06	1.9	7.18	1.36	3.32	2.37
Stressor after Habitat		June	2.46	1.32	2.64	1.25	2.62	1.42	1.92	0.533
		Sept	5.14	1.9	2.03	2.1	5.88	1.04	3.28	1.96
Stressor	Cadmium (Cd)-Dissolved	June	14.2	5.62	3.09	2.08	3.34	2.03	2.42	4.25
		Sept	14.9	2.87	3.36	1.68	3.63	2.16	3.31	1.78
Stressor after Habitat		June	3.94	4.96	1.06	1.71	5.48	2.07	2.43	0.538
		Sept	4.14	1.7	1.09	1.77	1.91	1.3	2.7	1.44
Stressor	Total Dissolved Solids	June	22	4.64	3.85	2.69	2.04	1.36	2.07	1.41
		Sept	28	1.45	5.24	2.07	4.53	1.19	6.28	2.7
Stressor after Habitat		June	4.07	2.99	2.16	1.85	2.2	1.68	2.26	1.02
		Sept	5.18	1.26	3.78	1.96	3.04	1.43	7.5	1.41

0-25th Percentile & P-Value < 0.05.

25th-50th Percentile & P-Value < 0.05.

50th-75th Percentile & P-Value < 0.05.

75th-100th Percentile & P-Value < 0.05.

Notes: Cells are shaded only if the associated p-value from permutation based ANOVA was < 0.05. Shading is arranged from lightest to darkest according to percentile of F-Statistic distributions within each model to highlight which predictors most strongly influence Benthic Invertebrate Community responses. F-Statistics are shown for each term as Single and Marginal. Single represents the importance of the predictor in isolation of other predictors, while Marginal represents the unique contribution of the predictor to a model containing all other predictors. Separate analysis were conducted on September and June samples. Predictors were analyzed in one of three Canonical Correspondence Analysis (CCA) models, a Habitat model containing landscape and site specific variables relating to instream and landscape habitat, a Stressor model containing water quality analyte concentrations and calcite variables, and a Stressor after Habitat model, which uses partial Canonical Correspondence Analysis (pCCA) to remove the effects of habitat differences, and explains the remaining variability using variables from the Stressor model. Taxa that made up less than 1% of total abundance (on the ln(x+1) scale) and occurred in fewer than 10% of samples were excluded from analysis. Only water quality analytes which contained fewer than 15% of values below Laboratory Reporting Limits (LRL) were included in the final model. Values below LRL were included at the LRL. All water quality analytes, as well as Catchment Area were log10-transformed and scaled by subtracting the mean and dividing by the standard deviation prior to analysis. All remaining predictors were scaled by subtracting the mean and dividing by the standard deviation prior to analysis.

APPENDIX G
HABITAT

Table G.1: Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021

Station ID		Reference			Mine-Exposed			
		RG_HENUP	RG_FO26	RG_UFR1	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD
Waterbody		Henretta Creek	Fording River	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
Weather		-	sunny, light breeze	overcast	sunny, gusting wind	sunny, light breeze	sunny, windy	-
Air Temperature (°C)		-	25	14	30	25	25	-
Habitat Characteristics								
Surrounding Land Use		-	-	-	-	-	-	-
Length of Reach Assessed (m)		50	30	50	-	100	100	-
Substrate	% Bedrock	0	0	0	0	0	0	0
	% Boulder	0	0	0	0	0	0	0
	% Cobble	0	0	0	0	0	0	0
	% Gravel	0	0	0	0	0	0	0
	% Sand	0	0	0	0	0	0	0
	% Fines	0	0	0	0	0	0	0
Water Clarity		clear	clear	clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless	colourless	colourless

Note: "-" indicates no data available.

Table G.1: Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021

Station ID		Mine-Exposed						
		RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS	RG_FOBSC	RG_FOBCP
Waterbody		Fording River	Fording River	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		14-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
Weather		sunny, windy	variable clouds	clear skies	sun and cloud, windy	sun and cloud, windy	sunny	sunny
Air Temperature (°C)		31	18	3	10	10	15	6
Habitat Characteristics								
Surrounding Land Use		-	-	-	-	-	-	-
Length of Reach Assessed (m)		100	50	100	100	100	100	100
Substrate	% Bedrock	0	0	0	0	0	0	0
	% Boulder	0	0	0	0	0	0	0
	% Cobble	0	0	0	0	0	0	0
	% Gravel	0	0	0	0	0	0	0
	% Sand	0	0	0	0	0	0	0
	% Fines	0	0	0	0	0	0	0
Water Clarity		clear	clear	clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless	colourless	colourless

Note: "-" indicates no data available.

Table G.1: **Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021**

Station ID		Mine-Exposed				
		RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Waterbody		Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
Weather		sunny	sunny, light breeze	sunny, windy	sunny	sunny
Air Temperature (°C)		18	10	25	20	5
Habitat Characteristics						
Surrounding Land Use		-	-	-	-	-
Length of Reach Assessed (m)		50	100	100	100	100
Substrate	% Bedrock	0	0	0	0	0
	% Boulder	0	0	0	0	0
	% Cobble	0	0	0	0	0
	% Gravel	0	0	0	0	0
	% Sand	0	0	0	0	0
	% Fines	0	0	0	0	0
Water Clarity		clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless

Note: "-" indicates no data available.

Table G.2: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Reference			Mine-Exposed			
		RG_HENUP	RG_FO26	RG_UFR1	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD
Station 1	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Temperature (°C)	3.6	6.7	4.9	8.8	7.9	6.4	7.5
	Dissolved Oxygen (mg/L)	11.01	10.04	10.74	10.01	9.82	10.16	10.11
	Dissolved Oxygen (%)	83.1	82.1	83.9	86.3	82.7	82.5	84.4
	Conductivity (µS/cm)	87.2	191.4	115.7	156.6	206	206.6	191.4
	Specific Conductivity (µS/cm)	147.6	124.6	187.8	226.5	306.2	320.6	287.6
	pH	8.15	8.24	8.25	8.29	8.1	8.08	8.18
Station 2	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Temperature (°C)	3.3	6.2	4.8	8.9	7.4	7.2	7.4
	Dissolved Oxygen (mg/L)	11.11	10.06	10.75	10.02	9.91	9.95	10.14
	Dissolved Oxygen (%)	83.2	81.2	83.7	86.5	82.6	82.5	84.4
	Conductivity (µS/cm)	86.3	122.8	115.5	157.4	201.8	213.3	191.4
	Specific Conductivity (µS/cm)	147.3	191.7	188.3	227.5	304.1	323	288.4
	pH	8.17	8.24	8.24	8.3	8.14	8.14	8.18
Station 3	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Temperature (°C)	3.1	5.2	4.5	8.7	6.3	7.4	7.2
	Dissolved Oxygen (mg/L)	11.16	10.35	10.76	10.04	10.24	9.8	10.21
	Dissolved Oxygen (%)	83.2	81.6	83.3	86.4	82.9	81.7	84.6
	Conductivity (µS/cm)	85	119	114.7	157.4	194.8	216.2	188.4
	Specific Conductivity (µS/cm)	146	191.1	188.3	228.3	303.4	325.3	285.4
	pH	8.18	8.14	-	8.31	7.99	8.14	8.19

Note: "-" indicates no data available.

Table G.2: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Mine-Exposed						
		RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS	RG_FOBSC	RG_FOBCP
Station 1	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Temperature (°C)	10.2	7.7	6.1	8.9	6.3	8.9	6.2
	Dissolved Oxygen (mg/L)	9.35	10.22	10.57	9.76	10.44	9.88	10.49
	Dissolved Oxygen (%)	83.3	85.6	85.1	84.6	84.6	85.5	84.9
	Conductivity (µS/cm)	283	214.8	238.6	283.3	281.9	469.3	394.7
	Specific Conductivity (µS/cm)	394.4	321.2	373.7	407.6	438.6	678	615
	pH	8.21	8.22	8.25	8.28	8.21	8.01	8.1
Station 2	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Temperature (°C)	10.4	7.4	5.6	8.5	5.9	8.5	5.8
	Dissolved Oxygen (mg/L)	9.29	10.3	10.68	9.83	10.43	10.01	10.65
	Dissolved Oxygen (%)	83.1	85.7	85	84.4	83.7	85.7	85.2
	Conductivity (µS/cm)	282.6	212	233.8	277.9	277.3	449.1	385.7
	Specific Conductivity (µS/cm)	391.6	319.6	371.6	405.6	436	655	609
	pH	8.19	8.21	8.24	8.29	8.2	8.03	8.12
Station 3	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Temperature (°C)	10.2	7	5.2	7.9	5.9	7.9	5.4
	Dissolved Oxygen (mg/L)	9.34	10.39	10.76	10.13	10.47	10.19	10.65
	Dissolved Oxygen (%)	83.3	85.6	84.7	85.5	83.9	86.1	84.4
	Conductivity (µS/cm)	276.5	208.4	229.9	272.3	273	427.2	381.6
	Specific Conductivity (µS/cm)	385.3	317.7	370	403.9	429.5	633	609
	pH	8.16	8.19	8.24	8.27	8.17	8.1	8.07

Note: "-" indicates no data available.

Table G.2: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Mine-Exposed				
		RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Station 1	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Temperature (°C)	9.5	8.3	9.9	5.6	5.5
	Dissolved Oxygen (mg/L)	9.86	10	9.48	10.51	10.7
	Dissolved Oxygen (%)	86.5	85.1	84	83.7	85.1
	Conductivity (µS/cm)	371.6	516	525	385.9	416.7
	Specific Conductivity (µS/cm)	528	758	738	613	663
	pH	8.18	8.03	7.99	8.02	8.06
Station 2	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Temperature (°C)	8.6	7.9	9.8	5.2	5.3
	Dissolved Oxygen (mg/L)	10.08	10.1	9.61	10.47	10.53
	Dissolved Oxygen (%)	86.5	85.2	85	82.6	83.2
	Conductivity (µS/cm)	359.1	522	524	380.5	412.3
	Specific Conductivity (µS/cm)	523	777	737	611	662
	pH	8.17	8.01	8.02	8.02	8.06
Station 3	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Temperature (°C)	8.1	8.2	9.4	5	5.3
	Dissolved Oxygen (mg/L)	10.18	10.11	9.61	10.38	10.53
	Dissolved Oxygen (%)	86.2	87	84.1	81.5	83.1
	Conductivity (µS/cm)	351.5	528	434.8	375	412.3
	Specific Conductivity (µS/cm)	519	778	619	606	662
	pH	8.18	8.01	8.03	8.01	8.02

Note: "-" indicates no data available.

Table G.3: Channel Measurements, FRO LAEMP, June 2021

	Replicate		1	2	3	4	5	Mean
Reference	RG_HENUP							
	1	Depth (cm)	19	18	20.5	19	25	20.3
		Velocity (m/s)	1.451	0.797	0.202	0.96	1.013	0.8846
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	25	17	14	16	19	18.2
		Velocity (m/s)	0.742	0.613	0.485	0.766	0.611	0.6434
		Bankfull Width (m)			32			-
		Wetted Width (m)			14			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	24	23.5	25.5	24.5	20	23.5
		Velocity (m/s)	0.913	1.074	1.39	1.355	0.964	1.1392
		Bankfull Width (m)			28			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			-			-
Reference	RG_FO26							
	1	Depth (cm)	22	22	17	17	12.5	18.1
		Velocity (m/s)	0.823	0.52	0.665	0.705	0.545	0.6516
		Bankfull Width (m)			45			-
		Wetted Width (m)			14.8			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	22	30	26.5	30.5	34	28.6
		Velocity (m/s)	0.888	0.875	0.915	0.742	0.712	0.8264
		Bankfull Width (m)			55			-
		Wetted Width (m)			7			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	29	31	27	22	29	27.6
		Velocity (m/s)	0.431	0.912	0.379	0.606	0.439	0.5534
		Bankfull Width (m)			50			-
		Wetted Width (m)			9.5			-
		Bankfull-Wetted Depth (cm)			-			-
Reference	RG_UFR1							
	1	Depth (cm)	12.5	13	15	15.5	13	13.8
		Velocity (m/s)	0.937	0.981	0.831	0.741	0.568	0.8116
		Bankfull Width (m)			14			-
		Wetted Width (m)			6.5			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	23.5	24	24	16.5	22	22
		Velocity (m/s)	0.719	0.864	0.749	0.635	0.614	0.7162
		Bankfull Width (m)			23.5			-
		Wetted Width (m)			8.5			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	9.5	10.5	14.5	15.5	12	12.4
		Velocity (m/s)	0.473	0.592	0.905	0.961	0.711	0.7284
		Bankfull Width (m)			26			-
		Wetted Width (m)			22			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FODHE							
	1	Depth (cm)	28.5	26.5	25.5	26.5	26.5	26.7
		Velocity (m/s)	0.224	0.693	0.581	0.774	0.742	0.6028
		Bankfull Width (m)			60			-
		Wetted Width (m)			35			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	27.5	28	34.5	24	22.5	27.3
		Velocity (m/s)	0.718	0.886	0.585	0.865	0.871	0.785
		Bankfull Width (m)			65			-
		Wetted Width (m)			29			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	29.1	32	29.5	19.5	16.5	25.32
		Velocity (m/s)	0.933	0.868	0.735	1.136	0.91	0.9164
		Bankfull Width (m)			80			-
		Wetted Width (m)			29			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.3: Channel Measurements, FRO LAEMP, June 2021

Replicate			1	2	3	4	5	Mean
Mine-Exposed	RG_FOUCL							
	1	Depth (cm)	32	35	43	48	39	39.4
		Velocity (m/s)	0.508	0.642	0.871	0.802	0.507	0.666
		Bankfull Width (m)			55			-
		Wetted Width (m)			22			-
		Bankfull-Wetted Depth (cm)			80			-
	2	Depth (cm)	25	32	47	48	39	38.2
		Velocity (m/s)	0.613	0.718	0.869	0.889	0.821	0.782
		Bankfull Width (m)			40			-
		Wetted Width (m)			25			-
		Bankfull-Wetted Depth (cm)			60			-
	3	Depth (cm)	31	45	47	48	38	41.8
		Velocity (m/s)	0.678	0.713	0.628	0.787	0.424	0.646
		Bankfull Width (m)			35			-
		Wetted Width (m)			28			-
		Bankfull-Wetted Depth (cm)			20			-
Mine-Exposed	RG_FOUNGD							
	1	Depth (cm)	50	54	48	52	54	51.6
		Velocity (m/s)	0.557	0.834	0.661	0.803	0.839	0.7388
		Bankfull Width (m)			30			-
		Wetted Width (m)			12			-
		Bankfull-Wetted Depth (cm)			60			-
	2	Depth (cm)	20	21	32	36	39	29.6
		Velocity (m/s)	0.789	0.889	0.967	1.007	1.04	0.9384
		Bankfull Width (m)			34			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			40			-
	3	Depth (cm)	20	19	22	30	34	25
		Velocity (m/s)	0.642	0.633	0.697	0.983	0.992	0.7894
		Bankfull Width (m)			28			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			80			-
Mine-Exposed	RG_FODNGD							
	1	Depth (cm)	21.5	31.5	29.5	24	19	25.1
		Velocity (m/s)	1.202	1.23	1.197	1.126	0.766	1.1042
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	22	27	35.5	28	20	26.5
		Velocity (m/s)	1.084	0.864	0.893	0.56	1.1	0.9002
		Bankfull Width (m)			18			-
		Wetted Width (m)			11			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	15.5	25.5	26.5	34.5	16.5	23.7
		Velocity (m/s)	0.562	1.379	1.243	1.061	0.984	1.0458
		Bankfull Width (m)			22			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_MP1							
	1	Depth (cm)	43	48	52	48	46	47.4
		Velocity (m/s)	0.73	0.793	0.689	0.578	0.408	0.6396
		Bankfull Width (m)			23			-
		Wetted Width (m)			18			-
		Bankfull-Wetted Depth (cm)			50			-
	2	Depth (cm)	21	24	36	48	46	35
		Velocity (m/s)	0.893	0.971	0.746	0.812	0.964	0.8772
		Bankfull Width (m)			28			-
		Wetted Width (m)			23			-
		Bankfull-Wetted Depth (cm)			60			-
	3	Depth (cm)	24	28	44	42	51	37.8
		Velocity (m/s)	0.514	0.679	0.771	0.778	0.889	0.7262
		Bankfull Width (m)			28			-
		Wetted Width (m)			25			-
		Bankfull-Wetted Depth (cm)			40			-

Note: "-" indicates no data available.

Table G.3: Channel Measurements, FRO LAEMP, June 2021

	Replicate		1	2	3	4	5	Mean
Mine-Exposed	RG_FOUSH							
	1	Depth (cm)	47	38	40	27	24	35.2
		Velocity (m/s)	0.672	0.912	0.644	1.036	0.831	0.819
		Bankfull Width (m)			35			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	45	46	30	40	35	39.2
		Velocity (m/s)	0.757	1.015	1.066	0.719	1.207	0.9528
		Bankfull Width (m)			35			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	32	39	32	29	29	32.2
		Velocity (m/s)	0.946	1.158	0.838	0.714	0.688	0.8688
		Bankfull Width (m)			35			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOUKI							
	1	Depth (cm)	27	36	35	29.5	31	31.7
		Velocity (m/s)	0.66	0.738	0.875	0.377	1.018	0.7336
		Bankfull Width (m)			40			-
		Wetted Width (m)			17			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	28.5	29	39	25.5	18.5	28.1
		Velocity (m/s)	0.52	0.453	0.38	0.306	0.558	0.4434
		Bankfull Width (m)			35			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	18	21	20	13	18.5	18.1
		Velocity (m/s)	0.713	0.827	0.709	0.876	0.726	0.7702
		Bankfull Width (m)			50			-
		Wetted Width (m)			17			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOBKS							
	1	Depth (cm)	34	37	35	36	33	35
		Velocity (m/s)	0.719	0.738	1.061	0.804	0.675	0.7994
		Bankfull Width (m)			28			-
		Wetted Width (m)			18			-
		Bankfull-Wetted Depth (cm)			30			-
	2	Depth (cm)	19	27	24	23	32	25
		Velocity (m/s)	0.713	0.811	0.741	0.77	0.632	0.7334
		Bankfull Width (m)			35			-
		Wetted Width (m)			26			-
		Bankfull-Wetted Depth (cm)			20			-
	3	Depth (cm)	19	33	29	30	33	28.8
		Velocity (m/s)	0.459	0.452	0.201	0.861	0.934	0.5814
		Bankfull Width (m)			30			-
		Wetted Width (m)			20			-
		Bankfull-Wetted Depth (cm)			20			-
Mine-Exposed	RG_SCOUTDS							
	1	Depth (cm)	39	26	23	45	42	35
		Velocity (m/s)	0.399	0.667	0.83	1.039	0.605	0.708
		Bankfull Width (m)			35			-
		Wetted Width (m)			9			-
		Bankfull-Wetted Depth (cm)			30			-
	2	Depth (cm)	26	23	26	21	20	23.2
		Velocity (m/s)	0.539	0.467	0.524	0.811	0.617	0.5916
		Bankfull Width (m)			35			-
		Wetted Width (m)			10			-
		Bankfull-Wetted Depth (cm)			30			-
	3	Depth (cm)	32	45	51	56	53	47.4
		Velocity (m/s)	0.314	0.648	0.668	0.428	1.032	0.618
		Bankfull Width (m)			30			-
		Wetted Width (m)			7			-
		Bankfull-Wetted Depth (cm)			40			-

Note: "-" indicates no data available.

Table G.3: **Channel Measurements, FRO LAEMP, June 2021**

Replicate			1	2	3	4	5	Mean
Mine-Exposed	RG_FOBSC							
	1	Depth (cm)	19	22	21	37	25	24.8
		Velocity (m/s)	0.23	0.376	0.405	0.476	0.416	0.3806
		Bankfull Width (m)			30			-
		Wetted Width (m)			25			-
		Bankfull-Wetted Depth (cm)			40			-
	2	Depth (cm)	19	22	21	37	25	24.8
		Velocity (m/s)	0.23	0.376	0.405	0.476	0.416	0.3806
		Bankfull Width (m)			25			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			40			-
	3	Depth (cm)	32	39	43	41	27	36.4
		Velocity (m/s)	0.582	0.821	0.899	0.906	0.703	0.7822
		Bankfull Width (m)			21			-
		Wetted Width (m)			17			-
		Bankfull-Wetted Depth (cm)			30			-
Mine-Exposed	RG_FOBCP							
	1	Depth (cm)	29	36	32	29	30	31.2
		Velocity (m/s)	0.349	1.127	0.803	0.818	0.649	0.7492
		Bankfull Width (m)			38			-
		Wetted Width (m)			22			-
		Bankfull-Wetted Depth (cm)			60			-
	2	Depth (cm)	29	36	32	29	30	31.2
		Velocity (m/s)	0.349	1.127	0.803	0.818	0.649	0.7492
		Bankfull Width (m)			35			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			40			-
	3	Depth (cm)	54	51	38	40	34	43.4
		Velocity (m/s)	0.723	0.603	0.832	0.696	0.954	0.7616
		Bankfull Width (m)			35			-
		Wetted Width (m)			12			-
		Bankfull-Wetted Depth (cm)			50			-
Mine-Exposed	RG_FRCP1SW							
	1	Depth (cm)	21	29	30	22.5	25	25.5
		Velocity (m/s)	0.478	0.52	0.504	0.583	0.708	0.5586
		Bankfull Width (m)			25			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	22	28	32	23.5	21	25.3
		Velocity (m/s)	1.15	1.218	1.264	1.248	1.02	1.18
		Bankfull Width (m)			20			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	19	14	21.5	13.5	21.5	17.9
		Velocity (m/s)	1.233	0.718	1.079	0.807	0.783	0.924
		Bankfull Width (m)			20			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FRUPO							
	1	Depth (cm)	35	28	36	39	34	34.4
		Velocity (m/s)	0.592	0.627	0.699	0.652	0.609	0.6358
		Bankfull Width (m)			16			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			80			-
	2	Depth (cm)	35.5	27	15	9	18	20.9
		Velocity (m/s)	1.14	0.951	0.67	0.305	1.102	0.8336
		Bankfull Width (m)			27			-
		Wetted Width (m)			10			-
		Bankfull-Wetted Depth (cm)			70			-
	3	Depth (cm)	23	24	36	25	17	25
		Velocity (m/s)	0.53	0.972	0.739	0.77	0.773	0.7568
		Bankfull Width (m)			20			-
		Wetted Width (m)			11			-
		Bankfull-Wetted Depth (cm)			60			-

Note: "-" indicates no data available.

Table G.3: Channel Measurements, FRO LAEMP, June 2021

Replicate			1	2	3	4	5	Mean
	RG_FODPO							
Mine-Exposed	1	Depth (cm)	21	42	36	38	32	33.8
		Velocity (m/s)	0.978	1.084	0.636	0.918	1.015	0.9262
		Bankfull Width (m)			25			-
		Wetted Width (m)			18			-
		Bankfull-Wetted Depth (cm)			70			-
	2	Depth (cm)	39	36	41	40	41	39.4
		Velocity (m/s)	0.897	0.916	1.011	0.856	0.893	0.9146
		Bankfull Width (m)			28			-
		Wetted Width (m)			11			-
		Bankfull-Wetted Depth (cm)			60			-
	3	Depth (cm)	28	27.5	32	38.5	27.5	30.7
		Velocity (m/s)	0.773	0.632	0.939	0.787	0.823	0.7908
		Bankfull Width (m)			16			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			-			-
	RG_FO22							
Mine-Exposed	1	Depth (cm)	20	12	20	24	24.5	20.1
		Velocity (m/s)	0.626	1.014	0.847	0.923	0.986	0.8792
		Bankfull Width (m)			17			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	42	49	42	47	49	45.8
		Velocity (m/s)	1.094	1.105	1.043	1.059	1.035	1.0672
		Bankfull Width (m)			20			-
		Wetted Width (m)			18			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	35	42	51	51	40	43.8
		Velocity (m/s)	0.726	0.964	0.819	0.776	0.756	0.8082
		Bankfull Width (m)			17			-
		Wetted Width (m)			13			-
		Bankfull-Wetted Depth (cm)			-			-
	RG_FOUEW							
Mine-Exposed	1	Depth (cm)	54	54	47	51	45	50.2
		Velocity (m/s)	0.561	0.592	0.498	0.389	0.537	0.5154
		Bankfull Width (m)			28			-
		Wetted Width (m)			25			-
		Bankfull-Wetted Depth (cm)			50			-
	2	Depth (cm)	26	32	34	46	23	32.2
		Velocity (m/s)	0.409	0.463	0.501	0.512	0.448	0.4666
		Bankfull Width (m)			35			-
		Wetted Width (m)			23			-
		Bankfull-Wetted Depth (cm)			80			-
	3	Depth (cm)	38	58	53	54	38	48.2
		Velocity (m/s)	0.712	0.921	0.721	0.919	0.779	0.8104
		Bankfull Width (m)			31			-
		Wetted Width (m)			25			-
		Bankfull-Wetted Depth (cm)			50			-

Note: "-" indicates no data available.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_HENUP-1			RG_HENUP-2			RG_HENUP-3			RG_FO26-1		
16-Jun-21			16-Jun-21			16-Jun-21			14-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	8.5	-	1	10	-	1	4	-	1	5	-
2	7.5	-	2	3	-	2	8.5	-	2	4	-
3	17	-	3	10	-	3	9	-	3	1.5	-
4	8	-	4	9	-	4	8.5	-	4	5	-
5	17	-	5	20	-	5	5.5	-	5	7.5	-
6	9	-	6	8	-	6	8	-	6	6	-
7	7	-	7	17	-	7	6.5	-	7	2	-
8	11.5	-	8	9.5	-	8	6.5	-	8	2.5	-
9	4	-	9	8	-	9	8	-	9	10.5	-
10	7	0	10	10	0	10	5.5	0.25	10	4.5	0
11	5	-	11	4.5	-	11	11	-	11	4.4	-
12	9	-	12	6.5	-	12	5	-	12	3	-
13	4.5	-	13	7	-	13	5.5	-	13	8.5	-
14	3.5	-	14	13	-	14	11	-	14	8.5	-
15	6	-	15	9	-	15	9	-	15	4	-
16	4	-	16	3.5	-	16	14	-	16	3.5	-
17	17	-	17	10.5	-	17	7.5	-	17	6.5	-
18	4.5	-	18	5	-	18	7	-	18	14.5	-
19	6	-	19	5.5	-	19	12	-	19	6.5	-
20	5	0	20	6	0	20	6	0	20	5.5	0
21	11	-	21	5.5	-	21	8.5	-	21	5	-
22	8.5	-	22	7	-	22	20	-	22	4.5	-
23	10	-	23	8	-	23	7	-	23	4	-
24	9	-	24	2	-	24	10	-	24	6	-
25	2	-	25	5.5	-	25	7.5	-	25	5	-
26	7	-	26	4	-	26	10	-	26	3.5	-
27	7	-	27	9.5	-	27	5.5	-	27	3	-
28	9	-	28	2.5	-	28	7.5	-	28	10	-
29	5	-	29	8.5	-	29	12	-	29	3.5	-
30	3	0	30	5	0	30	7.5	0	30	4	0.25
31	9.5	-	31	6	-	31	14	-	31	8.5	-
32	4.5	-	32	5	-	32	5.5	-	32	8.5	-
33	5	-	33	3.5	-	33	6.5	-	33	2	-
34	8	-	34	7	-	34	6.5	-	34	1	-
35	7	-	35	21	-	35	7	-	35	2.5	-
36	11	-	36	7	-	36	8.5	-	36	5.5	-
37	14	-	37	8.5	-	37	10	-	37	4	-
38	6.5	-	38	5.5	-	38	4	-	38	5	-
39	7.5	-	39	9	-	39	19.5	-	39	5.5	-
40	12	0	40	5.5	0	40	6.5	0	40	1	0
41	5.5	-	41	6	-	41	6.5	-	41	4	-
42	8	-	42	8	-	42	11	-	42	2	-
43	9.5	-	43	15	-	43	10	-	43	2.5	-
44	4	-	44	6	-	44	7.5	-	44	1.5	-
45	11	-	45	8.5	-	45	14	-	45	3	-
46	6	-	46	6.5	-	46	6.5	-	46	5.5	-
47	4	-	47	6.5	-	47	10	-	47	5	-
48	10	-	48	7	-	48	4	-	48	5	-
49	9	-	49	3	-	49	9	-	49	2	-
50	6	0	50	12	0	50	9	0	50	2.5	0
51	6.5	-	51	9.5	-	51	5.5	-	51	6	-
52	6	-	52	11	-	52	4	-	52	4.5	-
53	8.5	-	53	3	-	53	7.5	-	53	5.5	-
54	5	-	54	14	-	54	7	-	54	4	-
55	3.5	-	55	5.5	-	55	5	-	55	4	-
56	7	-	56	5.5	-	56	6	-	56	8	-
57	7	-	57	2.5	-	57	14	-	57	8	-
58	12	-	58	4.5	-	58	8.5	-	58	5.5	-
59	7	-	59	7	-	59	13	-	59	7	-
60	6	0	60	11	0.5	60	12.5	0	60	5	0
61	13	-	61	8	-	61	4.5	-	61	9	-
62	8	-	62	14	-	62	10	-	62	12	-
63	7	-	63	8	-	63	12	-	63	10	-
64	8	-	64	9	-	64	9.5	-	64	5.5	-
65	9	-	65	10	-	65	7	-	65	9	-
66	5	-	66	10.5	-	66	5	-	66	8	-
67	4.5	-	67	9	-	67	8	-	67	5	-
68	6	-	68	7	-	68	6	-	68	7	-
69	5.5	-	69	11	-	69	3	-	69	12	-
70	10.5	0	70	9	0	70	8.5	0.25	70	4	0
71	7	-	71	7.5	-	71	5	-	71	9	-
72	8	-	72	3.5	-	72	4.5	-	72	17	-
73	2	-	73	9	-	73	11	-	73	6	-
74	4.5	-	74	4	-	74	4.5	-	74	9	-
75	10.5	-	75	3.5	-	75	6.5	-	75	1	-
76	9	-	76	1.5	-	76	6	-	76	3.5	-
77	9	-	77	3	-	77	9	-	77	5	-
78	3	-	78	14	-	78	10.5	-	78	8	-
79	17	-	79	4.5	-	79	3	-	79	4	-
80	5.5	0	80	10	0.25	80	8.5	0	80	2	0
81	5.5	-	81	11	-	81	5.5	-	81	10	-
82	4	-	82	12	-	82	3	-	82	5	-
83	3.5	-	83	19	-	83	4	-	83	4	-
84	9.5	-	84	6.5	-	84	4	-	84	4	-
85	8	-	85	6	-	85	6	-	85	2.5	-
86	6.5	-	86	6	-	86	8	-	86	4	-
87	7	-	87	6.5	-	87	8	-	87	10.5	-
88	8.5	-	88	6	-	88	12	-	88	7.5	-
89	8.5	-	89	13	-	89	9	-	89	2.5	-
90	5.5	0	90	10	0	90	5	0	90	14	0.5
91	9	-	91	8.5	-	91	10	-	91	4	-
92	5	-	92	4	-	92	11	-	92	4.5	-
93	8	-	93	15	-	93	9.5	-	93	9	-
94	9	-	94	5	-	94	12.5	-	94	6	-
95	8	-	95	9	-	95	9	-	95	6.5	-
96	5	-	96	10	-	96	1	-	96	8	-
97	4	-	97	9.5	-	97	9.5	-	97	8	-
98	7.5	-	98	10	-	98	5	-	98	7	-
99	11.5	-	99	6	-	99	5.5	-	99	3	-
100	6.5	0	100	2.5	0	100	6.5	0	100	6.5	0.25
Average Cic, Cip and Embed. =	7.51	0.00	Average Cic, Cip and Embed. =	7.94	0.08	Average Cic, Cip and Embed. =	7.98	0.05	Average Cic, Cip and Embed. =	5.684	0.10
Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-	
New Calcite I	-		New Calcite I	-		New Calcite I	-		New Calcite I	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FO26-2			RG_FO26-3			RG_UFR1-1			RG_UFR1-2		
14-Jun-21			14-Jun-21			15-Jun-21			15-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	14	-	**1**	7.5	-	**1**	14	-	**1**	5	-
2	18	-	**2**	7	-	**2**	17	-	**2**	3	-
3	9	-	**3**	8.5	-	**3**	6.5	-	**3**	6	-
4	25.5	-	**4**	3	-	**4**	16	-	**4**	15	-
5	11.5	-	**5**	2.5	-	**5**	2	-	**5**	10	-
6	12	-	**6**	22	-	**6**	9.5	-	**6**	12.5	-
7	14	-	**7**	8	-	**7**	10	-	**7**	5.5	-
8	13	-	**8**	15	-	**8**	7.5	-	**8**	5.5	-
9	6.5	-	**9**	7	-	**9**	5	-	**9**	3.5	-
10	12.5	0.25	**10**	10.5	0.25	**10**	9	0.25	**10**	11	0.5
11	18.5	-	**11**	9	-	**11**	15	-	**11**	10	-
12	13.5	-	**12**	6	-	**12**	9.5	-	**12**	6.5	-
13	10.5	-	**13**	5	-	**13**	12	-	**13**	11	-
14	8.5	-	**14**	16	-	**14**	5.5	-	**14**	1.5	-
15	16	-	**15**	4.5	-	**15**	7	-	**15**	12	-
16	8	-	**16**	3	-	**16**	13	-	**16**	14	-
17	7.5	-	**17**	6.5	-	**17**	9	-	**17**	10.5	-
18	9.5	-	**18**	4.5	-	**18**	6	-	**18**	12.5	-
19	6	-	**19**	9	-	**19**	14	-	**19**	9	-
20	16.5	0	**20**	7	0	**20**	5.5	0.25	**20**	7	0
21	11.5	-	**21**	4	-	**21**	1	-	**21**	2.5	-
22	11.5	-	**22**	8	-	**22**	6	-	**22**	3.5	-
23	15.5	-	**23**	2	-	**23**	6.5	-	**23**	1	-
24	11.5	-	**24**	2.5	-	**24**	3.5	-	**24**	2.5	-
25	9.5	-	**25**	3	-	**25**	9.5	-	**25**	5	-
26	9	-	**26**	7.5	-	**26**	8	-	**26**	10	-
27	8	-	**27**	10	-	**27**	4.5	-	**27**	7.5	-
28	14.5	-	**28**	11	-	**28**	11	-	**28**	6	-
29	14	-	**29**	12.5	-	**29**	9.5	-	**29**	7	-
30	8.5	0	**30**	6	0.5	**30**	10	0.25	**30**	10	0.25
31	9	-	**31**	2	-	**31**	6	-	**31**	11.5	-
32	10.5	-	**32**	10	-	**32**	7	-	**32**	9.5	-
33	15.5	-	**33**	4	-	**33**	9	-	**33**	4	-
34	10	-	**34**	6.5	-	**34**	10.5	-	**34**	9	-
35	14.5	-	**35**	37	-	**35**	3.5	-	**35**	6	-
36	5	-	**36**	22	-	**36**	12	-	**36**	13	-
37	6	-	**37**	5.5	-	**37**	11.5	-	**37**	6	-
38	10.5	-	**38**	8	-	**38**	7	-	**38**	13	-
39	11	-	**39**	8	-	**39**	7.5	-	**39**	7	-
40	8	0.5	**40**	8	0	**40**	20	0.25	**40**	3.5	0
41	9	-	**41**	6	-	**41**	18	-	**41**	15	-
42	12	-	**42**	13	-	**42**	4.5	-	**42**	9	-
43	27	-	**43**	3	-	**43**	22	-	**43**	2	-
44	9	-	**44**	7.5	-	**44**	11	-	**44**	7.5	-
45	15	-	**45**	10	-	**45**	3	-	**45**	4	-
46	4	-	**46**	8	-	**46**	11	-	**46**	13	-
47	4	-	**47**	7	-	**47**	3.5	-	**47**	7.5	-
48	16	-	**48**	6	-	**48**	14.5	-	**48**	8	-
49	6	-	**49**	3	-	**49**	7	-	**49**	7	-
50	6.5	0.25	**50**	11.5	0.25	**50**	11	0.25	**50**	6.5	0.25
51	10.5	-	**51**	3	-	**51**	10	-	**51**	9	-
52	5	-	**52**	7	-	**52**	5.5	-	**52**	7	-
53	12.5	-	**53**	13	-	**53**	4	-	**53**	7.5	-
54	18	-	**54**	12	-	**54**	8	-	**54**	15	-
55	9	-	**55**	13.5	-	**55**	2	-	**55**	7	-
56	8	-	**56**	4	-	**56**	20	-	**56**	4.5	-
57	7	-	**57**	3.5	-	**57**	5	-	**57**	3	-
58	19	-	**58**	9	-	**58**	7	-	**58**	7.5	-
59	8	-	**59**	5.5	-	**59**	21	-	**59**	13	-
60	9	0.5	**60**	11.5	0.25	**60**	13	0	**60**	10	0.5
61	7.5	-	**61**	0.5	-	**61**	7.5	-	**61**	11	-
62	6.5	-	**62**	9	-	**62**	5	-	**62**	6.5	-
63	10.5	-	**63**	9	-	**63**	8	-	**63**	5.5	-
64	10	-	**64**	1	-	**64**	12	-	**64**	3.5	-
65	13	-	**65**	7	-	**65**	16.5	-	**65**	8.5	-
66	7	-	**66**	6.5	-	**66**	8	-	**66**	5.5	-
67	14	-	**67**	3.5	-	**67**	11	-	**67**	11	-
68	7	-	**68**	18	-	**68**	5	-	**68**	11	-
69	5	-	**69**	8.5	-	**69**	10.5	-	**69**	9.5	-
70	5	0	**70**	10	0.5	**70**	3.5	0.5	**70**	8	0.25
71	8	-	**71**	8	-	**71**	6	-	**71**	3.5	-
72	12	-	**72**	7	-	**72**	14	-	**72**	8	-
73	11	-	**73**	14.5	-	**73**	6	-	**73**	12.5	-
74	7	-	**74**	7.5	-	**74**	2.5	-	**74**	4	-
75	8	-	**75**	4	-	**75**	4	-	**75**	3.5	-
76	6.5	-	**76**	15	-	**76**	3.5	-	**76**	11	-
77	4	-	**77**	3	-	**77**	16	-	**77**	4.5	-
78	8	-	**78**	7.5	-	**78**	5.5	-	**78**	12	-
79	10	-	**79**	12	-	**79**	11	-	**79**	5.5	-
80	5	0	**80**	3	0	**80**	3	0	**80**	9	0.25
81	4	-	**81**	8.5	-	**81**	19	-	**81**	4	-
82	5	-	**82**	8	-	**82**	3.5	-	**82**	4	-
83	5	-	**83**	4	-	**83**	8	-	**83**	7	-
84	6	-	**84**	10.5	-	**84**	4	-	**84**	8.5	-
85	19	-	**85**	5	-	**85**	12	-	**85**	8.5	-
86	15	-	**86**	9.5	-	**86**	6	-	**86**	3	-
87	12	-	**87**	12	-	**87**	14	-	**87**	13	-
88	5.5	-	**88**	9	-	**88**	9	-	**88**	3	-
89	4	-	**89**	3.5	-	**89**	4.5	-	**89**	9	-
90	18.5	0.75	**90**	3	0	**90**	5	0.25	**90**	8	0
91	7	-	**91**	6	-	**91**	5.5	-	**91**	4.5	-
92	9	-	**92**	3	-	**92**	8.5	-	**92**	6	-
93	10	-	**93**	4	-	**93**	6	-	**93**	21	-
94	7	-	**94**	9	-	**94**	11	-	**94**	9	-
95	7.5	-	**95**	11	-	**95**	8	-	**95**	10.5	-
96	8	-	**96**	6	-	**96**	13	-	**96**	10	-
97	11.5	-	**97**	9	-	**97**	5.5	-	**97**	10	-
98	23	-	**98**	3	-	**98**	8	-	**98**	11	-
99	7.5	-	**99**	6	-	**99**	20	-	**99**	6	-
100	16	0.5	**100**	11	0.5	**100**	6	0.5	**100**	9	0.25
Average Cic, Cip and Embed. =	**10.44**	**0.28**	**Average Cic, Cip and Embed. =**	**7.915**	**0.23**	**Average Cic, Cip and Embed. =**	**8.925**	**0.25**	**Average Cic, Cip and Embed. =**	**7.9**	**0.23**
Old Calcite Ir	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**	
New Calcite I	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_UFR1-3			RG_FODHE-1			RG_FODHE-2			RG_FODHE-3		
15-Jun-21			14-Jun-21			14-Jun-21			14-Jun-21		
Pebble	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	6.5	-	**1**	13	-	**1**	6	-	**1**	5.5	-
2	7	-	**2**	16	-	**2**	12	-	**2**	8	-
3	7.5	-	**3**	9	-	**3**	12.5	-	**3**	10	-
4	8	-	**4**	6.5	-	**4**	8.5	-	**4**	10	-
5	8	-	**5**	15	-	**5**	8	-	**5**	11	-
6	5	-	**6**	11	-	**6**	8.5	-	**6**	11.5	-
7	10.5	-	**7**	6	-	**7**	9.5	-	**7**	6.5	-
8	8	-	**8**	5.5	-	**8**	10	-	**8**	6	-
9	4	-	**9**	4.5	-	**9**	8	-	**9**	12	-
10	6	0	**10**	6	0.25	**10**	13.5	0	**10**	12	0.5
11	9.5	-	**11**	15	-	**11**	7.5	-	**11**	9.5	-
12	9.5	-	**12**	9	-	**12**	5	-	**12**	11	-
13	8	-	**13**	8.5	-	**13**	6.5	-	**13**	6	-
14	6.5	-	**14**	15	-	**14**	10	-	**14**	6	-
15	14.5	-	**15**	5	-	**15**	5.5	-	**15**	9.5	-
16	3.5	-	**16**	14	-	**16**	4	-	**16**	9	-
17	13	-	**17**	14	-	**17**	8.5	-	**17**	7	-
18	8	-	**18**	6	-	**18**	10.5	-	**18**	9	-
19	8.5	-	**19**	6.5	-	**19**	8	-	**19**	17	-
20	7	0	**20**	6	0.25	**20**	8.5	0	**20**	9	0
21	5	-	**21**	6	-	**21**	6	-	**21**	8	-
22	5.5	-	**22**	5.5	-	**22**	10	-	**22**	12	-
23	4	-	**23**	7	-	**23**	6.5	-	**23**	10	-
24	6.5	-	**24**	6	-	**24**	5.5	-	**24**	18	-
25	8	-	**25**	8	-	**25**	5.5	-	**25**	8.5	-
26	3	-	**26**	8.5	-	**26**	6	-	**26**	7	-
27	8	-	**27**	7.5	-	**27**	3.5	-	**27**	4	-
28	6	-	**28**	14	-	**28**	7.5	-	**28**	9	-
29	7.5	-	**29**	8	-	**29**	9.5	-	**29**	14	-
30	7.5	0	**30**	11.5	0.25	**30**	7.5	0.25	**30**	8.5	0
31	5	-	**31**	11	-	**31**	6	-	**31**	11	-
32	15	-	**32**	6	-	**32**	9	-	**32**	10	-
33	6	-	**33**	6	-	**33**	5.5	-	**33**	12	-
34	6.5	-	**34**	8	-	**34**	7	-	**34**	13	-
35	8	-	**35**	10	-	**35**	13.5	-	**35**	17.5	-
36	5.5	-	**36**	21	-	**36**	6	-	**36**	8.5	-
37	4.5	-	**37**	9	-	**37**	10	-	**37**	6	-
38	4	-	**38**	7	-	**38**	7.5	-	**38**	7	-
39	5.5	-	**39**	10	-	**39**	6	-	**39**	10	-
40	8	0	**40**	6.5	0.25	**40**	8.5	0	**40**	10.5	0
41	5	-	**41**	7	-	**41**	21	-	**41**	9	-
42	6.5	-	**42**	8.5	-	**42**	6.5	-	**42**	12	-
43	6.5	-	**43**	5	-	**43**	5	-	**43**	3	-
44	3.5	-	**44**	7	-	**44**	7.5	-	**44**	15	-
45	11	-	**45**	8.5	-	**45**	4.5	-	**45**	12	-
46	11	-	**46**	9	-	**46**	9	-	**46**	3	-
47	9	-	**47**	14	-	**47**	8.5	-	**47**	5	-
48	3.5	-	**48**	6	-	**48**	7.5	-	**48**	9.5	-
49	6	-	**49**	8	-	**49**	15	-	**49**	6	-
50	5.5	0.25	**50**	7	0.25	**50**	7.5	0.25	**50**	6	0.25
51	9.5	-	**51**	6.5	-	**51**	8.5	-	**51**	6	-
52	9.5	-	**52**	14	-	**52**	6.5	-	**52**	14.5	-
53	6.5	-	**53**	6.5	-	**53**	7	-	**53**	13	-
54	21	-	**54**	7	-	**54**	6	-	**54**	12	-
55	7	-	**55**	8	-	**55**	7.5	-	**55**	11	-
56	6	-	**56**	7	-	**56**	4	-	**56**	4.5	-
57	12	-	**57**	11	-	**57**	8	-	**57**	7.5	-
58	7	-	**58**	4	-	**58**	2	-	**58**	6.5	-
59	6.5	-	**59**	4	-	**59**	7	-	**59**	11.5	-
60	5.5	0.25	**60**	8	0.25	**60**	11	0.25	**60**	10.5	0.25
61	6.5	-	**61**	5	-	**61**	7	-	**61**	10	-
62	12	-	**62**	17	-	**62**	5	-	**62**	7.5	-
63	3.5	-	**63**	16	-	**63**	9.5	-	**63**	11	-
64	9	-	**64**	9	-	**64**	1	-	**64**	6	-
65	6	-	**65**	4	-	**65**	7.5	-	**65**	11.5	-
66	8.5	-	**66**	8.5	-	**66**	9	-	**66**	5.5	-
67	5	-	**67**	12	-	**67**	5.5	-	**67**	7	-
68	5	-	**68**	8.5	-	**68**	10	-	**68**	9	-
69	4	-	**69**	8	-	**69**	5.5	-	**69**	7	-
70	13	0.5	**70**	10.5	0.75	**70**	2	0	**70**	7	0.25
71	9.5	-	**71**	6.5	-	**71**	5	-	**71**	9	-
72	4.5	-	**72**	10.5	-	**72**	11	-	**72**	5	-
73	4	-	**73**	12	-	**73**	7.5	-	**73**	2.5	-
74	5	-	**74**	13	-	**74**	5.5	-	**74**	18.5	-
75	3.5	-	**75**	5	-	**75**	7.5	-	**75**	7	-
76	6.5	-	**76**	8	-	**76**	13	-	**76**	3.5	-
77	11.5	-	**77**	7	-	**77**	8.5	-	**77**	4.5	-
78	4.5	-	**78**	6.5	-	**78**	6	-	**78**	9.5	-
79	12	-	**79**	10.5	-	**79**	1.5	-	**79**	4	-
80	7.5	0.25	**80**	6	0.25	**80**	5	0.25	**80**	7	0.25
81	3.5	-	**81**	11	-	**81**	7	-	**81**	7.5	-
82	5.5	-	**82**	8	-	**82**	5.5	-	**82**	6	-
83	8.5	-	**83**	7	-	**83**	9	-	**83**	11.5	-
84	5.5	-	**84**	9	-	**84**	8.5	-	**84**	7	-
85	5.5	-	**85**	8	-	**85**	4	-	**85**	8.5	-
86	7.5	-	**86**	6	-	**86**	5.5	-	**86**	9	-
87	7.5	-	**87**	11	-	**87**	7	-	**87**	3	-
88	6.5	-	**88**	6.5	-	**88**	4	-	**88**	5	-
89	5.5	-	**89**	7	-	**89**	5	-	**89**	14	-
90	8	0	**90**	12	0.25	**90**	4.5	0.5	**90**	7	0
91	3	-	**91**	8	-	**91**	0.5	-	**91**	11	-
92	8	-	**92**	9	-	**92**	4	-	**92**	6	-
93	4.5	-	**93**	6.5	-	**93**	5	-	**93**	12.5	-
94	11	-	**94**	10	-	**94**	12.5	-	**94**	5	-
95	6.5	-	**95**	16	-	**95**	5.5	-	**95**	10	-
96	6	-	**96**	9	-	**96**	9.5	-	**96**	6.5	-
97	2.5	-	**97**	10	-	**97**	5	-	**97**	7	-
98	5	-	**98**	7	-	**98**	9.5	-	**98**	4	-
99	4.5	-	**99**	5.5	-	**99**	8.5	-	**99**	7	-
100	7.5	0.25	**100**	17	0.5	**100**	3	0	**100**	5	0.25
Average Cic, Cip and Embed. =	**7.085**	**0.15**	**Average Cic, Cip and Embed. =**	**8.91**	**0.33**	**Average Cic, Cip and Embed. =**	**7.32**	**0.15**	**Average Cic, Cip and Embed. =**	**8.72**	**0.18**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOUCL-1			RG_FOUCL-2			RG_FOUCL-3			RG_FOUNGD-1		
14-Jun-21			14-Jun-21			14-Jun-21			15-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	5.1	-	1	6.3	-	1	4.5	-	1	7.9	-
2	4.8	-	2	6.6	-	2	3.6	-	2	6.2	-
3	6.1	-	3	4.9	-	3	4.1	-	3	6.8	-
4	5.6	-	4	3.3	-	4	4.2	-	4	6.2	-
5	7.1	-	5	12	-	5	5.8	-	5	4.6	-
6	2.2	-	6	4.2	-	6	2.7	-	6	5.6	-
7	9.1	-	7	5.1	-	7	5.5	-	7	10.3	-
8	5.8	-	8	2.2	-	8	5.3	-	8	4.1	-
9	11.3	-	9	9.5	-	9	4.7	-	9	3.1	-
10	5	0.5	10	4.8	0.25	10	3.1	0.25	10	10.1	0.5
11	5.8	-	11	7.1	-	11	2.5	-	11	4.2	-
12	6.1	-	12	4.1	-	12	7.3	-	12	4.5	-
13	3.1	-	13	5.3	-	13	2.4	-	13	4.2	-
14	5.2	-	14	4.8	-	14	2	-	14	6.4	-
15	5	-	15	6.3	-	15	2.4	-	15	3.1	-
16	7.4	-	16	8.9	-	16	7.6	-	16	4.3	-
17	3.8	-	17	5.8	-	17	5.8	-	17	2.8	-
18	2.9	-	18	3.6	-	18	7.4	-	18	3.1	-
19	13.5	-	19	5.2	-	19	5.3	-	19	4.7	-
20	4.8	0.5	20	3.3	0.5	20	5.5	0.25	20	6	0.5
21	5.4	-	21	3.8	-	21	5.1	-	21	2.8	-
22	6.5	-	22	7.2	-	22	5.4	-	22	3.1	-
23	7.7	-	23	3.1	-	23	6	-	23	11	-
24	4.4	-	24	7.2	-	24	9.1	-	24	4.6	-
25	4.5	-	25	4.1	-	25	3.6	-	25	5	-
26	5.6	-	26	10.6	-	26	3.6	-	26	1.3	-
27	7.8	-	27	4.3	-	27	6.2	-	27	5.6	-
28	3.2	-	28	3.8	-	28	7.1	-	28	4.2	-
29	4.4	-	29	1.9	-	29	5.3	-	29	2.5	-
30	9.2	0.25	30	4.8	0.25	30	4.6	0.5	30	3.4	0.25
31	4.5	-	31	3.9	-	31	5.2	-	31	5.8	-
32	6.1	-	32	3.6	-	32	5.4	-	32	2	-
33	8.6	-	33	4.5	-	33	6.2	-	33	2.6	-
34	12.1	-	34	3.6	-	34	8.1	-	34	3.5	-
35	6.1	-	35	5.6	-	35	9.4	-	35	2.1	-
36	5.8	-	36	2.8	-	36	4.8	-	36	4	-
37	5.8	-	37	3.7	-	37	7.3	-	37	4.3	-
38	6.1	-	38	4.5	-	38	12.4	-	38	3.8	-
39	5.6	-	39	3.5	-	39	7.3	-	39	6	-
40	8.4	0.25	40	1.5	0	40	6.2	0.25	40	5.1	0.5
41	6.6	-	41	6.6	-	41	5.2	-	41	4.5	-
42	7.1	-	42	2.9	-	42	7.3	-	42	5.4	-
43	4.9	-	43	9.8	-	43	9	-	43	3.6	-
44	5.2	-	44	7.1	-	44	6.8	-	44	4.3	-
45	4.3	-	45	5.7	-	45	10.7	-	45	6.1	-
46	4.6	-	46	11.1	-	46	9.8	-	46	4.7	-
47	3.8	-	47	6.3	-	47	4.2	-	47	6.1	-
48	7.1	-	48	6.1	-	48	6.3	-	48	3.3	-
49	3.8	-	49	5.8	-	49	3.5	-	49	6.1	-
50	2.7	0.25	50	6.3	0.5	50	7.3	0.25	50	4.1	0.5
51	4.2	-	51	7.4	-	51	4.6	-	51	4.1	-
52	10.5	-	52	4.6	-	52	7.8	-	52	4.2	-
53	6.1	-	53	2.1	-	53	4	-	53	4.5	-
54	3.7	-	54	7.3	-	54	4.2	-	54	2.8	-
55	6.2	-	55	7.7	-	55	6.1	-	55	2.3	-
56	6.4	-	56	5.3	-	56	10.8	-	56	5.9	-
57	11.2	-	57	5.2	-	57	3.4	-	57	6.3	-
58	7.1	-	58	9.6	-	58	3.3	-	58	4.4	-
59	5.6	-	59	5.6	-	59	12.2	-	59	4.4	-
60	5.8	0.25	60	8.3	0.25	60	6.1	0.25	60	2.8	0.25
61	13.2	-	61	3.1	-	61	4.3	-	61	3	-
62	5.9	-	62	18.5	-	62	5.9	-	62	3.3	-
63	4.8	-	63	5.7	-	63	5.5	-	63	6.4	-
64	12.6	-	64	4.9	-	64	4.6	-	64	3.3	-
65	7.3	-	65	5.1	-	65	3	-	65	3.8	-
66	4.1	-	66	8.9	-	66	4.6	-	66	2.7	-
67	9.1	-	67	3.5	-	67	4.9	-	67	5.1	-
68	7.5	-	68	13.2	-	68	9.5	-	68	10.2	-
69	9	-	69	4.6	-	69	8.2	-	69	2.7	-
70	2.9	0.5	70	4.1	0.25	70	9.3	0.25	70	5.1	0.5
71	9.8	-	71	6.1	-	71	6.7	-	71	2.6	-
72	5.5	-	72	1.9	-	72	3.2	-	72	8.1	-
73	8.5	-	73	4.8	-	73	6.5	-	73	3.7	-
74	6	-	74	2.6	-	74	3.8	-	74	5.2	-
75	7	-	75	4.6	-	75	4.9	-	75	3.2	-
76	5.6	-	76	8.1	-	76	4	-	76	8	-
77	8	-	77	8.7	-	77	3.5	-	77	2.7	-
78	10.1	-	78	2.1	-	78	8.3	-	78	10.1	-
79	14.2	-	79	4.3	-	79	5.1	-	79	6.5	-
80	6.1	0.25	80	3.3	0.25	80	5.5	0.75	80	5.5	0.25
81	8.1	-	81	8	-	81	6.3	-	81	5.4	-
82	3.5	-	82	6.3	-	82	7.7	-	82	3.9	-
83	5	-	83	9.2	-	83	10.5	-	83	4.5	-
84	6.2	-	84	6.1	-	84	11.8	-	84	3.5	-
85	8	-	85	3.8	-	85	10.6	-	85	8.6	-
86	8.1	-	86	6.5	-	86	8.3	-	86	5	-
87	5.2	-	87	11.1	-	87	5.2	-	87	6.3	-
88	9.1	-	88	8.4	-	88	9.9	-	88	6	-
89	4.6	-	89	4.9	-	89	2.2	-	89	7.2	-
90	5.8	0.5	90	11.2	0	90	5.4	0.5	90	4.4	0.25
91	13.2	-	91	8.4	-	91	5.8	-	91	3.8	-
92	8.1	-	92	3.1	-	92	4.7	-	92	3.7	-
93	11.3	-	93	3	-	93	6.7	-	93	6.8	-
94	3.7	-	94	2.4	-	94	6.2	-	94	2.9	-
95	2.1	-	95	3.6	-	95	5.4	-	95	5.7	-
96	5.2	-	96	4.2	-	96	5.8	-	96	3.8	-
97	5.8	-	97	6.8	-	97	4.3	-	97	4.5	-
98	5.1	-	98	3.1	-	98	3.9	-	98	6.6	-
99	5.3	-	99	6.4	-	99	4.7	-	99	4	-
100	19.5	0.25	100	10.1	0.5	100	10.2	0.25	100	3.3	0.25
Average Cic, Cip and Embed. =	6.645	0.35	Average Cic, Cip and Embed. =	5.768	0.28	Average Cic, Cip and Embed. =	5.995	0.35	Average Cic, Cip and Embed. =	4.819	0.38
Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-	
New Calcite I	-		New Calcite I	-		New Calcite I	-		New Calcite I	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOUNGD-2			RG_FOUNGD-3			RG_FODNGD-1			RG_FODNGD-2		
15-Jun-21			15-Jun-21			16-Jun-21			16-Jun-21		
Pebble	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	3.6	-	**1**	6.4	-	**1**	13	-	**1**	4	-
2	5	-	**2**	3.5	-	**2**	14	-	**2**	13.5	-
3	4.3	-	**3**	3.7	-	**3**	6	-	**3**	12	-
4	5.6	-	**4**	1.9	-	**4**	7	-	**4**	6	-
5	5.6	-	**5**	4.4	-	**5**	5.5	-	**5**	5	-
6	4.2	-	**6**	5.6	-	**6**	5	-	**6**	3	-
7	4.4	-	**7**	7.2	-	**7**	5.5	-	**7**	2.5	-
8	5.1	-	**8**	8.7	-	**8**	14.5	-	**8**	3	-
9	3.6	-	**9**	5.4	-	**9**	6.5	-	**9**	5.5	-
10	4.9	0.25	**10**	7.2	0.25	**10**	3.5	0.25	**10**	7	0.25
11	4.7	-	**11**	5.2	-	**11**	3	-	**11**	2.5	-
12	8	-	**12**	5.3	-	**12**	6	-	**12**	14	-
13	2.2	-	**13**	4.3	-	**13**	1.5	-	**13**	4	-
14	4.9	-	**14**	4.2	-	**14**	9.5	-	**14**	15	-
15	6.2	-	**15**	4.6	-	**15**	11	-	**15**	18.5	-
16	3.5	-	**16**	4.1	-	**16**	5.5	-	**16**	10.5	-
17	4.7	-	**17**	6.9	-	**17**	12	-	**17**	14	-
18	3	-	**18**	5.6	-	**18**	14	-	**18**	9	-
19	3.7	-	**19**	7.1	-	**19**	9	-	**19**	5	-
20	3	0	**20**	10	0	**20**	13	0	**20**	10	0.5
21	2.5	-	**21**	4.9	-	**21**	11.5	-	**21**	1.5	-
22	3.9	-	**22**	3.2	-	**22**	12	-	**22**	5.5	-
23	3.9	-	**23**	5	-	**23**	7	-	**23**	1	-
24	5.2	-	**24**	7.9	-	**24**	7	-	**24**	8	-
25	3.7	-	**25**	4.9	-	**25**	12	-	**25**	2	-
26	4	-	**26**	5.7	-	**26**	5.5	-	**26**	5	-
27	2.2	-	**27**	3.2	-	**27**	9.5	-	**27**	32	-
28	3.6	-	**28**	6.1	-	**28**	8	-	**28**	8	-
29	3.7	-	**29**	8.7	-	**29**	12	-	**29**	12	-
30	4.6	0.25	**30**	4.1	0.25	**30**	10.5	0	**30**	4.5	0.5
31	10	-	**31**	2.5	-	**31**	6.5	-	**31**	8	-
32	4.4	-	**32**	6.2	-	**32**	6	-	**32**	8	-
33	3.6	-	**33**	6.3	-	**33**	1	-	**33**	6.5	-
34	1.1	-	**34**	4.2	-	**34**	8	-	**34**	9.5	-
35	2.2	-	**35**	3.7	-	**35**	14	-	**35**	9	-
36	3.4	-	**36**	6.5	-	**36**	5.5	-	**36**	8	-
37	3.5	-	**37**	4.1	-	**37**	6	-	**37**	2.5	-
38	2.1	-	**38**	9.5	-	**38**	7	-	**38**	4	-
39	4.8	-	**39**	4.6	-	**39**	5.5	-	**39**	7.5	-
40	5.3	0.25	**40**	5.1	0	**40**	7.5	0	**40**	4	0
41	4.4	-	**41**	4.9	-	**41**	5	-	**41**	8.5	-
42	5	-	**42**	5	-	**42**	9	-	**42**	3	-
43	4.5	-	**43**	7.9	-	**43**	7	-	**43**	6.5	-
44	4.9	-	**44**	4.1	-	**44**	15	-	**44**	4	-
45	8.2	-	**45**	4.9	-	**45**	5	-	**45**	9	-
46	4.7	-	**46**	7.6	-	**46**	18.5	-	**46**	6.5	-
47	7.3	-	**47**	7.1	-	**47**	13	-	**47**	2	-
48	3.6	-	**48**	10.5	-	**48**	3	-	**48**	20	-
49	8.9	-	**49**	4.4	-	**49**	6.5	-	**49**	5.5	-
50	5.2	0.25	**50**	2.2	0.25	**50**	4	0	**50**	5	0
51	3.1	-	**51**	12.5	-	**51**	8	-	**51**	7	-
52	6	-	**52**	4.8	-	**52**	2.5	-	**52**	4.5	-
53	3.6	-	**53**	8.8	-	**53**	8.5	-	**53**	9.5	-
54	8.2	-	**54**	6.2	-	**54**	6.5	-	**54**	7.5	-
55	5.4	-	**55**	9.7	-	**55**	4	-	**55**	6.5	-
56	6.3	-	**56**	3.4	-	**56**	5	-	**56**	4	-
57	8.7	-	**57**	9.3	-	**57**	20	-	**57**	2	-
58	7.7	-	**58**	4.3	-	**58**	11.5	-	**58**	10.5	-
59	5.3	-	**59**	5.9	-	**59**	14	-	**59**	5	-
60	3.9	0	**60**	3.9	0	**60**	5.5	0	**60**	7.5	0.25
61	5.1	-	**61**	9.2	-	**61**	9.5	-	**61**	14	-
62	7.5	-	**62**	5.5	-	**62**	6	-	**62**	5.5	-
63	5.2	-	**63**	3.8	-	**63**	12	-	**63**	15	-
64	5.5	-	**64**	3.1	-	**64**	13	-	**64**	3.5	-
65	6.1	-	**65**	9.6	-	**65**	8.5	-	**65**	3.5	-
66	4.9	-	**66**	7.9	-	**66**	7	-	**66**	7	-
67	4.1	-	**67**	7.1	-	**67**	8	-	**67**	6.5	-
68	3.3	-	**68**	12.5	-	**68**	2.5	-	**68**	4.5	-
69	4.4	-	**69**	5.1	-	**69**	12.5	-	**69**	21	-
70	3.4	0.25	**70**	4.9	0.25	**70**	8	0.5	**70**	9	0
71	3.7	-	**71**	4.7	-	**71**	12	-	**71**	18	-
72	7.9	-	**72**	6.7	-	**72**	1.5	-	**72**	3	-
73	3.2	-	**73**	8.5	-	**73**	10	-	**73**	6.5	-
74	5.2	-	**74**	5.8	-	**74**	10	-	**74**	3	-
75	1.7	-	**75**	3.9	-	**75**	6.5	-	**75**	11.5	-
76	3.4	-	**76**	2.9	-	**76**	8	-	**76**	4.5	-
77	4	-	**77**	1.6	-	**77**	5	-	**77**	5	-
78	5.1	-	**78**	6.5	-	**78**	17	-	**78**	2.5	-
79	3.6	-	**79**	3.7	-	**79**	3	-	**79**	12.5	-
80	1.9	0.25	**80**	2.5	0.25	**80**	15	0.25	**80**	5	0
81	3.5	-	**81**	4	-	**81**	5.5	-	**81**	14	-
82	6.2	-	**82**	3.7	-	**82**	5.5	-	**82**	7	-
83	7.8	-	**83**	4.2	-	**83**	7.5	-	**83**	7	-
84	8.9	-	**84**	2.5	-	**84**	8	-	**84**	4	-
85	7.5	-	**85**	3.5	-	**85**	9	-	**85**	5	-
86	6.2	-	**86**	5.1	-	**86**	5.5	-	**86**	5	-
87	1.9	-	**87**	4.3	-	**87**	5.5	-	**87**	3	-
88	5.9	-	**88**	4.7	-	**88**	5	-	**88**	5	-
89	4.7	-	**89**	7.2	-	**89**	5.5	-	**89**	9	-
90	4.8	0.25	**90**	4.9	0.25	**90**	10	0	**90**	12	0.25
91	4.3	-	**91**	8.4	-	**91**	13	-	**91**	6.5	-
92	3.4	-	**92**	4.3	-	**92**	10	-	**92**	10.5	-
93	2.3	-	**93**	3.9	-	**93**	9.5	-	**93**	5	-
94	4.3	-	**94**	6.4	-	**94**	5.5	-	**94**	8	-
95	4.6	-	**95**	5.2	-	**95**	5.5	-	**95**	6.5	-
96	3.9	-	**96**	4.7	-	**96**	3	-	**96**	3	-
97	2.4	-	**97**	4.6	-	**97**	5.5	-	**97**	20	-
98	2.1	-	**98**	5.8	-	**98**	8.5	-	**98**	4	-
99	3.2	-	**99**	7.7	-	**99**	4	-	**99**	5	-
100	6.9	0.25	**100**	6.1	0.25	**100**	7.5	0.25	**100**	6.5	0
Average Cic, Cip and Embed. =	**4.668**	**0.20**	**Average Cic, Cip and Embed. =**	**5.618**	**0.18**	**Average Cic, Cip and Embed. =**	**8.125**	**0.13**	**Average Cic, Cip and Embed. =**	**7.515**	**0.18**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FODNGD-3			RG_MP1-1			RG_MP1-2			RG_MP1-3		
16-Jun-21			15-Jun-21			15-Jun-21			15-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	5.5	-	**1**	3.1	-	**1**	5.2	-	**1**	4	-
2	11	-	**2**	6.5	-	**2**	6.5	-	**2**	6.5	-
3	19	-	**3**	4.1	-	**3**	6.1	-	**3**	3.5	-
4	3	-	**4**	7.8	-	**4**	6.3	-	**4**	1.5	-
5	7	-	**5**	5.6	-	**5**	7	-	**5**	7	-
6	5.5	-	**6**	7.3	-	**6**	4.1	-	**6**	10.5	-
7	16	-	**7**	2.5	-	**7**	3	-	**7**	6	-
8	7	-	**8**	2.8	-	**8**	4.2	-	**8**	5.5	-
9	7.5	-	**9**	3.5	-	**9**	4.4	-	**9**	2	-
10	2	0	**10**	3.9	0.5	**10**	3.5	0.25	**10**	6	0.25
11	9	-	**11**	4.5	-	**11**	4.6	-	**11**	2.5	-
12	9.5	-	**12**	4.3	-	**12**	4	-	**12**	5.4	-
13	8	-	**13**	3.9	-	**13**	5.2	-	**13**	2.8	-
14	7	-	**14**	4.6	-	**14**	5.1	-	**14**	7.9	-
15	13	-	**15**	3.1	-	**15**	10	-	**15**	10	-
16	4.5	-	**16**	9	-	**16**	7.1	-	**16**	3.6	-
17	10	-	**17**	3	-	**17**	5.5	-	**17**	3.5	-
18	3	-	**18**	3.8	-	**18**	8.6	-	**18**	3.4	-
19	10	-	**19**	6.5	-	**19**	6	-	**19**	3.6	-
20	10.5	0.25	**20**	3.6	0.5	**20**	5.1	0.5	**20**	9	0.5
21	17	-	**21**	4.5	-	**21**	7.2	-	**21**	6	-
22	8.5	-	**22**	3.6	-	**22**	3.4	-	**22**	4.2	-
23	18	-	**23**	2.4	-	**23**	8	-	**23**	3.5	-
24	9	-	**24**	13.1	-	**24**	3.5	-	**24**	4.5	-
25	3	-	**25**	1	-	**25**	4.4	-	**25**	2.2	-
26	13	-	**26**	4.5	-	**26**	6.5	-	**26**	2.5	-
27	3	-	**27**	5.5	-	**27**	4.5	-	**27**	6.5	-
28	6.5	-	**28**	8.9	-	**28**	5.2	-	**28**	2.9	-
29	8.5	-	**29**	2	-	**29**	5.6	-	**29**	3.8	-
30	5.5	0	**30**	4.5	0.5	**30**	4.5	0.5	**30**	3.2	0.25
31	6	-	**31**	9	-	**31**	3.6	-	**31**	6.5	-
32	4	-	**32**	2.4	-	**32**	2.6	-	**32**	2.3	-
33	4	-	**33**	2.5	-	**33**	5.9	-	**33**	2.8	-
34	5	-	**34**	2.4	-	**34**	3.2	-	**34**	11	-
35	5.5	-	**35**	3	-	**35**	6.5	-	**35**	3.6	-
36	11	-	**36**	13.5	-	**36**	4.1	-	**36**	2.9	-
37	18	-	**37**	2.4	-	**37**	4.2	-	**37**	2.4	-
38	8	-	**38**	8.6	-	**38**	8.5	-	**38**	8.5	-
39	3	-	**39**	9.8	-	**39**	7.8	-	**39**	3.1	-
40	9	0.5	**40**	2.6	0.5	**40**	5.6	0.25	**40**	8.2	0.5
41	10	-	**41**	1.3	-	**41**	5.5	-	**41**	6	-
42	2.5	-	**42**	8	-	**42**	7.5	-	**42**	6.5	-
43	17	-	**43**	3.5	-	**43**	5.1	-	**43**	6.2	-
44	10	-	**44**	3.8	-	**44**	8	-	**44**	7.5	-
45	5.5	-	**45**	11	-	**45**	6.9	-	**45**	7.1	-
46	6	-	**46**	4.2	-	**46**	4.3	-	**46**	3.5	-
47	7.5	-	**47**	4.6	-	**47**	5.5	-	**47**	7.2	-
48	7	-	**48**	7.8	-	**48**	4.6	-	**48**	3.2	-
49	9	-	**49**	9.3	-	**49**	5.5	-	**49**	5.1	-
50	1.5	0	**50**	7	0.5	**50**	5.8	0.5	**50**	2.6	0
51	7.5	-	**51**	7.3	-	**51**	4.3	-	**51**	5	-
52	3	-	**52**	3.8	-	**52**	8	-	**52**	5.1	-
53	5	-	**53**	2.8	-	**53**	7.5	-	**53**	3.4	-
54	2.5	-	**54**	1.9	-	**54**	12.5	-	**54**	7.5	-
55	12.5	-	**55**	5.4	-	**55**	7.5	-	**55**	6.2	-
56	7.5	-	**56**	2.3	-	**56**	5.5	-	**56**	4	-
57	6	-	**57**	3.5	-	**57**	5.5	-	**57**	4.3	-
58	10	-	**58**	3.1	-	**58**	4.6	-	**58**	4.3	-
59	8.5	-	**59**	5.5	-	**59**	12.5	-	**59**	8.5	-
60	4	0	**60**	2.3	0.5	**60**	8.3	0.5	**60**	3.1	0
61	12	-	**61**	3.1	-	**61**	11	-	**61**	4.4	-
62	10	-	**62**	4	-	**62**	6.8	-	**62**	7	-
63	10.5	-	**63**	3.6	-	**63**	6.2	-	**63**	6.2	-
64	11	-	**64**	6.4	-	**64**	12	-	**64**	4.1	-
65	9.5	-	**65**	2.5	-	**65**	6.9	-	**65**	4	-
66	3.5	-	**66**	2.2	-	**66**	3.8	-	**66**	6.4	-
67	2.5	-	**67**	4	-	**67**	7.5	-	**67**	4.3	-
68	3.5	-	**68**	3.4	-	**68**	5.5	-	**68**	3.6	-
69	10	-	**69**	10	-	**69**	4.1	-	**69**	11	-
70	7	0	**70**	3.4	0.25	**70**	4.6	0.5	**70**	3.8	0.25
71	7	-	**71**	2.1	-	**71**	10	-	**71**	9.5	-
72	7.5	-	**72**	3.3	-	**72**	6.5	-	**72**	9.4	-
73	3.5	-	**73**	5.5	-	**73**	4.1	-	**73**	9.4	-
74	6	-	**74**	3	-	**74**	6.2	-	**74**	5.5	-
75	5	-	**75**	10	-	**75**	9.5	-	**75**	4.2	-
76	12	-	**76**	8.5	-	**76**	6.2	-	**76**	3.1	-
77	16	-	**77**	3	-	**77**	5.2	-	**77**	2.8	-
78	4	-	**78**	3.5	-	**78**	8.5	-	**78**	2.1	-
79	9	-	**79**	1.5	-	**79**	4.5	-	**79**	5.2	-
80	5	0.25	**80**	5.9	0.5	**80**	4.4	0.5	**80**	4.2	0.25
81	2.5	-	**81**	3	-	**81**	7.5	-	**81**	6	-
82	10.5	-	**82**	4.4	-	**82**	4.6	-	**82**	7.3	-
83	10	-	**83**	4.4	-	**83**	5.1	-	**83**	4.1	-
84	8	-	**84**	6.5	-	**84**	4.5	-	**84**	5.9	-
85	20	-	**85**	6.5	-	**85**	7.6	-	**85**	10.5	-
86	7	-	**86**	1.9	-	**86**	3.8	-	**86**	3.9	-
87	2	-	**87**	12.5	-	**87**	2.5	-	**87**	5	-
88	13	-	**88**	3.1	-	**88**	3.4	-	**88**	3.6	-
89	8.5	-	**89**	5.4	-	**89**	5.5	-	**89**	2	-
90	17	0.5	**90**	6.2	0.25	**90**	4.2	0.5	**90**	4.1	0.5
91	7	-	**91**	7.7	-	**91**	4.3	-	**91**	5.6	-
92	8	-	**92**	2.3	-	**92**	10.4	-	**92**	8	-
93	4.5	-	**93**	7.2	-	**93**	5.5	-	**93**	4.2	-
94	4	-	**94**	3.1	-	**94**	3.6	-	**94**	5	-
95	2	-	**95**	8.4	-	**95**	3.2	-	**95**	4.5	-
96	13	-	**96**	7.5	-	**96**	6	-	**96**	4.2	-
97	6.5	-	**97**	7.2	-	**97**	5.1	-	**97**	3.4	-
98	5	-	**98**	4.1	-	**98**	8.5	-	**98**	5.2	-
99	8.5	-	**99**	6.8	-	**99**	7	-	**99**	2.8	-
100	7.5	0	**100**	5.1	0.5	**100**	4.8	0.5	**100**	4.1	0.25
Average Cic, Cip and Embed. =	**7.95**	**0.15**	**Average Cic, Cip and Embed. =**	**5.002**	**0.45**	**Average Cic, Cip and Embed. =**	**5.918**	**0.45**	**Average Cic, Cip and Embed. =**	**5.107**	**0.28**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOUSH-1			RG_FOUSH-2			RG_FOUSH-3			RG_FOUKI-1		
15-Jun-21			15-Jun-21			15-Jun-21			17-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	9	-	1	7	-	1	13	-	1	19	-
2	9.5	-	2	26	-	2	4	-	2	9.5	-
3	10	-	3	9.5	-	3	9.5	-	3	16	-
4	6	-	4	8.5	-	4	13	-	4	7.5	-
5	10	-	5	7	-	5	10	-	5	11	-
6	14	-	6	12	-	6	9	-	6	12.5	-
7	7	-	7	10	-	7	5	-	7	19	-
8	7	-	8	7	-	8	5.5	-	8	8	-
9	12	-	9	7.5	-	9	4.5	-	9	10	-
10	22	0.25	10	15	0.25	10	13	0	10	8.5	0.25
11	14.5	-	11	8	-	11	6.5	-	11	5	-
12	12	-	12	9.5	-	12	9	-	12	7	-
13	8	-	13	11	-	13	12	-	13	9	-
14	8.5	-	14	10.5	-	14	2.5	-	14	14.5	-
15	8	-	15	6.5	-	15	7.5	-	15	14	-
16	8	-	16	11	-	16	6.5	-	16	12	-
17	6.5	-	17	7	-	17	3.5	-	17	8	-
18	15	-	18	16	-	18	14.5	-	18	11.5	-
19	5.5	-	19	6	-	19	11	-	19	5	-
20	6.5	0.25	20	9.5	0	20	25	0.25	20	10	0
21	6	-	21	30	-	21	7.5	-	21	12.5	-
22	21	-	22	4.5	-	22	7.5	-	22	16	-
23	6	-	23	8.5	-	23	12.5	-	23	5	-
24	14	-	24	12	-	24	3.5	-	24	8	-
25	4	-	25	7.5	-	25	12.5	-	25	10.5	-
26	12.5	-	26	8.5	-	26	9	-	26	6	-
27	10	-	27	10	-	27	10.5	-	27	6	-
28	14	-	28	10	-	28	3	-	28	13	-
29	7.5	-	29	8.5	-	29	9	-	29	5.5	-
30	7.5	0	30	9	0.25	30	10	0	30	17.5	0.25
31	12	-	31	11.5	-	31	11	-	31	13.5	-
32	9	-	32	9.5	-	32	11.5	-	32	21	-
33	12	-	33	13	-	33	7.5	-	33	7	-
34	4	-	34	16	-	34	7.5	-	34	9	-
35	9	-	35	6	-	35	5.5	-	35	3.5	-
36	15	-	36	7	-	36	13	-	36	7.5	-
37	11.5	-	37	7.5	-	37	7.5	-	37	10	-
38	9.5	-	38	8	-	38	7.5	-	38	9	-
39	6	-	39	14	-	39	3	-	39	6.5	-
40	13	0	40	5.5	0	40	3.5	0.25	40	16	0
41	8.5	-	41	8.5	-	41	11	-	41	20	-
42	6.5	-	42	3	-	42	7	-	42	6.5	-
43	7	-	43	7	-	43	7.5	-	43	10	-
44	9	-	44	8	-	44	10	-	44	11	-
45	10	-	45	22	-	45	1	-	45	12	-
46	6.5	-	46	12	-	46	8	-	46	14	-
47	9	-	47	4.5	-	47	6	-	47	11	-
48	7	-	48	11	-	48	12.5	-	48	13.5	-
49	3.5	-	49	8	-	49	7	-	49	5.5	-
50	16	0.5	50	19	0.25	50	10	0	50	7	0.25
51	8.5	-	51	9.5	-	51	9	-	51	9	-
52	6	-	52	13	-	52	11	-	52	8	-
53	6.5	-	53	12	-	53	4.5	-	53	16	-
54	4	-	54	7.5	-	54	3.5	-	54	13	-
55	4	-	55	7	-	55	6	-	55	9.5	-
56	10.5	-	56	7	-	56	7	-	56	3.5	-
57	6.5	-	57	14.5	-	57	11	-	57	20	-
58	11	-	58	5.5	-	58	6	-	58	10.5	-
59	23	-	59	6	-	59	16	-	59	8.5	-
60	11	0	60	6	0	60	4.5	0	60	6	0
61	9.5	-	61	3.5	-	61	10	-	61	7.5	-
62	12	-	62	9	-	62	11.5	-	62	5	-
63	11	-	63	16	-	63	8.5	-	63	6.5	-
64	12	-	64	7.5	-	64	6	-	64	9	-
65	13	-	65	24.5	-	65	6	-	65	19	-
66	8	-	66	8	-	66	2	-	66	23	-
67	8.5	-	67	12	-	67	5	-	67	16	-
68	6.5	-	68	5	-	68	11.5	-	68	12	-
69	7	-	69	11.5	-	69	4	-	69	1.5	-
70	3.5	0.25	70	10	0.25	70	6.5	0.25	70	8.5	0.25
71	6.5	-	71	11.5	-	71	8	-	71	8	-
72	5.5	-	72	12	-	72	4.5	-	72	7	-
73	8.5	-	73	15	-	73	5.5	-	73	11	-
74	5.5	-	74	12.5	-	74	5	-	74	25	-
75	8.5	-	75	9	-	75	12.5	-	75	7	-
76	9.5	-	76	8	-	76	2.5	-	76	5.5	-
77	9	-	77	11	-	77	1	-	77	16	-
78	16	-	78	12	-	78	11	-	78	5	-
79	11	-	79	13	-	79	7	-	79	11	-
80	13	0.25	80	5	0.25	80	13.5	0.25	80	7	0.25
81	8	-	81	5	-	81	9	-	81	6.5	-
82	12	-	82	12	-	82	6	-	82	10	-
83	7	-	83	8	-	83	8.5	-	83	12	-
84	6	-	84	9	-	84	6.5	-	84	5	-
85	9	-	85	20	-	85	8	-	85	5.5	-
86	14	-	86	7	-	86	6.5	-	86	5.5	-
87	6	-	87	5	-	87	5.5	-	87	8.5	-
88	6	-	88	8.5	-	88	8	-	88	16	-
89	8	-	89	12	-	89	5	-	89	12	-
90	6	0.25	90	12	0	90	14	0	90	6	0.5
91	4.5	-	91	7	-	91	15	-	91	9	-
92	8.5	-	92	11	-	92	5.5	-	92	6	-
93	14	-	93	10	-	93	16	-	93	12	-
94	6	-	94	7	-	94	6.5	-	94	12	-
95	19	-	95	15	-	95	8	-	95	11	-
96	6.5	-	96	8.5	-	96	13	-	96	4.5	-
97	7	-	97	12	-	97	5	-	97	5	-
98	6.5	-	98	22	-	98	3	-	98	17	-
99	21	-	99	9	-	99	7	-	99	6.5	-
100	9	0	100	12.5	0.25	100	7	0	100	9	0
Average Cic, Cip and Embed. =	9.445	0.18	Average Cic, Cip and Embed. =	10.305	0.15	Average Cic, Cip and Embed. =	8.1	0.10	Average Cic, Cip and Embed. =	10.24	0.18
Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-	
New Calcite I	-		New Calcite I	-		New Calcite I	-		New Calcite I	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOUKI-2			RG_FOUKI-3			RG_FOBKS-1			RG_FOBKS-2		
17-Jun-21			17-Jun-21			16-Jun-21			16-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	6	-	**1**	5.5	-	**1**	8.1	-	**1**	26	-
2	5.5	-	**2**	14	-	**2**	6.3	-	**2**	15	-
3	6.5	-	**3**	9	-	**3**	4.2	-	**3**	6.1	-
4	5	-	**4**	4.5	-	**4**	3.6	-	**4**	16.5	-
5	5.5	-	**5**	10	-	**5**	2.9	-	**5**	13.2	-
6	5	-	**6**	9.5	-	**6**	5.8	-	**6**	20.9	-
7	9	-	**7**	5.5	-	**7**	9.8	-	**7**	13.5	-
8	8.5	-	**8**	5.5	-	**8**	2.5	-	**8**	6.6	-
9	5.5	-	**9**	11.5	-	**9**	4.2	-	**9**	7	-
10	4	0	**10**	3	0	**10**	8.1	0.5	**10**	6.6	0.25
11	9	-	**11**	6	-	**11**	16.5	-	**11**	4.1	-
12	20	-	**12**	6.5	-	**12**	2.3	-	**12**	7.4	-
13	7	-	**13**	11	-	**13**	6.8	-	**13**	8.3	-
14	19	-	**14**	12	-	**14**	3.5	-	**14**	12	-
15	9	-	**15**	11.5	-	**15**	8.2	-	**15**	10.9	-
16	6	-	**16**	9.5	-	**16**	3.7	-	**16**	14.3	-
17	3.5	-	**17**	5	-	**17**	4.3	-	**17**	1.9	-
18	5.5	-	**18**	10	-	**18**	5.9	-	**18**	7.4	-
19	4	-	**19**	8	-	**19**	5.8	-	**19**	10.4	-
20	4.5	0.25	**20**	8.5	0.25	**20**	8.6	0.5	**20**	5.9	0
21	14.5	-	**21**	7	-	**21**	5.6	-	**21**	10.1	-
22	5	-	**22**	6	-	**22**	4.2	-	**22**	3.5	-
23	5	-	**23**	9.5	-	**23**	3.1	-	**23**	11.2	-
24	10	-	**24**	11	-	**24**	12.2	-	**24**	3.5	-
25	10	-	**25**	10.5	-	**25**	10.4	-	**25**	8.9	-
26	12.5	-	**26**	14.5	-	**26**	3.7	-	**26**	6.7	-
27	11	-	**27**	6.5	-	**27**	2.5	-	**27**	4.2	-
28	7.5	-	**28**	9	-	**28**	2.5	-	**28**	14.3	-
29	8.5	-	**29**	4	-	**29**	4.1	-	**29**	8.4	-
30	5.5	0	**30**	20	0.5	**30**	7.6	0.25	**30**	13	0
31	12	-	**31**	9	-	**31**	1.5	-	**31**	6.4	-
32	4	-	**32**	11	-	**32**	4.3	-	**32**	12.5	-
33	7.5	-	**33**	6	-	**33**	11.2	-	**33**	7.2	-
34	5.5	-	**34**	4	-	**34**	8.1	-	**34**	2.9	-
35	8	-	**35**	6.5	-	**35**	8.6	-	**35**	4.2	-
36	3	-	**36**	8.5	-	**36**	9.7	-	**36**	13	-
37	7	-	**37**	8	-	**37**	4.7	-	**37**	8.6	-
38	6	-	**38**	8	-	**38**	3.4	-	**38**	6.2	-
39	8	-	**39**	5	-	**39**	3.8	-	**39**	14.2	-
40	10.5	0	**40**	3.5	0	**40**	1.9	0.25	**40**	3.5	0.25
41	10.5	-	**41**	11	-	**41**	3.2	-	**41**	13.3	-
42	5.5	-	**42**	4	-	**42**	2.8	-	**42**	3.7	-
43	6	-	**43**	7	-	**43**	9.1	-	**43**	13.2	-
44	13	-	**44**	7	-	**44**	4.6	-	**44**	4.7	-
45	8.5	-	**45**	7	-	**45**	4.3	-	**45**	11.2	-
46	6.5	-	**46**	8	-	**46**	5.2	-	**46**	8.1	-
47	21	-	**47**	5	-	**47**	8	-	**47**	3.5	-
48	5	-	**48**	9	-	**48**	10.4	-	**48**	5.9	-
49	20.5	-	**49**	9	-	**49**	6.1	-	**49**	6.9	-
50	19	0.25	**50**	8.5	0.5	**50**	6.3	0.5	**50**	5	0.5
51	17	-	**51**	7	-	**51**	6.7	-	**51**	6.3	-
52	8	-	**52**	6	-	**52**	5.9	-	**52**	4.6	-
53	10	-	**53**	7	-	**53**	8.7	-	**53**	18	-
54	7.5	-	**54**	12	-	**54**	3.5	-	**54**	15.6	-
55	10	-	**55**	8	-	**55**	1.9	-	**55**	10	-
56	3.5	-	**56**	3	-	**56**	4.6	-	**56**	3.2	-
57	3.5	-	**57**	6	-	**57**	7.8	-	**57**	2.6	-
58	20	-	**58**	7	-	**58**	6.3	-	**58**	4.2	-
59	10.5	-	**59**	8.5	-	**59**	11.6	-	**59**	3.1	-
60	4.5	0.5	**60**	6.5	0.25	**60**	8.3	0.5	**60**	5.2	0.25
61	11	-	**61**	6.5	-	**61**	7.2	-	**61**	1.6	-
62	4.5	-	**62**	5	-	**62**	5.5	-	**62**	3.5	-
63	12	-	**63**	6	-	**63**	8.5	-	**63**	2.5	-
64	8.5	-	**64**	7	-	**64**	2.5	-	**64**	11.2	-
65	25	-	**65**	6	-	**65**	14.6	-	**65**	12.5	-
66	4	-	**66**	9	-	**66**	3.2	-	**66**	4.2	-
67	7	-	**67**	3	-	**67**	3.8	-	**67**	2.2	-
68	10.5	-	**68**	13	-	**68**	8.6	-	**68**	16.1	-
69	8	-	**69**	7	-	**69**	5.5	-	**69**	4.7	-
70	8.5	0.25	**70**	8	0	**70**	6.3	0.25	**70**	14	0.25
71	5	-	**71**	12	-	**71**	11.4	-	**71**	2.5	-
72	8	-	**72**	10	-	**72**	5.2	-	**72**	8.1	-
73	7	-	**73**	10	-	**73**	14.3	-	**73**	8	-
74	10.5	-	**74**	7	-	**74**	2.6	-	**74**	10	-
75	11	-	**75**	6	-	**75**	4	-	**75**	5.7	-
76	5.5	-	**76**	4.5	-	**76**	15	-	**76**	15.2	-
77	8	-	**77**	10	-	**77**	3.1	-	**77**	2.9	-
78	8.5	-	**78**	4.5	-	**78**	9.6	-	**78**	6.2	-
79	5.5	-	**79**	9.5	-	**79**	6.2	-	**79**	20.1	-
80	7	0.25	**80**	5.5	0.25	**80**	11.2	0.5	**80**	13.9	0.5
81	9	-	**81**	7	-	**81**	7.1	-	**81**	4.7	-
82	6	-	**82**	7	-	**82**	9.8	-	**82**	11.2	-
83	10.5	-	**83**	9	-	**83**	6.5	-	**83**	1.7	-
84	11	-	**84**	9	-	**84**	3.4	-	**84**	5.2	-
85	6	-	**85**	6.5	-	**85**	7.4	-	**85**	12.3	-
86	11.5	-	**86**	3	-	**86**	6.5	-	**86**	5.7	-
87	8.5	-	**87**	6.5	-	**87**	6.1	-	**87**	16.9	-
88	6.5	-	**88**	5	-	**88**	4.5	-	**88**	6.2	-
89	4.5	-	**89**	7	-	**89**	2.1	-	**89**	11	-
90	4	0.25	**90**	6.5	0	**90**	4.1	0.25	**90**	4	0.25
91	2.5	-	**91**	5	-	**91**	7.3	-	**91**	3	-
92	7	-	**92**	4	-	**92**	3.3	-	**92**	9.2	-
93	14.5	-	**93**	5	-	**93**	11.4	-	**93**	19.2	-
94	6	-	**94**	4.5	-	**94**	7.6	-	**94**	8.9	-
95	19	-	**95**	10	-	**95**	3.8	-	**95**	9	-
96	9	-	**96**	7	-	**96**	19.4	-	**96**	10.1	-
97	14	-	**97**	8	-	**97**	9.4	-	**97**	1.9	-
98	18	-	**98**	7	-	**98**	2.3	-	**98**	3.6	-
99	5.5	-	**99**	5.5	-	**99**	5.1	-	**99**	7.4	-
100	6.5	0.5	**100**	8	0.25	**100**	7.7	0.5	**100**	4.6	0
Average Cic, Cip and Embed. =	**8.735**	**0.23**	**Average Cic, Cip and Embed. =**	**7.6**	**0.20**	**Average Cic, Cip and Embed. =**	**6.426**	**0.40**	**Average Cic, Cip and Embed. =**	**8.457**	**0.23**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOBKS-3			RG_SCOUTDS-1			RG_SCOUTDS-2			RG_SCOUTDS-3		
16-Jun-21			16-Jun-21			16-Jun-21			16-Jun-21		
Pebble	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	7.2	-	**1**	5.6	-	**1**	3.8	-	**1**	7.6	-
2	5.5	-	**2**	7.9	-	**2**	4.6	-	**2**	6.4	-
3	6.1	-	**3**	7.3	-	**3**	10	-	**3**	5.3	-
4	4.6	-	**4**	4.8	-	**4**	12.5	-	**4**	6.8	-
5	4.5	-	**5**	12	-	**5**	4.4	-	**5**	2.2	-
6	4.2	-	**6**	16.2	-	**6**	9.9	-	**6**	7.4	-
7	10.1	-	**7**	5.6	-	**7**	8.5	-	**7**	5	-
8	18	-	**8**	12.2	-	**8**	4	-	**8**	2.6	-
9	7.5	-	**9**	8.6	-	**9**	7.6	-	**9**	6.6	-
10	3.4	0.25	**10**	16.3	0.25	**10**	10.4	0.5	**10**	5.4	0.25
11	5.2	-	**11**	9.3	-	**11**	6.2	-	**11**	5.8	-
12	3.1	-	**12**	10	-	**12**	12.3	-	**12**	5.8	-
13	4.2	-	**13**	11.3	-	**13**	6.5	-	**13**	8.2	-
14	4.3	-	**14**	9.6	-	**14**	9.6	-	**14**	5.6	-
15	6.8	-	**15**	4.2	-	**15**	2.8	-	**15**	16.5	-
16	5	-	**16**	6.3	-	**16**	2.7	-	**16**	5.4	-
17	6.7	-	**17**	11.3	-	**17**	6.7	-	**17**	6.4	-
18	11.1	-	**18**	6.2	-	**18**	9	-	**18**	8	-
19	3.5	-	**19**	7.4	-	**19**	3.2	-	**19**	5.2	-
20	8.5	0.5	**20**	6.9	0.5	**20**	2.8	0.25	**20**	6.2	0.5
21	12.6	-	**21**	7.3	-	**21**	12.1	-	**21**	4.3	-
22	4.4	-	**22**	6.2	-	**22**	6.4	-	**22**	4.3	-
23	8.4	-	**23**	17.5	-	**23**	6.5	-	**23**	2.1	-
24	7.5	-	**24**	4.3	-	**24**	4.4	-	**24**	4	-
25	2.6	-	**25**	16.5	-	**25**	2.5	-	**25**	5.6	-
26	3.6	-	**26**	5.8	-	**26**	2.3	-	**26**	5.3	-
27	3.8	-	**27**	5.4	-	**27**	5.6	-	**27**	4.2	-
28	5.2	-	**28**	9.2	-	**28**	5.4	-	**28**	7	-
29	6.9	-	**29**	15.6	-	**29**	4.3	-	**29**	15	-
30	14.2	0.75	**30**	8.3	0.5	**30**	4.2	0	**30**	7.1	0.25
31	6.5	-	**31**	6.9	-	**31**	7.3	-	**31**	6.1	-
32	10.1	-	**32**	3.1	-	**32**	4.5	-	**32**	13.5	-
33	7.3	-	**33**	7.6	-	**33**	3.8	-	**33**	3	-
34	2.4	-	**34**	8.4	-	**34**	11.5	-	**34**	8	-
35	7.1	-	**35**	5.3	-	**35**	6.2	-	**35**	5.6	-
36	3.2	-	**36**	9.5	-	**36**	5.9	-	**36**	4.5	-
37	2.4	-	**37**	8	-	**37**	6.2	-	**37**	6.4	-
38	6.3	-	**38**	16.5	-	**38**	6.9	-	**38**	7	-
39	8.3	-	**39**	6.5	-	**39**	9	-	**39**	6.4	-
40	4.3	0.25	**40**	4.8	0.25	**40**	11	0.75	**40**	17	0
41	6.5	-	**41**	7.4	-	**41**	6.3	-	**41**	5.3	-
42	5.8	-	**42**	11.2	-	**42**	4.8	-	**42**	7.4	-
43	5.9	-	**43**	-	-	**43**	8	-	**43**	5.3	-
44	9.3	-	**44**	8.7	-	**44**	7.6	-	**44**	6.1	-
45	6.6	-	**45**	7.1	-	**45**	6.2	-	**45**	5	-
46	3.8	-	**46**	7.3	-	**46**	6.5	-	**46**	4	-
47	4.9	-	**47**	7.4	-	**47**	6.8	-	**47**	8.5	-
48	2.9	-	**48**	8.2	-	**48**	4.9	-	**48**	4.4	-
49	3.1	-	**49**	10.3	-	**49**	2	-	**49**	5.6	-
50	4.6	0.5	**50**	6.1	0.5	**50**	2.8	0.25	**50**	10.6	0.25
51	7.9	-	**51**	4.3	-	**51**	6.4	-	**51**	2.2	-
52	4	-	**52**	6.6	-	**52**	4.5	-	**52**	8.1	-
53	4.9	-	**53**	3.1	-	**53**	3.6	-	**53**	6.5	-
54	4.6	-	**54**	9.8	-	**54**	3.6	-	**54**	3	-
55	4.3	-	**55**	4.5	-	**55**	5.8	-	**55**	11.4	-
56	5.6	-	**56**	10.2	-	**56**	3.6	-	**56**	9.3	-
57	5.2	-	**57**	15.4	-	**57**	3.6	-	**57**	8.4	-
58	6.1	-	**58**	15.5	-	**58**	4.7	-	**58**	3.6	-
59	8.3	-	**59**	6.8	-	**59**	6.2	-	**59**	8.9	-
60	3.5	0.25	**60**	12.4	0.5	**60**	3.2	0.25	**60**	2.1	0.25
61	5.5	-	**61**	5.6	-	**61**	4.4	-	**61**	4.8	-
62	7.2	-	**62**	10.3	-	**62**	6.8	-	**62**	11.2	-
63	4.3	-	**63**	11.6	-	**63**	6.8	-	**63**	3.5	-
64	4.8	-	**64**	11.5	-	**64**	4.2	-	**64**	2.1	-
65	5.1	-	**65**	6.9	-	**65**	3.3	-	**65**	4.6	-
66	6.8	-	**66**	14.5	-	**66**	3.3	-	**66**	9.5	-
67	10.2	-	**67**	12.2	-	**67**	4.4	-	**67**	3.2	-
68	5.6	-	**68**	10.5	-	**68**	3.2	-	**68**	5.1	-
69	12.1	-	**69**	10.5	-	**69**	6.5	-	**69**	3.1	-
70	10.5	0.5	**70**	2.1	0	**70**	4.1	0.5	**70**	4.3	0.25
71	4.3	-	**71**	5.3	-	**71**	5.6	-	**71**	5.4	-
72	10.6	-	**72**	18.2	-	**72**	4.1	-	**72**	6.5	-
73	8.1	-	**73**	6.5	-	**73**	5.6	-	**73**	6.3	-
74	5.3	-	**74**	14.1	-	**74**	4.7	-	**74**	7.2	-
75	5.3	-	**75**	10.3	-	**75**	6.2	-	**75**	10.1	-
76	8.9	-	**76**	7.6	-	**76**	9.2	-	**76**	5.5	-
77	7.5	-	**77**	10.5	-	**77**	6.6	-	**77**	4.4	-
78	15.2	-	**78**	10.5	-	**78**	3.5	-	**78**	10.4	-
79	5.9	-	**79**	5.6	-	**79**	6.2	-	**79**	5.3	-
80	6.2	0.25	**80**	3.4	0.5	**80**	4.8	0.5	**80**	8.1	0.5
81	7.2	-	**81**	6.5	-	**81**	6.4	-	**81**	4.4	-
82	4.1	-	**82**	5.4	-	**82**	6.4	-	**82**	8.2	-
83	9.3	-	**83**	7.5	-	**83**	6.2	-	**83**	4.2	-
84	13.4	-	**84**	9.3	-	**84**	4.5	-	**84**	5.2	-
85	5.5	-	**85**	5.1	-	**85**	4.8	-	**85**	10.5	-
86	15.6	-	**86**	4.8	-	**86**	5.9	-	**86**	8.5	-
87	6.8	-	**87**	6.8	-	**87**	6.9	-	**87**	5.5	-
88	7.3	-	**88**	6.7	-	**88**	7	-	**88**	6	-
89	5.2	-	**89**	12.4	-	**89**	5	-	**89**	8.1	-
90	14.2	0.25	**90**	6.1	0.5	**90**	5.3	0.25	**90**	3.6	0.5
91	4.4	-	**91**	5.5	-	**91**	5.4	-	**91**	6.4	-
92	4.3	-	**92**	7.3	-	**92**	5.6	-	**92**	2.8	-
93	3.8	-	**93**	23	-	**93**	4.8	-	**93**	5.9	-
94	4.6	-	**94**	4.7	-	**94**	7.2	-	**94**	6.2	-
95	6.2	-	**95**	5.8	-	**95**	4.3	-	**95**	5.3	-
96	3.4	-	**96**	6.4	-	**96**	7.6	-	**96**	5.3	-
97	4.8	-	**97**	5.5	-	**97**	4.2	-	**97**	10.8	-
98	4.8	-	**98**	9.1	-	**98**	10.5	-	**98**	6.2	-
99	8.9	-	**99**	17	-	**99**	8.3	-	**99**	4.4	-
100	7.5	0.25	**100**	4.1	-	**100**	6.5	0.5	**100**	3.9	0.25
Average Cic, Cip and Embed. =	**6.551**	**0.38**	**Average Cic, Cip and Embed. =**	**8.693939394**	**0.39**	**Average Cic, Cip and Embed. =**	**5.909**	**0.38**	**Average Cic, Cip and Embed. =**	**6.325**	**0.30**
Old Calcite Ir	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**	
New Calcite I	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOBSC-1			RG_FOBSC-2			RG_FOBSC-3			RG_FOBCP-1		
17-Jun-21			17-Jun-21			17-Jun-21			17-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	4.5	-	**1**	14.3	-	**1**	5.5	-	**1**	21	-
2	2.9	-	**2**	5.5	-	**2**	9.8	-	**2**	5.5	-
3	12.2	-	**3**	5.4	-	**3**	11.5	-	**3**	3.7	-
4	6.8	-	**4**	11.3	-	**4**	9.2	-	**4**	22	-
5	5.3	-	**5**	12.5	-	**5**	16.4	-	**5**	30	-
6	6.5	-	**6**	4.1	-	**6**	7.6	-	**6**	4.5	-
7	2.7	-	**7**	24.5	-	**7**	11.8	-	**7**	11	-
8	2.9	-	**8**	5.5	-	**8**	7.2	-	**8**	11	-
9	2.8	-	**9**	9.5	-	**9**	8.3	-	**9**	5.1	-
10	4.8	0.25	**10**	6.4	0.25	**10**	6.4	0.25	**10**	4.8	0.25
11	5.2	-	**11**	2.6	-	**11**	10.3	-	**11**	4	-
12	7.3	-	**12**	3.2	-	**12**	12.8	-	**12**	5.6	-
13	5.2	-	**13**	5.9	-	**13**	15.2	-	**13**	9.5	-
14	8.7	-	**14**	3.6	-	**14**	6.4	-	**14**	9	-
15	7.1	-	**15**	3.3	-	**15**	11.5	-	**15**	6.2	-
16	5.4	-	**16**	9.1	-	**16**	7.3	-	**16**	4.7	-
17	7.6	-	**17**	2.1	-	**17**	10.6	-	**17**	6.4	-
18	5.6	-	**18**	18.3	-	**18**	15.5	-	**18**	8.3	-
19	6.2	-	**19**	7.3	-	**19**	10.3	-	**19**	9.5	-
20	7.3	0.25	**20**	7.3	0.25	**20**	6.5	0.5	**20**	4.2	0
21	6.5	-	**21**	8.2	-	**21**	11.6	-	**21**	9.2	-
22	6.3	-	**22**	9.5	-	**22**	15.3	-	**22**	4.5	-
23	11.5	-	**23**	4.4	-	**23**	15.1	-	**23**	5.2	-
24	15.8	-	**24**	19.5	-	**24**	15.3	-	**24**	3.2	-
25	3.4	-	**25**	8.7	-	**25**	10.4	-	**25**	5	-
26	4.2	-	**26**	6.3	-	**26**	12.5	-	**26**	3.9	-
27	5.1	-	**27**	14.2	-	**27**	13.2	-	**27**	2.6	-
28	8.1	-	**28**	9.9	-	**28**	12.5	-	**28**	7.1	-
29	9.7	-	**29**	15.3	-	**29**	5.8	-	**29**	2.5	-
30	3.5	0.25	**30**	8.9	0	**30**	7.8	0.5	**30**	5.6	0.25
31	4.7	-	**31**	6	-	**31**	12.2	-	**31**	5.4	-
32	9.9	-	**32**	5.7	-	**32**	7.5	-	**32**	2.7	-
33	10.2	-	**33**	5.9	-	**33**	13.4	-	**33**	5.9	-
34	10.8	-	**34**	7.7	-	**34**	10.4	-	**34**	3.7	-
35	3.8	-	**35**	6.7	-	**35**	7.5	-	**35**	2.6	-
36	2.2	-	**36**	8.9	-	**36**	11.5	-	**36**	10.9	-
37	15.5	-	**37**	7.2	-	**37**	7.6	-	**37**	10.7	-
38	10.4	-	**38**	7.7	-	**38**	5.8	-	**38**	4.1	-
39	3.5	-	**39**	8	-	**39**	10.4	-	**39**	23.1	-
40	2.6	0.25	**40**	8.7	0.25	**40**	21.4	0.5	**40**	4.8	0
41	2.8	-	**41**	4.9	-	**41**	11.5	-	**41**	4	-
42	3.5	-	**42**	19.7	-	**42**	13.4	-	**42**	4	-
43	7.7	-	**43**	5.5	-	**43**	8.6	-	**43**	3.2	-
44	3.6	-	**44**	8.4	-	**44**	9.2	-	**44**	5.9	-
45	5.2	-	**45**	5.2	-	**45**	9.9	-	**45**	3.6	-
46	6.5	-	**46**	13.2	-	**46**	5.5	-	**46**	7.6	-
47	4.8	-	**47**	4.8	-	**47**	13.2	-	**47**	5.2	-
48	2.7	-	**48**	4.3	-	**48**	6.4	-	**48**	4.6	-
49	8.1	-	**49**	8.2	-	**49**	14.5	-	**49**	5.9	-
50	19.5	0.5	**50**	7.6	0.25	**50**	9.4	0.5	**50**	13.1	0.25
51	4.8	-	**51**	3.5	-	**51**	5.8	-	**51**	6	-
52	5.6	-	**52**	20.5	-	**52**	16.4	-	**52**	7	-
53	5.4	-	**53**	6.3	-	**53**	6.3	-	**53**	3.2	-
54	11.4	-	**54**	3.9	-	**54**	10.2	-	**54**	4.6	-
55	5	-	**55**	4.6	-	**55**	6.4	-	**55**	2.4	-
56	7.5	-	**56**	4.7	-	**56**	6.8	-	**56**	5.9	-
57	6.2	-	**57**	6.7	-	**57**	8.3	-	**57**	4.5	-
58	3.8	-	**58**	10.3	-	**58**	10.2	-	**58**	8.9	-
59	5	-	**59**	3.9	-	**59**	10.1	-	**59**	14.2	-
60	5.2	0.25	**60**	5.9	0.25	**60**	11.3	0.5	**60**	4.1	0.5
61	4.4	-	**61**	4.3	-	**61**	13	-	**61**	11.6	-
62	11.3	-	**62**	6.1	-	**62**	9	-	**62**	4.4	-
63	4.2	-	**63**	7.3	-	**63**	11.6	-	**63**	5.6	-
64	4.4	-	**64**	2.2	-	**64**	15.6	-	**64**	12.6	-
65	4.1	-	**65**	17.2	-	**65**	7.8	-	**65**	3.6	-
66	5.2	-	**66**	3.9	-	**66**	10.5	-	**66**	4.6	-
67	7.6	-	**67**	16.7	-	**67**	8.9	-	**67**	3.5	-
68	4.1	-	**68**	12.7	-	**68**	8.9	-	**68**	5.8	-
69	4.3	-	**69**	13.5	-	**69**	9.6	-	**69**	7.5	-
70	6	0.25	**70**	7.2	0.25	**70**	18.8	0.25	**70**	3.6	0.5
71	11.7	-	**71**	7.9	-	**71**	7.5	-	**71**	5.4	-
72	6.2	-	**72**	7	-	**72**	6	-	**72**	10.3	-
73	8	-	**73**	5.4	-	**73**	11.5	-	**73**	4.2	-
74	6.3	-	**74**	6.2	-	**74**	17.1	-	**74**	7.7	-
75	2.9	-	**75**	5.4	-	**75**	6.5	-	**75**	6.9	-
76	4.4	-	**76**	12.3	-	**76**	12.3	-	**76**	12.8	-
77	5.4	-	**77**	6.7	-	**77**	6	-	**77**	4.2	-
78	6.4	-	**78**	4.9	-	**78**	13.1	-	**78**	11.5	-
79	16.5	-	**79**	18.9	-	**79**	9.5	-	**79**	6.8	-
80	2.9	0.5	**80**	3.2	0.5	**80**	13.4	0.5	**80**	5.6	0.25
81	9.5	-	**81**	12.5	-	**81**	11.5	-	**81**	4.9	-
82	2.9	-	**82**	15.2	-	**82**	7.6	-	**82**	7.3	-
83	15	-	**83**	17.9	-	**83**	5.5	-	**83**	2.1	-
84	10.8	-	**84**	10.7	-	**84**	8.4	-	**84**	5.9	-
85	8.1	-	**85**	6.1	-	**85**	13.7	-	**85**	5.4	-
86	8.9	-	**86**	7.2	-	**86**	7.6	-	**86**	5.3	-
87	4.2	-	**87**	9.1	-	**87**	7.1	-	**87**	13.2	-
88	2.1	-	**88**	13.3	-	**88**	6.6	-	**88**	3.6	-
89	7.1	-	**89**	8.6	-	**89**	9.2	-	**89**	12.8	-
90	7.3	0.5	**90**	9.3	0.25	**90**	5.6	0.5	**90**	-	0.25
91	5.3	-	**91**	5.7	-	**91**	6.5	-	**91**	3.6	-
92	4.2	-	**92**	11.7	-	**92**	10.5	-	**92**	7.1	-
93	5.5	-	**93**	11.5	-	**93**	13.1	-	**93**	7.2	-
94	9.1	-	**94**	4.7	-	**94**	9.4	-	**94**	3.6	-
95	6.2	-	**95**	4.4	-	**95**	5.7	-	**95**	14.4	-
96	4.3	-	**96**	4.1	-	**96**	7.5	-	**96**	7.1	-
97	4.5	-	**97**	2.3	-	**97**	13.5	-	**97**	7.6	-
98	3.7	-	**98**	7.6	-	**98**	7	-	**98**	5.4	-
99	6.7	-	**99**	7.1	-	**99**	8.9	-	**99**	5.9	-
100	6.5	0.5	**100**	6.3	0.25	**100**	11.6	0.25	**100**	9.2	0.5
Average Cic, Cip and Embed. =	**6.472**	**0.35**	**Average Cic, Cip and Embed. =**	**8.355**	**0.25**	**Average Cic, Cip and Embed. =**	**10.138**	**0.43**	**Average Cic, Cip and Embed. =**	**7.034343434**	**0.28**
Old Calcite Ir	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**	
New Calcite I	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOBCP-2			RG_FOBCP-3			RG_FRCP1SW-1			RG_FRCP1SW-2		
17-Jun-21			17-Jun-21			17-Jun-21			17-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	5.4	-	**1**	3.7	-	**1**	3.5	-	**1**	3.5	-
2	6.3	-	**2**	4.2	-	**2**	4	-	**2**	7.5	-
3	9.2	-	**3**	5.6	-	**3**	3.5	-	**3**	4.5	-
4	5.3	-	**4**	4.1	-	**4**	7	-	**4**	1.5	-
5	16.2	-	**5**	4.2	-	**5**	4	-	**5**	6	-
6	3.5	-	**6**	7.1	-	**6**	4.5	-	**6**	6	-
7	5.5	-	**7**	5.6	-	**7**	9.5	-	**7**	5	-
8	7.2	-	**8**	7.4	-	**8**	6.5	-	**8**	7.5	-
9	6.4	-	**9**	4.2	-	**9**	5.5	-	**9**	5.5	-
10	7.9	0.25	**10**	6.9	0.25	**10**	6	0	**10**	10	0
11	4.2	-	**11**	4.2	-	**11**	6	-	**11**	5.5	-
12	12.6	-	**12**	4.1	-	**12**	5	-	**12**	8	-
13	4.5	-	**13**	6.6	-	**13**	3.5	-	**13**	6.5	-
14	14.3	-	**14**	4.9	-	**14**	3	-	**14**	5.5	-
15	9.4	-	**15**	4.2	-	**15**	3.5	-	**15**	6	-
16	9.4	-	**16**	5.6	-	**16**	8	-	**16**	2	-
17	10.3	-	**17**	8.5	-	**17**	4.5	-	**17**	5.5	-
18	4.5	-	**18**	7.2	-	**18**	4	-	**18**	5	-
19	7.4	-	**19**	5.5	-	**19**	3	-	**19**	5	-
20	10.2	0.25	**20**	8.9	0.25	**20**	9	0.25	**20**	4.5	0
21	4.6	-	**21**	8	-	**21**	5.5	-	**21**	6	-
22	6.3	-	**22**	3.1	-	**22**	6	-	**22**	7	-
23	8.8	-	**23**	5.6	-	**23**	5	-	**23**	7	-
24	6.8	-	**24**	5.5	-	**24**	2	-	**24**	5	-
25	10.1	-	**25**	3.4	-	**25**	5	-	**25**	4.5	-
26	21.5	-	**26**	7	-	**26**	4	-	**26**	5	-
27	8.2	-	**27**	2.9	-	**27**	4	-	**27**	7	-
28	4.3	-	**28**	7.4	-	**28**	5	-	**28**	8	-
29	9.4	-	**29**	6.2	-	**29**	6	-	**29**	2	-
30	6	0.25	**30**	3.3	0	**30**	7	0	**30**	3	0
31	10.2	-	**31**	5.7	-	**31**	6.5	-	**31**	2	-
32	9.1	-	**32**	4.2	-	**32**	5	-	**32**	5	-
33	12.2	-	**33**	4	-	**33**	4.5	-	**33**	7	-
34	6.4	-	**34**	5	-	**34**	3	-	**34**	7	-
35	7.1	-	**35**	3.2	-	**35**	4	-	**35**	6.5	-
36	17.4	-	**36**	7.1	-	**36**	7.5	-	**36**	3	-
37	7.8	-	**37**	4.1	-	**37**	12	-	**37**	6.5	-
38	8.2	-	**38**	5.5	-	**38**	5.5	-	**38**	6	-
39	10.2	-	**39**	6.5	-	**39**	5	-	**39**	6.5	-
40	5.2	0.25	**40**	5	0.25	**40**	4.5	0.5	**40**	3.5	0.5
41	18.5	-	**41**	3.5	-	**41**	4.5	-	**41**	8	-
42	10.9	-	**42**	6.2	-	**42**	5	-	**42**	7	-
43	5.4	-	**43**	4.9	-	**43**	2	-	**43**	4.5	-
44	6.1	-	**44**	7.1	-	**44**	3.5	-	**44**	4	-
45	5.1	-	**45**	5.8	-	**45**	6.5	-	**45**	7	-
46	11.3	-	**46**	6.6	-	**46**	4.5	-	**46**	7	-
47	4.1	-	**47**	3.1	-	**47**	7.5	-	**47**	7.5	-
48	6.6	-	**48**	4.7	-	**48**	5	-	**48**	1.5	-
49	8.9	-	**49**	4.9	-	**49**	8	-	**49**	5.5	-
50	12.2	0	**50**	5.3	0.5	**50**	6	0.25	**50**	3.5	0
51	9.5	-	**51**	12	-	**51**	5.5	-	**51**	8	-
52	13.5	-	**52**	7.9	-	**52**	4	-	**52**	6	-
53	10.5	-	**53**	6.4	-	**53**	5	-	**53**	4.5	-
54	5	-	**54**	8.7	-	**54**	7.5	-	**54**	4	-
55	4.4	-	**55**	8.2	-	**55**	4	-	**55**	5.5	-
56	8.7	-	**56**	5.9	-	**56**	3.5	-	**56**	3	-
57	8.4	-	**57**	8.1	-	**57**	7	-	**57**	3.5	-
58	4.5	-	**58**	6	-	**58**	6	-	**58**	8.5	-
59	8.5	-	**59**	7.4	-	**59**	4.5	-	**59**	5	-
60	13.1	0.25	**60**	5.7	0.5	**60**	3	0	**60**	2.5	0
61	7.4	-	**61**	4.2	-	**61**	5	-	**61**	7	-
62	4.5	-	**62**	5.3	-	**62**	6.5	-	**62**	7	-
63	4.3	-	**63**	4.6	-	**63**	7.5	-	**63**	7.5	-
64	18.2	-	**64**	3.8	-	**64**	4.5	-	**64**	4.5	-
65	5.5	-	**65**	4.8	-	**65**	6	-	**65**	5	-
66	5.3	-	**66**	3.2	-	**66**	6.5	-	**66**	5.5	-
67	5.3	-	**67**	4.4	-	**67**	2	-	**67**	1.5	-
68	4.5	-	**68**	3.2	-	**68**	5.5	-	**68**	9	-
69	3.3	-	**69**	5.8	-	**69**	4	-	**69**	8.5	-
70	3.8	0.25	**70**	6	0.25	**70**	5.5	0.25	**70**	2	0.25
71	5.5	-	**71**	4.7	-	**71**	5	-	**71**	4.5	-
72	5.5	-	**72**	2.4	-	**72**	4.5	-	**72**	4.5	-
73	5.3	-	**73**	3.6	-	**73**	5	-	**73**	7	-
74	5.9	-	**74**	7.5	-	**74**	3	-	**74**	6	-
75	9	-	**75**	5.4	-	**75**	8	-	**75**	3.5	-
76	14.5	-	**76**	8	-	**76**	4	-	**76**	3.5	-
77	3.2	-	**77**	4.2	-	**77**	4	-	**77**	8	-
78	9.3	-	**78**	2	-	**78**	4	-	**78**	5	-
79	2.7	-	**79**	4.7	-	**79**	5.5	-	**79**	7	-
80	5.5	0.25	**80**	3.7	0.25	**80**	2	0	**80**	5.5	0.25
81	6.8	-	**81**	3.5	-	**81**	9	-	**81**	2	-
82	10.3	-	**82**	4.4	-	**82**	4	-	**82**	5.5	-
83	9.2	-	**83**	3.5	-	**83**	8	-	**83**	4.5	-
84	3.8	-	**84**	4.5	-	**84**	5	-	**84**	4	-
85	5.5	-	**85**	6	-	**85**	8	-	**85**	7.5	-
86	5.5	-	**86**	6.1	-	**86**	4.5	-	**86**	3	-
87	7.5	-	**87**	4.6	-	**87**	4.5	-	**87**	5	-
88	8.6	-	**88**	11.1	-	**88**	6.5	-	**88**	2.5	-
89	6.9	-	**89**	5	-	**89**	2.5	-	**89**	4	-
90	12	0.25	**90**	6.5	0	**90**	7.5	0	**90**	3	0.25
91	3.4	-	**91**	4.2	-	**91**	5	-	**91**	5.5	-
92	7.5	-	**92**	6.6	-	**92**	6	-	**92**	7	-
93	14.5	-	**93**	7.5	-	**93**	4.5	-	**93**	4.5	-
94	5.8	-	**94**	6.7	-	**94**	4.5	-	**94**	5.5	-
95	4.6	-	**95**	5.9	-	**95**	4	-	**95**	3.5	-
96	11.3	-	**96**	4.7	-	**96**	7	-	**96**	5	-
97	7.4	-	**97**	3.9	-	**97**	4	-	**97**	3.5	-
98	10.5	-	**98**	3.9	-	**98**	7	-	**98**	6.5	-
99	6.4	-	**99**	6.9	-	**99**	4	-	**99**	7	-
100	7.3	0.5	**100**	4.9	0.25	**100**	3.5	0.25	**100**	7.5	0
Average Cic, Cip and Embed. =	**7.98**	**0.25**	**Average Cic, Cip and Embed. =**	**5.457**	**0.25**	**Average Cic, Cip and Embed. =**	**5.2**	**0.15**	**Average Cic, Cip and Embed. =**	**5.325**	**0.13**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FRCP1SW-3			RG_FRUPO-1			RG_FRUPO-2			RG_FRUPO-3		
17-Jun-21			18-Jun-21			18-Jun-21			18-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	4	-	**1**	6.9	-	**1**	4.5	-	**1**	4	-
2	4	-	**2**	4.4	-	**2**	3.5	-	**2**	4	-
3	7.5	-	**3**	8.3	-	**3**	5.5	-	**3**	3.5	-
4	4	-	**4**	7.2	-	**4**	5.5	-	**4**	2	-
5	6.5	-	**5**	7.1	-	**5**	4	-	**5**	5	-
6	6.5	-	**6**	5.6	-	**6**	4	-	**6**	7	-
7	8	-	**7**	9.3	-	**7**	4.5	-	**7**	6	-
8	6	-	**8**	3.4	-	**8**	8.5	-	**8**	6.5	-
9	6	-	**9**	9.4	-	**9**	8	-	**9**	9	-
10	6	0	**10**	3.3	0.25	**10**	5	0	**10**	6	0.25
11	6	-	**11**	10.5	-	**11**	1.5	-	**11**	4	-
12	6	-	**12**	6.5	-	**12**	8	-	**12**	7	-
13	4	-	**13**	8.3	-	**13**	11	-	**13**	2.5	-
14	1.5	-	**14**	4.1	-	**14**	8	-	**14**	2.5	-
15	6.5	-	**15**	5.6	-	**15**	9	-	**15**	2.5	-
16	6.5	-	**16**	4.6	-	**16**	7.5	-	**16**	5	-
17	10	-	**17**	6.4	-	**17**	12	-	**17**	3.5	-
18	3.5	-	**18**	9.2	-	**18**	8.5	-	**18**	7	-
19	3	-	**19**	5.3	-	**19**	10	-	**19**	4	-
20	6	0	**20**	10.2	0.75	**20**	11.2	0	**20**	7	0
21	15	-	**21**	4.7	-	**21**	11.5	-	**21**	6	-
22	4	-	**22**	5.8	-	**22**	4.5	-	**22**	6.5	-
23	4.5	-	**23**	3.4	-	**23**	8.5	-	**23**	8	-
24	3	-	**24**	4.2	-	**24**	13	-	**24**	3.5	-
25	8.5	-	**25**	8.5	-	**25**	9.5	-	**25**	8	-
26	6.5	-	**26**	3.6	-	**26**	7.5	-	**26**	2	-
27	3.5	-	**27**	16.4	-	**27**	7.5	-	**27**	5	-
28	13.5	-	**28**	7.6	-	**28**	4.5	-	**28**	3	-
29	4	-	**29**	6.8	-	**29**	7.5	-	**29**	4.5	-
30	11	0.25	**30**	14	0.5	**30**	10	0.75	**30**	3.5	0.25
31	4.5	-	**31**	7.3	-	**31**	6.5	-	**31**	8.5	-
32	8	-	**32**	7.4	-	**32**	10	-	**32**	8	-
33	6	-	**33**	10.2	-	**33**	8	-	**33**	9	-
34	5.5	-	**34**	9.5	-	**34**	12	-	**34**	6.5	-
35	11.5	-	**35**	6.5	-	**35**	3.5	-	**35**	5	-
36	8	-	**36**	13.6	-	**36**	6.5	-	**36**	3.5	-
37	6.5	-	**37**	10.8	-	**37**	8	-	**37**	4.5	-
38	3	-	**38**	4.7	-	**38**	8.5	-	**38**	6	-
39	4.5	-	**39**	6.3	-	**39**	8	-	**39**	5	-
40	5.5	0.25	**40**	12.5	0.5	**40**	3.5	0.25	**40**	4	0.25
41	5	-	**41**	8.3	-	**41**	7.5	-	**41**	6.7	-
42	7.5	-	**42**	10.2	-	**42**	4.5	-	**42**	7	-
43	3.5	-	**43**	5.3	-	**43**	11	-	**43**	4.3	-
44	6	-	**44**	3.2	-	**44**	10	-	**44**	4.5	-
45	4	-	**45**	7.1	-	**45**	7	-	**45**	2.5	-
46	8	-	**46**	7.9	-	**46**	11	-	**46**	3.6	-
47	3	-	**47**	3.4	-	**47**	6.5	-	**47**	2.9	-
48	7	-	**48**	5.5	-	**48**	5	-	**48**	3.4	-
49	2	-	**49**	4.2	-	**49**	8	-	**49**	5.5	-
50	6	0	**50**	11.5	0.5	**50**	4	0	**50**	5.3	0.25
51	6.5	-	**51**	4.1	-	**51**	8	-	**51**	5	-
52	5	-	**52**	7.5	-	**52**	11	-	**52**	6.2	-
53	5	-	**53**	4.2	-	**53**	6.5	-	**53**	5	-
54	3.5	-	**54**	5.8	-	**54**	5.5	-	**54**	7.9	-
55	6.5	-	**55**	7.4	-	**55**	4.5	-	**55**	3.5	-
56	2	-	**56**	7.3	-	**56**	8.5	-	**56**	5.1	-
57	7	-	**57**	9.4	-	**57**	7	-	**57**	4	-
58	3	-	**58**	4.8	-	**58**	4	-	**58**	8.6	-
59	4.5	-	**59**	9.4	-	**59**	3.5	-	**59**	4.3	-
60	5.5	0	**60**	5	0.25	**60**	8	0	**60**	8	0
61	5.5	-	**61**	3.4	-	**61**	4	-	**61**	5	-
62	5.5	-	**62**	13.2	-	**62**	8.5	-	**62**	5.4	-
63	6.5	-	**63**	3.5	-	**63**	5.5	-	**63**	6	-
64	7	-	**64**	10.6	-	**64**	7	-	**64**	4.6	-
65	6	-	**65**	11.7	-	**65**	7.5	-	**65**	5.3	-
66	12.5	-	**66**	5.1	-	**66**	8.5	-	**66**	5.5	-
67	7	-	**67**	6.8	-	**67**	5	-	**67**	3.8	-
68	7	-	**68**	5.2	-	**68**	6.5	-	**68**	4.5	-
69	10	-	**69**	10.5	-	**69**	9.5	-	**69**	4.5	-
70	5.5	0	**70**	6.1	0.5	**70**	9.5	0	**70**	6.3	0.25
71	4	-	**71**	8.3	-	**71**	9.5	-	**71**	5	-
72	5	-	**72**	5.4	-	**72**	5.5	-	**72**	4.5	-
73	10	-	**73**	5.5	-	**73**	14	-	**73**	3.3	-
74	1.5	-	**74**	6.3	-	**74**	6.5	-	**74**	5.5	-
75	9	-	**75**	7	-	**75**	7	-	**75**	3	-
76	10	-	**76**	8.5	-	**76**	3	-	**76**	7.6	-
77	6	-	**77**	7.3	-	**77**	7.5	-	**77**	4	-
78	1.5	-	**78**	4.2	-	**78**	4.5	-	**78**	7.9	-
79	8.5	-	**79**	4.2	-	**79**	9.5	-	**79**	5	-
80	10	0.25	**80**	6.3	0.5	**80**	5.5	0.25	**80**	7.2	0.25
81	6	-	**81**	5.4	-	**81**	9	-	**81**	8	-
82	6	-	**82**	6.5	-	**82**	9.5	-	**82**	5	-
83	4	-	**83**	3.2	-	**83**	3.5	-	**83**	3.8	-
84	4	-	**84**	12.5	-	**84**	9	-	**84**	7	-
85	3.5	-	**85**	9	-	**85**	11	-	**85**	4.9	-
86	7	-	**86**	7.5	-	**86**	6.5	-	**86**	8.1	-
87	9	-	**87**	4.6	-	**87**	10	-	**87**	6	-
88	5	-	**88**	14.4	-	**88**	7	-	**88**	4.5	-
89	7	-	**89**	7.8	-	**89**	7.5	-	**89**	1.5	-
90	12	0	**90**	5.9	0.5	**90**	3.5	0.25	**90**	4.5	0.25
91	5.5	-	**91**	8.7	-	**91**	10	-	**91**	8.2	-
92	4.5	-	**92**	6.2	-	**92**	7.5	-	**92**	3.5	-
93	9.5	-	**93**	3.1	-	**93**	12.5	-	**93**	3	-
94	7.5	-	**94**	3.6	-	**94**	8.5	-	**94**	4	-
95	10.5	-	**95**	6.2	-	**95**	4	-	**95**	3.5	-
96	4.5	-	**96**	3.1	-	**96**	7	-	**96**	4	-
97	4.5	-	**97**	14.1	-	**97**	6.5	-	**97**	9.1	-
98	4	-	**98**	10.2	-	**98**	9.5	-	**98**	4	-
99	10	-	**99**	2.5	-	**99**	8	-	**99**	3	-
100	12	0	**100**	6.8	0.25	**100**	7	0.25	**100**	2.5	0
Average Cic, Cip and Embed. =	**6.225**	**0.08**	**Average Cic, Cip and Embed. =**	**7.113**	**0.45**	**Average Cic, Cip and Embed. =**	**7.402**	**0.18**	**Average Cic, Cip and Embed. =**	**5.133**	**0.18**
Old Calcite Ir	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**		**Old Calcite Ir**	**-**	
New Calcite I	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**		**New Calcite I**	**-**	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FODPO-1			RG_FODPO-2			RG_FODPO-3			RG_FO22-1		
17-Jun-21			17-Jun-21			17-Jun-21			18-Jun-21		
Pebble	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	5.5	-	**1**	6.1	-	**1**	4.5	-	**1**	4	-
2	7.5	-	**2**	6.6	-	**2**	4	-	**2**	3	-
3	6	-	**3**	6.2	-	**3**	3	-	**3**	3	-
4	4.5	-	**4**	3.6	-	**4**	3.5	-	**4**	3	-
5	5.5	-	**5**	2.9	-	**5**	3.5	-	**5**	1	-
6	6.5	-	**6**	5.5	-	**6**	0.5	-	**6**	1.5	-
7	6	-	**7**	3.6	-	**7**	4	-	**7**	0.5	-
8	4.5	-	**8**	4.7	-	**8**	3	-	**8**	3	-
9	8.5	-	**9**	3.5	-	**9**	3.5	-	**9**	2.5	-
10	3.5	0.5	**10**	6.4	0	**10**	3.5	0.25	**10**	2	0.25
11	6	-	**11**	5.3	-	**11**	3.5	-	**11**	1.5	-
12	3.5	-	**12**	4.2	-	**12**	3	-	**12**	3.5	-
13	4.5	-	**13**	4.2	-	**13**	3.5	-	**13**	3	-
14	6	-	**14**	4.6	-	**14**	3	-	**14**	1.5	-
15	3.5	-	**15**	4.8	-	**15**	5	-	**15**	1	-
16	6.5	-	**16**	3.8	-	**16**	5	-	**16**	3	-
17	4	-	**17**	3.8	-	**17**	3	-	**17**	2.5	-
18	7	-	**18**	3.2	-	**18**	5	-	**18**	1.5	-
19	6	-	**19**	2.8	-	**19**	1	-	**19**	3	-
20	4	0.25	**20**	5.6	0.25	**20**	5.5	0.25	**20**	3	0.5
21	7	-	**21**	4.5	-	**21**	4	-	**21**	4	-
22	4	-	**22**	4.6	-	**22**	3.5	-	**22**	1	-
23	2.5	-	**23**	5.2	-	**23**	3.5	-	**23**	1.5	-
24	5	-	**24**	3.8	-	**24**	4	-	**24**	1	-
25	7	-	**25**	3.8	-	**25**	3.5	-	**25**	0.2	1
26	5	-	**26**	7	-	**26**	3.5	-	**26**	2	-
27	3.5	-	**27**	4.7	-	**27**	4	-	**27**	2.5	-
28	5	-	**28**	11.5	-	**28**	5	-	**28**	2	-
29	8	-	**29**	4.4	-	**29**	8	-	**29**	2	-
30	6	0.25	**30**	5.3	0.25	**30**	3.5	0.5	**30**	1.5	0.5
31	5.5	-	**31**	2.8	-	**31**	3.5	-	**31**	1.5	-
32	5	-	**32**	5	-	**32**	3.5	-	**32**	1	-
33	5	-	**33**	4.5	-	**33**	3.5	-	**33**	0.5	-
34	5	-	**34**	3.7	-	**34**	5	-	**34**	1	-
35	5	-	**35**	2.5	-	**35**	3	-	**35**	3	-
36	5	-	**36**	8.4	-	**36**	1	-	**36**	2.5	-
37	7	-	**37**	5.4	-	**37**	5	-	**37**	1.5	-
38	6	-	**38**	4.7	-	**38**	2.5	-	**38**	3.5	-
39	5	-	**39**	3.8	-	**39**	3	-	**39**	1.5	-
40	4	0	**40**	5.5	0	**40**	3	0.25	**40**	1.5	0.25
41	4.5	-	**41**	2.6	-	**41**	4.5	-	**41**	1.5	-
42	5	-	**42**	4.4	-	**42**	4	-	**42**	1.5	-
43	5	-	**43**	6.8	-	**43**	4.5	-	**43**	1	-
44	7.5	-	**44**	3.2	-	**44**	3	-	**44**	0.5	-
45	8.5	-	**45**	6.1	-	**45**	4.5	-	**45**	5.5	-
46	7.5	-	**46**	4.2	-	**46**	6	-	**46**	4	-
47	6	-	**47**	4.3	-	**47**	4	-	**47**	3.5	-
48	7.5	-	**48**	4.1	-	**48**	1.5	-	**48**	2.5	-
49	5.5	-	**49**	4.6	-	**49**	4.5	-	**49**	2.5	-
50	4	0.25	**50**	5.8	0.25	**50**	4	0.25	**50**	3.5	0.25
51	7.5	-	**51**	8.4	-	**51**	2	-	**51**	1.5	-
52	6	-	**52**	3.3	-	**52**	4	-	**52**	1	-
53	5	-	**53**	6.3	-	**53**	5.5	-	**53**	1	-
54	5	-	**54**	5.4	-	**54**	3	-	**54**	1.5	-
55	5	-	**55**	4.7	-	**55**	5.5	-	**55**	1.5	-
56	7	-	**56**	4.1	-	**56**	4	-	**56**	2	-
57	6	-	**57**	2	-	**57**	5.5	-	**57**	1	-
58	5	-	**58**	4.1	-	**58**	4.5	-	**58**	3.5	-
59	5	-	**59**	4.1	-	**59**	3	-	**59**	3	-
60	5	0.25	**60**	3.6	0.25	**60**	2	0.25	**60**	2	0.5
61	8.5	-	**61**	4.3	-	**61**	3.5	-	**61**	4.5	-
62	7	-	**62**	3.4	-	**62**	3	-	**62**	3	-
63	4	-	**63**	6.5	-	**63**	4.5	-	**63**	2	-
64	7	-	**64**	4	-	**64**	4	-	**64**	0.5	-
65	6	-	**65**	4.5	-	**65**	6	-	**65**	1.5	-
66	7	-	**66**	4.5	-	**66**	3	-	**66**	2.5	-
67	5	-	**67**	3	-	**67**	4	-	**67**	2	-
68	6	-	**68**	5.9	-	**68**	3	-	**68**	2	-
69	6	-	**69**	3.1	-	**69**	8.5	-	**69**	3.5	-
70	7	0.5	**70**	2	0.25	**70**	4	0.5	**70**	2	0.25
71	4	-	**71**	4.7	-	**71**	2	-	**71**	2.5	-
72	4	-	**72**	4.4	-	**72**	4	-	**72**	2.5	-
73	4	-	**73**	2.2	-	**73**	7	-	**73**	3	-
74	5.5	-	**74**	5.5	-	**74**	4	-	**74**	6	-
75	5.5	-	**75**	1.9	-	**75**	2.5	-	**75**	2.5	-
76	6	-	**76**	4.5	-	**76**	3.5	-	**76**	4	-
77	7.5	-	**77**	5.2	-	**77**	8	-	**77**	2	-
78	5.5	-	**78**	2.4	-	**78**	5	-	**78**	3	-
79	5.5	-	**79**	3.2	-	**79**	5	-	**79**	2	-
80	5	0.25	**80**	2.5	0.25	**80**	8	0.25	**80**	2.5	0.25
81	6	-	**81**	4.6	-	**81**	7.5	-	**81**	2	-
82	7	-	**82**	2.8	-	**82**	3	-	**82**	1.5	-
83	7	-	**83**	2.5	-	**83**	5	-	**83**	1.5	-
84	3.5	-	**84**	3.8	-	**84**	4	-	**84**	1	-
85	7	-	**85**	6.6	-	**85**	7	-	**85**	5	-
86	3	-	**86**	3	-	**86**	4.5	-	**86**	2	-
87	4	-	**87**	3.9	-	**87**	4	-	**87**	1.5	-
88	6.5	-	**88**	3.6	-	**88**	3	-	**88**	2.5	-
89	7	-	**89**	5	-	**89**	6	-	**89**	3	-
90	6	0.25	**90**	4.5	0.5	**90**	4.5	0.5	**90**	2	0.5
91	4.5	-	**91**	4.4	-	**91**	4.5	-	**91**	3.5	-
92	4	-	**92**	3.6	-	**92**	3.5	-	**92**	3.5	-
93	6	-	**93**	6.2	-	**93**	1.5	-	**93**	4	-
94	6	-	**94**	3.9	-	**94**	4	-	**94**	5	-
95	6.5	-	**95**	4.1	-	**95**	4	-	**95**	3	-
96	7	-	**96**	4.1	-	**96**	2.5	-	**96**	2	-
97	6.5	-	**97**	3.5	-	**97**	4	-	**97**	4.5	-
98	8	-	**98**	2	-	**98**	2.5	-	**98**	3.5	-
99	5	-	**99**	7.1	-	**99**	4	-	**99**	4	-
100	5	0.25	**100**	4.6	0	**100**	7	0.5	**100**	2	0.25
Average Cic, Cip and Embed. =	**5.635**	**0.28**	**Average Cic, Cip and Embed. =**	**4.461**	**0.20**	**Average Cic, Cip and Embed. =**	**4.04**	**0.35**	**Average Cic, Cip and Embed. =**	**2.367**	**0.41**
Old Calcite Ir	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-		**Old Calcite Ir**	-	
New Calcite I	-		**New Calcite I**	-		**New Calcite I**	-		**New Calcite I**	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FO22-2			RG_FO22-3			RG_FOUEW-1			RG_FOUEW-2		
18-Jun-21			18-Jun-21			18-Jun-21			18-Jun-21		
Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Intermediate Axis (cm)	Embedded-ness (%)
1	3	-	1	2.5	-	1	8.4	-	1	10.3	-
2	2.5	-	2	1.5	-	2	4.2	-	2	4.2	-
3	3	-	3	2.5	-	3	10.4	-	3	5.7	-
4	2	-	4	1.5	-	4	11.5	-	4	13.1	-
5	3	-	5	2	-	5	9.4	-	5	8.9	-
6	0.2	1	6	3.5	-	6	5.1	-	6	6.2	-
7	2.5	-	7	5	-	7	5.5	-	7	8.3	-
8	1.5	-	8	2	-	8	2.6	-	8	4.4	-
9	1	-	9	5.5	-	9	7	-	9	9.9	-
10	2.5	0.5	10	6	0	10	7.4	0.5	10	10.6	0.5
11	3	-	11	3	-	11	4.3	-	11	4.5	-
12	2	-	12	0.5	-	12	5.4	-	12	3.4	-
13	1	-	13	2	-	13	11.1	-	13	6.2	-
14	2.5	-	14	1.5	-	14	8.5	-	14	9.9	-
15	2	-	15	2.5	-	15	9.6	-	15	13.5	-
16	2.5	-	16	0.5	-	16	14.5	-	16	7.1	-
17	1	-	17	1.5	-	17	9.9	-	17	3.9	-
18	2.5	-	18	0.2	1	18	8.1	-	18	10.9	-
19	2	-	19	2	-	19	11.5	-	19	19.1	-
20	2	0.5	20	1	0.25	20	5.9	0.5	20	11	0.25
21	2	-	21	3.5	-	21	7.1	-	21	13.2	-
22	3	-	22	1.5	-	22	4.4	-	22	3.6	-
23	1	-	23	2	-	23	7.3	-	23	3.1	-
24	2	-	24	2	-	24	8.5	-	24	5.9	-
25	3	-	25	2	-	25	5.6	-	25	19.2	-
26	0.5	-	26	2.5	-	26	7.2	-	26	11.7	-
27	1	-	27	1.5	-	27	6.2	-	27	9.3	-
28	2.5	-	28	2.5	-	28	7.5	-	28	8.2	-
29	1.5	-	29	1.5	-	29	6.4	-	29	9.9	-
30	1	0.25	30	2.5	0.5	30	7.9	0.25	30	8.9	0.5
31	2	-	31	3	-	31	4.4	-	31	10.3	-
32	0.5	-	32	2	-	32	7.5	-	32	6.1	-
33	3.5	-	33	2.5	-	33	5.2	-	33	6.7	-
34	2.5	-	34	0.5	-	34	10.5	-	34	10.2	-
35	2	-	35	1.5	-	35	3.2	-	35	6	-
36	1.5	-	36	3	-	36	2.1	-	36	7.6	-
37	2	-	37	1	-	37	10.5	-	37	7.3	-
38	2	-	38	3.5	-	38	11.6	-	38	5.7	-
39	2.5	-	39	3	-	39	8.3	-	39	8.7	-
40	1.5	0.25	40	0.5	1	40	21.5	0.25	40	4.7	0
41	2	-	41	3.5	-	41	7.5	-	41	4.6	-
42	1	-	42	2	-	42	9.3	-	42	5.4	-
43	2.5	-	43	1.5	-	43	7.2	-	43	23.1	-
44	1.5	-	44	4	-	44	11.3	-	44	14.9	-
45	3	-	45	4	-	45	8.3	-	45	7.4	-
46	1	-	46	1	-	46	10.8	-	46	4.6	-
47	1.5	-	47	2.5	-	47	7.4	-	47	12.5	-
48	1	-	48	1.5	-	48	6.5	-	48	3	-
49	1	-	49	2	-	49	6.5	-	49	6.2	-
50	0.5	0.75	50	1.5	0.25	50	10.6	0.25	50	3.1	0.25
51	1.5	-	51	2	-	51	11.8	-	51	7.1	-
52	1.5	-	52	4	-	52	6.4	-	52	8.4	-
53	0.5	-	53	0.5	-	53	6	-	53	9.6	-
54	1	-	54	2	-	54	6.5	-	54	9.1	-
55	1	-	55	2.5	-	55	6.5	-	55	3.7	-
56	3	-	56	2.5	-	56	7.8	-	56	9.9	-
57	1	-	57	3	-	57	8.5	-	57	16.1	-
58	2	-	58	2	-	58	6.6	-	58	19.5	-
59	1.5	-	59	0.5	-	59	14.5	-	59	6.4	-
60	2.5	0.25	60	2	0.25	60	11.5	0.5	60	3.9	0.25
61	1.5	-	61	5.5	-	61	2.6	-	61	7.9	-
62	2.5	-	62	3	-	62	7.1	-	62	6	-
63	0.5	-	63	2	-	63	6.4	-	63	7.5	-
64	2	-	64	3	-	64	17.5	-	64	13.6	-
65	2.5	-	65	4	-	65	8.8	-	65	5.2	-
66	0.5	-	66	3	-	66	5.5	-	66	13.5	-
67	5	-	67	2.5	-	67	5	-	67	9.3	-
68	2.5	-	68	2.5	-	68	8.4	-	68	5.5	-
69	1.5	-	69	3	-	69	3.6	-	69	21	-
70	1.5	0	70	2	0	70	8.5	0.25	70	9.5	0.5
71	1	-	71	2	-	71	9.5	-	71	9.1	-
72	4	-	72	6	-	72	6.2	-	72	12.9	-
73	0.2	1	73	2.5	-	73	11.5	-	73	4.2	-
74	3	-	74	3.5	-	74	11.2	-	74	5.6	-
75	1.5	-	75	4	-	75	21.6	-	75	4.5	-
76	0.5	-	76	1	-	76	5.4	-	76	4.6	-
77	3	-	77	1	-	77	7.3	-	77	5.5	-
78	1	-	78	0.5	-	78	2.5	-	78	10.6	-
79	1	-	79	1	-	79	6.6	-	79	7.6	-
80	1.5	0.25	80	1.5	0.25	80	8.4	0.25	80	3.5	0.25
81	1	-	81	1	-	81	10.1	-	81	5.9	-
82	1	-	82	4.5	-	82	16.5	-	82	5.4	-
83	1.5	-	83	0.2	1	83	8.6	-	83	5.2	-
84	0.5	-	84	3	-	84	8.9	-	84	6.7	-
85	0.5	-	85	2	-	85	5.9	-	85	4.6	-
86	2	-	86	0.5	-	86	13	-	86	16.5	-
87	3.5	-	87	1	-	87	6.5	-	87	7.2	-
88	2	-	88	1.5	-	88	12.9	-	88	6.2	-
89	1.5	-	89	0.5	-	89	5.4	-	89	13.3	-
90	3.5	0	90	7	0	90	5.3	0.25	90	9.9	0.5
91	2.5	-	91	2.5	-	91	5.5	-	91	6.4	-
92	3.5	-	92	1.5	-	92	4.4	-	92	9.5	-
93	4	-	93	2.5	-	93	5.6	-	93	11.6	-
94	2	-	94	1.5	-	94	4.4	-	94	5.7	-
95	3	-	95	2.5	-	95	5.5	-	95	13.2	-
96	2	-	96	0.2	1	96	7.1	-	96	3.6	-
97	2.5	-	97	3	-	97	7.4	-	97	3.6	-
98	0.5	-	98	0.5	-	98	5.5	-	98	6.7	-
99	1	-	99	4	-	99	11.2	-	99	6.2	-
100	1.5	0.25	100	3.5	0.25	100	6.3	0.5	100	5.2	0.25
Average Cic, Cip and Embed. =	1.859	0.42	Average Cic, Cip and Embed. =	2.296	0.44	Average Cic, Cip and Embed. =	8.043	0.35	Average Cic, Cip and Embed. =	8.356	0.33
Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-		Old Calcite Ir	-	
New Calcite I	-		New Calcite I	-		New Calcite I	-		New Calcite I	-	

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.4: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, June 2021

RG_FOUEW-3		
18-Jun-21		
Pebble	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	3.2	-
2	7.6	-
3	9.1	-
4	3.6	-
5	7.9	-
6	5.2	-
7	6	-
8	5.6	-
9	3.2	-
10	6.6	0.25
11	8.1	-
12	4.9	-
13	12.5	-
14	8.9	-
15	4.2	-
16	6.7	-
17	5.9	-
18	6.2	-
19	9.9	-
20	8.1	0
21	16.2	-
22	6.8	-
23	2.1	-
24	2.3	-
25	5.7	-
26	6.7	-
27	5.7	-
28	5	-
29	5.2	-
30	5.7	0.25
31	10	-
32	4.8	-
33	4.9	-
34	7.5	-
35	7	-
36	7	-
37	5.9	-
38	12.5	-
39	11.3	-
40	6.6	0.25
41	8.2	-
42	9.2	-
43	12.5	-
44	8.5	-
45	7.6	-
46	9.2	-
47	8.3	-
48	7.1	-
49	11.5	-
50	4.4	0
51	5.6	-
52	6.4	-
53	12.8	-
54	10.4	-
55	11	-
56	6.2	-
57	4.3	-
58	12.5	-
59	7.1	-
60	7.6	0.25
61	6.4	-
62	3.5	-
63	7.4	-
64	5.9	-
65	7.8	-
66	7.8	-
67	6.6	-
68	4.2	-
69	3.3	-
70	7.5	0.5
71	8.2	-
72	11	-
73	11.5	-
74	7.2	-
75	9.2	-
76	9.5	-
77	9.9	-
78	4.5	-
79	5.6	-
80	5.4	0.25
81	8.3	-
82	5.5	-
83	6.5	-
84	4	-
85	4.5	-
86	13.5	-
87	6.2	-
88	8.1	-
89	5.5	-
90	4.2	0.25
91	7.3	-
92	9.9	-
93	4.7	-
94	8.2	-
95	7.3	-
96	4.5	-
97	6.3	-
98	6.2	-
99	7.3	-
100	5.4	0.5
Average Cic, Cip and Embed. =	**7.185**	**0.25**
Old Calcite Index (CI)	**-**	
New Calcite Index (CI')	**-**	

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and p

Table G.5: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, 2021

Station Parameters		Reference			Mine-Exposed			
		RG_HENUP	RG_FO26	RG_UFR1	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD
Station 1	Easting	655821	653041	651317	651443	650831	650869	650883
	Northing	5567695	5569650	5566889	5565516	5564509	5563477	5563257
	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Number of Jars	1	1	2	1	1	1	2
	Total Kick Distance (m)	-	20	14	18	11	8	-
	Full Transect (Yes / No)	No	Yes	No	No	No	No	No
	Number of Transects	-	3	0.25	0.4	0.33	0.25	-
Station 2	Easting	655782	653050	651327	651397	650789	650855	650889
	Northing	5567708	5569603	5566875	5565493	5564448	5563521	5563182
	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Number of Jars	1	2	2	2	1	2	2
	Total Kick Distance (m)	10	18	15	12	9	12	13
	Full Transect (Yes / No)	No	Yes	No	No	No	No	No
	Number of Transects	0.25	2.5	0.25	0.25	0.5	0.67	0.33
Station 3	Easting	655730	653041	651348	651371	650786	650868	650978
	Northing	5567678	5569564	5566779	5565416	5564417	5563574	5563169
	Date	16-Jun-21	14-Jun-21	15-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	16-Jun-21
	Number of Jars	3	2	2	1	2	1	2
	Total Kick Distance (m)	12	15	16	12	10	12	12
	Full Transect (Yes / No)	No	Yes	No	No	No	No	No
	Number of Transects	0.25	2.5	0.25	0.25	0.25	0.67	0.33

Note: "-" indicates no data available.

Table G.5: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, 2021

Station Parameters		Mine-Exposed						
		RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS	RG_FOBSC	RG_FOBCP
Station 1	Easting	651146	650848	651837	652047	652290	652319	652860
	Northing	5562416	5561027	5559905	5558758	5558521	5558205	5557155
	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Number of Jars	1	1	1	1	2	1	1
	Total Kick Distance (m)	9	9	9	8	7	12	7
	Full Transect (Yes / No)	No	No	No	No	No	No	No
	Number of Transects	0.25	0.2	0.2	0.33	0.1	0.5	0.1
Station 2	Easting	651210	650856	651851	652057	652306	652362	652919
	Northing	5562463	5561001	5559831	5558669	5558502	5558165	5557045
	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Number of Jars	1	1	1	2	1	1	2
	Total Kick Distance (m)	12	10	10	10	9	10	7
	Full Transect (Yes / No)	No	No	No	No	No	No	No
	Number of Transects	0.5	0.2	0.2	0.67	0.1	0.33	0.25
Station 3	Easting	651259	650866	651874	652073	652315	652410	652915
	Northing	5562487	5560946	5559763	5558653	5558447	5558117	5557094
	Date	15-Jun-21	15-Jun-21	17-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21
	Number of Jars	1	1	1	1	2	1	2
	Total Kick Distance (m)	12	12	13	8	7	7	8
	Full Transect (Yes / No)	No	No	No	No	No	No	No
	Number of Transects	0.5	0.25	0.25	0.5	0.1	0.1	0.33

Note: "-" indicates no data available.

Table G.5: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, 2021

Station Parameters		Mine-Exposed				
		RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Station 1	Easting	653303	653893	653841	654789	656197
	Northing	5556337	5555880	5555045	5553729	5551877
	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Number of Jars	1	1	3	2	1
	Total Kick Distance (m)	14	9	25	15	15
	Full Transect (Yes / No)	No	No	Yes	No	No
	Number of Transects	0.25	0.67	2	0.5	0.67
Station 2	Easting	653308	653863	653865	654792	656321
	Northing	5556224	5555861	5555059	5553704	5551868
	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Number of Jars	2	2	2	2	2
	Total Kick Distance (m)	20	12	18	16	15
	Full Transect (Yes / No)	No	No	Yes	No	No
	Number of Transects	0.33	0.25	2	0.2	0.5
Station 3	Easting	653373	653814	653896	654769	656365
	Northing	5556192	5555854	5555079	5553633	5551888
	Date	17-Jun-21	18-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21
	Number of Jars	1	2	1	1	2
	Total Kick Distance (m)	16	20	15	13	10
	Full Transect (Yes / No)	No	Yes	No	No	No
	Number of Transects	0.2	2	0.5	0.25	0.33

Note: "-" indicates no data available.

Table G.6: Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021

Station ID		Reference		Mine-Exposed			
		RG_HENUP	RG_FO26	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD
Waterbody		Henretta Creek	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21
Weather		sunny	clear and cool	sun and cloud	sun and cloud	cloudy	cloudy
Air Temperature (°C)		-3	-4	-	-	0	15
Habitat Characteristics							
Surrounding Land Use		-	-	Mining	-	Mining	Mining
Length of Reach Assessed (m)		100	30	50	50	100	100
Substrate	% Bedrock	0	0	0	0	0	0
	% Boulder	0	0	0	0	0	0
	% Cobble	95	80	90	75	75	85
	% Gravel	3	15	5	20	10	10
	% Sand	1	5	5	5	8	3
	% Fines	1	0	0	0	7	2
Water Clarity		clear	clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless	colourless
Vegetation							
Canopy Coverage (%)		1-25	0	0	1-25	0	1-25
Streamside Vegetation		Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses	Coniferous Trees, Ferns/Grasses
Dominant Vegetation		coniferous trees	-	coniferous trees	coniferous trees	ferns/grass	coniferous trees
Macrophyte Coverage (%)		0	0	0	0	0	0
Dominant Macrophyte		-	-	-	-	-	-
Periphyton Cover (1-5)		3, 3, 3, 3, 3	3, 4, 4, 3, 4	1, 2, 2, 2, 2	2, 3, 3, 3, 2	2, 2, 2, 2, 2, 4	3, 3, 3, 3, 3
Comments		-	-	-	-	-	-

Note: "-" indicates no data available.

Table G.6: **Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021**

Station ID		Mine-Exposed					
		RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS	RG_FOBSC
Waterbody		Fording River	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		15-Sep-21	16-Sep-21	20-Sep-21	9-Sep-21	14-Sep-21	10-Sep-21
Weather		cloudy, windy	variable cloud	cloudy	sunny, hazy	sunny	sunny, hazy, no clouds
Air Temperature (°C)		10	10	10	19	10	-
Habitat Characteristics							
Surrounding Land Use		-	-	-	Other	-	Mining
Length of Reach Assessed (m)		-	50	-	100	50	100
Substrate	% Bedrock	0	0	0	0	0	0
	% Boulder	5	2	5	0	0	0
	% Cobble	70	90	85	60	80	90
	% Gravel	20	5	5	25	15	5
	% Sand	5	3	5	10	5	4
	% Fines	0	0	0	5	0	1
Water Clarity		clear	clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless	colourless
Vegetation							
Canopy Coverage (%)		0	0	0	1-25	0	1-25
Streamside Vegetation		Ferns/Grasses, Shrubs	Coniferous Trees, Shrubs	Coniferous Trees, Ferns/Grasses	Coniferous Trees, Ferns/Grasses, Shrubs	Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses
Dominant Vegetation		-	-	ferns/grass	coniferous trees	-	ferns/grass
Macrophyte Coverage (%)		0	0	0	0	0	0
Dominant Macrophyte		-	-	-	-	-	-
Periphyton Cover (1-5)		2, 2, 2, 2, 2	2, 2, 3, 2, 3	3, 3, 3, 3, 3	1, 1, 3, 1, 1	2, 3, 3, 3, 2	2, 3, 2, 3, 1
Comments		-	-	-	-	-	-

Note: "-" indicates no data available.

Table G.6: **Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey, FRO LAEMP, 2021**

Station ID		Mine-Exposed					
		RG_FOBCP	RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Waterbody		Fording River	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		13-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
Weather		sun and cloud	sunny	sunny	sunny with some cloud	rain	cloudy with rain
Air Temperature (°C)		-	12	4	25	-	20
Habitat Characteristics							
Surrounding Land Use		Mining	-	-	Logging, Mining	Logging, Mining	Mining
Length of Reach Assessed (m)		100	50	50	50	100	100
Substrate	% Bedrock	0	0	0	0	0	0
	% Boulder	0	0	0	0	0	0
	% Cobble	70	70	95	75	60	90
	% Gravel	15	25	5	15	20	5
	% Sand	10	3	0	7	10	3
	% Fines	5	2	0	3	10	2
Water Clarity		clear	clear	clear	clear	clear	clear
Water Colour		colourless	colourless	colourless	colourless	colourless	colourless
Vegetation							
Canopy Coverage (%)		1-25	1-25	1-25	1-25	1-25	1-25
Streamside Vegetation		Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses	-	Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses, Shrubs	Coniferous Trees, Ferns/Grasses, Shrubs
Dominant Vegetation		ferns/grass	-	-	coniferous trees	ferns/grass	coniferous trees
Macrophyte Coverage (%)		0	0	0	0	0	0
Dominant Macrophyte		-	-	-	-	-	-
Periphyton Cover (1-5)		3, 3, 3, 3, 3	1, 2, 3, 2, 2	2, 2, 3, 2, 3	1, 1, 2, 1, 2	1, 1, 1, 1, 1	1, 2, 1, 2, 2
Comments		-	-	-	-	-	-

Note: "-" indicates no data available.

Table G.7: *In Situ* Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, September 2021

Field Parameters		Reference		Mine-Exposed															
		RG_HENUP	RG_FO26	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD	RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS	RG_FOBSC	RG_FOBCP	RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Station 1	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21	9-Sep-21	14-Sep-21	10-Sep-21	14-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Temperature (°C)	6.3	6.5	7.1	9.5	8.2	8.9	9.3	9.8	10.6	8.1	9.7	8.1	8.1	8.9	7.8	8.6	8.4	7.9
	Dissolved Oxygen (mg/L)	10.18	10.61	9.72	9.54	8.96	9.58	9.5	9.63	10.49	9.33	10.9	9.45	10.59	10.59	10.05	9.09	9.76	9.18
	Dissolved Oxygen (%)	102.3	107	97.6	101.8	93.7	101.8	101.8	103.2	111.6	95.5	116.1	96.7	108.3	111.4	102.5	93.7	100.4	93.2
	Conductivity (µS/cm)	208.2	196.5	339.4	334.2	737	850	494.2	514	594	524	723	751	797	670	695	733	746	706
	Specific Conductivity (µS/cm)	323.9	303.2	516	493	1086	1230	706.1	723	819	773	1020	1110	1176	967	1037	1069	1093	1050
	pH	9.1	8.42	7.93	8.15	8.67	8.84	8.37	8.39	8.53	8.38	8.42	8.2	8	8.63	7.99	7.85	7.99	8.62
Station 2	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21	9-Sep-21	14-Sep-21	10-Sep-21	14-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Temperature (°C)	4.3	5.1	7.3	9.2	7.4	8.6	9.3	9.9	9.2	13.8	7.9	13.1	6.8	8.5	7.4	8.7	8	7.8
	Dissolved Oxygen (mg/L)	10.29	10.53	9.67	9.4	8.67	9.44	9.93	9.66	10.89	10.35	11.3	8.62	10.3	10.55	10.24	9.13	9.64	8.73
	Dissolved Oxygen (%)	102.8	102.6	98.2	99.6	88.6	100	106.4	103.7	114	121.5	114.9	99.2	102	110	103.6	94.7	98.2	88.3
	Conductivity (µS/cm)	192.6	189.7	331.6	388.8	740	809	494.6	515	572	643	695	743	768	663	688	757	737	693
	Specific Conductivity (µS/cm)	327.2	306	500	557	1116	1177	705.7	722	819	819	1033	961	1177	967	1036	1097	1089	1034
	pH	9.84	8.49	8.33	8.1	8.47	8.78	8.34	8.38	8.49	8.43	8.5	8.51	7.87	8.61	7.96	7.86	7.97	7.97
Station 3	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21	9-Sep-21	14-Sep-21	10-Sep-21	13-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Temperature (°C)	3.1	4.6	7.9	9.3	7.3	8.5	9.4	10.1	7.8	9.9	7.3	12.6	13.6	8.2	6.9	9.3	7.8	8
	Dissolved Oxygen (mg/L)	10.62	10.38	9.71	9.18	8.32	9.28	9.62	9.46	11.2	10.89	11.49	8.54	8.65	10.41	9.55	8.87	9.62	8.82
	Dissolved Oxygen (%)	98.4	100.1	100	97.3	84.9	98	103.1	102.1	113.3	116.8	115.1	97.1	100.5	107.7	95.4	93.1	97.5	89.7
	Conductivity (µS/cm)	187	187.2	331.7	393	738	806	492.3	518	554	593	686	751	776	658	678	767	737	699
	Specific Conductivity (µS/cm)	321.5	306.7	492	563	1116	1179	702.5	724	823	833	1038	984	993	969	1036	1097	1096	1036
	pH	8.9	8.42	8.4	8.18	8.31	8.78	8.32	8.39	8.53	8.44	8.31	8.53	8.52	8.58	7.91	7.88	7.94	7.93
Station 4	Date	-	-	-	-	-	-	-	-	-	-	-	-	13-Sep-21	-	-	-	12-Sep-21	-
	Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-	-	13.1	-	-	-	7.5	-
	Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	9.12	-	-	-	9.39	-
	Dissolved Oxygen (%)	-	-	-	-	-	-	-	-	-	-	-	-	104.7	-	-	-	94.6	-
	Conductivity (µS/cm)	-	-	-	-	-	-	-	-	-	-	-	-	838	-	-	-	734	-
	Specific Conductivity (µS/cm)	-	-	-	-	-	-	-	-	-	-	-	-	1085	-	-	-	1102	-
	pH	-	-	-	-	-	-	-	-	-	-	-	-	8.27	-	-	-	7.9	-
Station 5	Date	-	-	-	-	-	-	-	-	-	-	-	-	13-Sep-21	-	-	-	12-Sep-21	-
	Temperature (°C)	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	7.4	-
	Dissolved Oxygen (mg/L)	-	-	-	-	-	-	-	-	-	-	-	-	9.41	-	-	-	8.9	-
	Dissolved Oxygen (%)	-	-	-	-	-	-	-	-	-	-	-	-	103.3	-	-	-	89.2	-
	Conductivity (µS/cm)	-	-	-	-	-	-	-	-	-	-	-	-	798	-	-	-	730	-
	Specific Conductivity (µS/cm)	-	-	-	-	-	-	-	-	-	-	-	-	1088	-	-	-	1101	-
	pH	-	-	-	-	-	-	-	-	-	-	-	-	8.27	-	-	-	7.87	-

Note: "-" indicates no data available.

Table G.8: Channel Measurements, FRO LAEMP, September 2021

Replicate			1	2	3	4	5	Mean
Reference	RG_HENUP							
	1	Depth (cm)	17	29	13	13	10.5	16.5
		Velocity (m/s)	0.375	0.785	0.503	0.435	0.423	0.5042
		Bankfull Width (m)			66.5			-
		Wetted Width (m)			7.4			-
		Bankfull-Wetted Depth (cm)			136			-
	2	Depth (cm)	18	10	17	18	7	14
		Velocity (m/s)	0.392	0.313	0.481	0.319	0.413	0.3836
		Bankfull Width (m)			63.8			-
		Wetted Width (m)			7.75			-
		Bankfull-Wetted Depth (cm)			136			-
	3	Depth (cm)	22	16	23	21.5	17	19.9
		Velocity (m/s)	0.331	0.592	0.482	0.519	0.503	0.4854
		Bankfull Width (m)			21.5			-
		Wetted Width (m)			8			-
		Bankfull-Wetted Depth (cm)			136			-
Reference	RG_FO26							
	1	Depth (cm)	14	11	17.5	14.5	15.5	14.5
		Velocity (m/s)	0.467	0.512	0.674	0.462	0.522	0.5274
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	19	16.5	15	18	21	17.9
		Velocity (m/s)	0.141	0.381	0.451	0.26	0.117	0.27
		Bankfull Width (m)			10			-
		Wetted Width (m)			5			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	18.5	16.5	20	25.5	18.5	19.8
		Velocity (m/s)	0.389	0.363	0.411	0.323	0.268	0.3508
		Bankfull Width (m)			10			-
		Wetted Width (m)			5			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FODHE							
	1	Depth (cm)	14.5	15.5	20.5	22	17.5	18
		Velocity (m/s)	0.375	0.773	0.919	0.55	0.883	0.7
		Bankfull Width (m)			30			-
		Wetted Width (m)			6			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	18	14	17.5	18.5	14.5	16.5
		Velocity (m/s)	0.45	0.454	0.567	0.32	0.248	0.4078
		Bankfull Width (m)			50			-
		Wetted Width (m)			8			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	17	23	21.5	18	12.5	18.4
		Velocity (m/s)	0.102	0.56	0.58	0.308	0.256	0.3612
		Bankfull Width (m)			55			-
		Wetted Width (m)			8			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOUCL							
	1	Depth (cm)	14.5	19.5	20.5	17.5	25	19.4
		Velocity (m/s)	0.423	0.527	0.335	0.365	0.503	0.4306
		Bankfull Width (m)			40			-
		Wetted Width (m)			10			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	16	28.5	30.5	25.5	16.5	23.4
		Velocity (m/s)	0.559	0.687	0.844	0.681	0.667	0.6876
		Bankfull Width (m)			25			-
		Wetted Width (m)			5			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	10	8.5	15	14.5	13.5	12.3
		Velocity (m/s)	0.77	0.415	0.4	0.366	0.178	0.4258
		Bankfull Width (m)			25			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.8: Channel Measurements, FRO LAEMP, September 2021

Replicate			1	2	3	4	5	Mean
Mine-Exposed	RG_FOUNGD							
	1	Depth (cm)	7	13.5	12.5	16	11	12
		Velocity (m/s)	0.138	0.205	0.307	0.149	0.143	0.1884
		Bankfull Width (m)			12.7			-
		Wetted Width (m)			5.4			-
		Bankfull-Wetted Depth (cm)			70			-
	2	Depth (cm)	8	13	14.5	15	10	12.1
		Velocity (m/s)	0.102	0.311	0.267	0.245	0.094	0.2038
		Bankfull Width (m)			13.7			-
		Wetted Width (m)			2.5			-
		Bankfull-Wetted Depth (cm)			70			-
	3	Depth (cm)	6.5	5.5	7	8	7.8	6.96
		Velocity (m/s)	0.126	0.318	0.25	0.199	0.285	0.2356
		Bankfull Width (m)			16			-
		Wetted Width (m)			11.5			-
		Bankfull-Wetted Depth (cm)			70			-
Mine-Exposed	RG_FODNGD							
	1	Depth (cm)	13	11	21	22.5	31	19.7
		Velocity (m/s)	0.249	0.283	0.434	0.448	0.52	0.3868
		Bankfull Width (m)			13			-
		Wetted Width (m)			12.1			-
		Bankfull-Wetted Depth (cm)			60			-
	2	Depth (cm)	20	15	13	18.5	25	18.3
		Velocity (m/s)	0.451	0.388	0.732	0.442	0.311	0.4648
		Bankfull Width (m)			12.6			-
		Wetted Width (m)			10.7			-
		Bankfull-Wetted Depth (cm)			60			-
	3	Depth (cm)	18	12.5	20	18	21	17.9
		Velocity (m/s)	0.483	0.218	0.351	0.223	0.708	0.3966
		Bankfull Width (m)			15.9			-
		Wetted Width (m)			8.9			-
		Bankfull-Wetted Depth (cm)			60			-
Mine-Exposed	RG_MP1							
	1	Depth (cm)	23	16.5	15	18	20.5	18.6
		Velocity (m/s)	0.188	0.442	0.439	0.989	0.74	0.5596
		Bankfull Width (m)			16			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	22	9	13	10	14.5	13.7
		Velocity (m/s)	0.36	0.226	0.468	0.427	0.525	0.4012
		Bankfull Width (m)			25			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	12	14.5	17	18	17.5	15.8
		Velocity (m/s)	0.199	0.168	0.385	0.314	0.473	0.3078
		Bankfull Width (m)			30			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOUSH							
	1	Depth (cm)	22.5	24	24	21	17	21.7
		Velocity (m/s)	0.518	0.914	0.74	0.645	0.542	0.6718
		Bankfull Width (m)			14			-
		Wetted Width (m)			10			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	13.5	20.5	28	22	19.5	20.7
		Velocity (m/s)	0.371	0.383	0.34	0.797	0.248	0.4278
		Bankfull Width (m)			15			-
		Wetted Width (m)			8			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	27	23	33	27.5	19.5	26
		Velocity (m/s)	0.494	0.478	0.591	0.219	0.415	0.4394
		Bankfull Width (m)			17			-
		Wetted Width (m)			10			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.8: Channel Measurements, FRO LAEMP, September 2021

		Replicate	1	2	3	4	5	Mean
Mine-Exposed	RG_FOUKI							
	1	Depth (cm)	15.5	19	19.5	24	23.5	20.3
		Velocity (m/s)	0.245	0.349	0.51	0.398	0.429	0.3862
		Bankfull Width (m)			30			-
		Wetted Width (m)			17			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	22.5	24.5	25	21	23	23.2
		Velocity (m/s)	0.788	0.342	0.581	0.462	0.508	0.5362
		Bankfull Width (m)			30			-
		Wetted Width (m)			16			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	16	11.5	14.5	15.5	19	15.3
		Velocity (m/s)	0.436	0.317	0.608	0.627	0.792	0.556
		Bankfull Width (m)			28			-
		Wetted Width (m)			18			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOBKS							
	1	Depth (cm)	14	18.1	17	15.5	22.6	17.44
		Velocity (m/s)	0.371	0.741	0.644	0.458	0.367	0.5162
		Bankfull Width (m)			15.1			-
		Wetted Width (m)			12.2			-
		Bankfull-Wetted Depth (cm)			50			-
	2	Depth (cm)	14.5	12.1	16.1	19.8	20.2	16.54
		Velocity (m/s)	0.283	0.207	0.534	0.583	0.391	0.3996
		Bankfull Width (m)			15			-
		Wetted Width (m)			13.1			-
		Bankfull-Wetted Depth (cm)			50			-
	3	Depth (cm)	10.5	16	18.8	15	27	17.46
		Velocity (m/s)	0.287	0.493	0.502	0.751	0.449	0.4964
		Bankfull Width (m)			19.8			-
		Wetted Width (m)			8.6			-
		Bankfull-Wetted Depth (cm)			50			-
Mine-Exposed	RG_SCOUTDS							
	1	Depth (cm)	13	18.5	15	17	26	17.9
		Velocity (m/s)	0.463	0.674	0.485	0.73	0.842	0.6388
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	14.5	25	19	17.5	13.5	17.9
		Velocity (m/s)	0.498	0.593	0.26	0.304	0.902	0.5114
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	21.5	16.5	9	16	11	14.8
		Velocity (m/s)	0.59	0.728	0.327	0.956	0.5	0.6202
		Bankfull Width (m)			14			-
		Wetted Width (m)			12			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOBSC							
	1	Depth (cm)	16	19.5	23	18.5	19	19.2
		Velocity (m/s)	0.375	0.632	0.299	0.462	0.309	0.4154
		Bankfull Width (m)			19			-
		Wetted Width (m)			10.5			-
		Bankfull-Wetted Depth (cm)			7.95			-
	2	Depth (cm)	15	27.5	31.5	21	15.5	22.1
		Velocity (m/s)	0.398	0.249	0.922	0.565	0.354	0.4976
		Bankfull Width (m)			12.1			-
		Wetted Width (m)			8.1			-
		Bankfull-Wetted Depth (cm)			7.95			-
	3	Depth (cm)	12	17	19.2	22	13.2	16.68
		Velocity (m/s)	0.266	0.326	0.608	0.374	0.148	0.3444
		Bankfull Width (m)			29.9			-
		Wetted Width (m)			21.95			-
		Bankfull-Wetted Depth (cm)			7.95			-

Note: "-" indicates no data available.

Table G.8: Channel Measurements, FRO LAEMP, September 2021

Replicate			1	2	3	4	5	Mean
	RG_FOBCP							
Mine-Exposed	1	Depth (cm)	14	20	17	26	23	20
		Velocity (m/s)	0.214	0.442	0.492	0.57	0.691	0.4818
		Bankfull Width (m)			24.7			-
		Wetted Width (m)			11.4			-
		Bankfull-Wetted Depth (cm)			60			-
	2	Depth (cm)	11	7	18	25	18	15.8
		Velocity (m/s)	0.339	0.373	0.595	0.403	0.405	0.423
		Bankfull Width (m)			13			-
		Wetted Width (m)			8.2			-
		Bankfull-Wetted Depth (cm)			60			-
	3	Depth (cm)	18.5	16	15	28	43	24.1
		Velocity (m/s)	0.259	0.526	0.302	0.323	0.296	0.3412
		Bankfull Width (m)			10.6			-
		Wetted Width (m)			7.8			-
		Bankfull-Wetted Depth (cm)			60			-
	4	Depth (cm)	9.5	16	11	25	24	17.1
		Velocity (m/s)	0.166	0.292	0.306	0.355	0.438	0.3114
		Bankfull Width (m)			14.7			-
		Wetted Width (m)			12.2			-
		Bankfull-Wetted Depth (cm)			60			-
	5	Depth (cm)	16	22	18	18.5	15	17.9
		Velocity (m/s)	0.484	0.412	0.694	0.597	0.415	0.5204
		Bankfull Width (m)			16.2			-
		Wetted Width (m)			11.6			-
		Bankfull-Wetted Depth (cm)			60			-
	RG_FRCP1SW							
Mine-Exposed	1	Depth (cm)	26	26.5	22	31	29.5	27
		Velocity (m/s)	0.656	0.829	0.694	0.871	0.532	0.7164
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	7	9	11	13.5	12.5	10.6
		Velocity (m/s)	0.803	0.791	0.937	0.398	0.402	0.6662
		Bankfull Width (m)			25			-
		Wetted Width (m)			12			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	15.8	14.9	15	14	16	15.14
		Velocity (m/s)	0.349	0.466	0.401	0.446	0.248	0.382
		Bankfull Width (m)			20			-
		Wetted Width (m)			15			-
		Bankfull-Wetted Depth (cm)			-			-
	RG_FRUPO							
Mine-Exposed	1	Depth (cm)	13	22.5	18	21	13	17.5
		Velocity (m/s)	0.649	0.945	0.976	0.78	0.984	0.8668
		Bankfull Width (m)			13			-
		Wetted Width (m)			7			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	17.5	29.5	34	21	21.5	24.7
		Velocity (m/s)	0.577	0.694	0.534	0.152	0.269	0.4452
		Bankfull Width (m)			15			-
		Wetted Width (m)			7			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	14	23	24	18.5	14.5	18.8
		Velocity (m/s)	0.777	0.919	0.764	0.87	0.526	0.7712
		Bankfull Width (m)			14			-
		Wetted Width (m)			9			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.8: Channel Measurements, FRO LAEMP, September 2021

Replicate			1	2	3	4	5	Mean
Mine-Exposed	RG_FODPO							
	1	Depth (cm)	14	17.5	20	23	27	20.3
		Velocity (m/s)	0.392	0.428	0.295	0.213	0.549	0.3754
		Bankfull Width (m)			15.1			-
		Wetted Width (m)			12.7			-
		Bankfull-Wetted Depth (cm)			100			-
	2	Depth (cm)	14	18	24	38	48	28.4
		Velocity (m/s)	0.118	0.201	0.421	0.501	0.308	0.3098
		Bankfull Width (m)			18.8			-
		Wetted Width (m)			8			-
		Bankfull-Wetted Depth (cm)			100			-
	3	Depth (cm)	14.8	18.5	18	15	15	16.26
		Velocity (m/s)	0.264	0.394	0.287	0.374	0.344	0.3326
		Bankfull Width (m)			26.7			-
		Wetted Width (m)			12.7			-
		Bankfull-Wetted Depth (cm)			100			-
Mine-Exposed	RG_FO22							
	1	Depth (cm)	25.5	35	28.5	18.5	11	23.7
		Velocity (m/s)	0.601	0.725	0.56	0.747	0.552	0.637
		Bankfull Width (m)			15.3			-
		Wetted Width (m)			14.1			-
		Bankfull-Wetted Depth (cm)			57			-
	2	Depth (cm)	10	25	34	28.5	29.5	25.4
		Velocity (m/s)	0.152	0.37	0.353	0.284	0.346	0.301
		Bankfull Width (m)			24.7			-
		Wetted Width (m)			22.1			-
		Bankfull-Wetted Depth (cm)			57			-
	3	Depth (cm)	15.8	23	19.5	25.5	23	21.36
		Velocity (m/s)	0.51	0.433	0.453	0.379	0.577	0.4704
		Bankfull Width (m)			15.3			-
		Wetted Width (m)			12.8			-
		Bankfull-Wetted Depth (cm)			57			-
	4	Depth (cm)	16	25	38.5	32	25	27.3
		Velocity (m/s)	0.284	0.211	0.312	0.156	0.245	0.2416
		Bankfull Width (m)			16.2			-
		Wetted Width (m)			13.1			-
		Bankfull-Wetted Depth (cm)			57			-
	5	Depth (cm)	28	14	17.5	18	7.5	17
		Velocity (m/s)	0.293	0.144	0.104	0.296	0.47	0.2614
		Bankfull Width (m)			25.3			-
		Wetted Width (m)			24.4			-
		Bankfull-Wetted Depth (cm)			57			-
Mine-Exposed	RG_FOUEW							
	1	Depth (cm)	9	15.5	20.5	30.5	37	22.5
		Velocity (m/s)	0.258	0.467	0.685	0.633	0.69	0.5466
		Bankfull Width (m)			23			-
		Wetted Width (m)			12.6			-
		Bankfull-Wetted Depth (cm)			140			-
	2	Depth (cm)	16.9	20	13.1	21.5	32	20.7
		Velocity (m/s)	0.227	0.627	0.556	0.624	0.404	0.4876
		Bankfull Width (m)			19.4			-
		Wetted Width (m)			12.5			-
		Bankfull-Wetted Depth (cm)			140			-
	3	Depth (cm)	11.5	26	33	21	21.4	22.58
		Velocity (m/s)	0.231	0.428	0.708	0.757	0.342	0.4932
		Bankfull Width (m)			15.7			-
		Wetted Width (m)			12.3			-
		Bankfull-Wetted Depth (cm)			140			-

Note: "-" indicates no data available.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_HENUP-1						RG_HENUP-2					
2021-09-16						2021-09-16					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	11.5	-	**1**	0	0	0	8.5	-
2	0	0	0	7	-	**2**	0	0	0	20	-
3	0	0	0	16	-	**3**	0	0	0	7.5	-
4	0	0	0	13	-	**4**	0	0	0	5.5	-
5	0	0	0	13	-	**5**	0	0	0	7.5	-
6	0	0	0	12	-	**6**	0	0	0	8	-
7	0	0	0	6	-	**7**	0	0	0	9	-
8	0	0	0	6	-	**8**	0	0	0	10	-
9	0	0	0	15	-	**9**	0	0	0	5	-
10	0	0	0	11	0.5	**10**	0	0	0	17	0.5
11	0	0	0	9	-	**11**	0	0	0	8.5	-
12	0	0	0	8	-	**12**	0	0	0	15	-
13	0	0	0	7.5	-	**13**	0	0	0	6	-
14	0	0	0	13	-	**14**	0	0	0	8	-
15	0	0	0	4	-	**15**	0	0	0	3.5	-
16	0	0	0	9	-	**16**	0	0	0	6	-
17	0	0	0	28	-	**17**	0	0	0	8.5	-
18	0	0	0	9	-	**18**	0	0	0	6	-
19	0	0	0	9	-	**19**	0	0	0	6.5	-
20	0	0	0	18	0.25	**20**	0	0	0	11.5	0.5
21	0	0	0	4	-	**21**	0	0	0	23	-
22	0	0	0	5	-	**22**	0	0	0	8.5	-
23	0	0	0	8.5	-	**23**	0	0	0	5.5	-
24	0	0	0	11	-	**24**	0	0	0	13	-
25	0	0	0	11	-	**25**	0	0	0	21.5	-
26	0	0	0	6.5	-	**26**	0	0	0	4.5	-
27	0	0	0	8.5	-	**27**	0	0	0	11	-
28	0	0	0	7	-	**28**	0	0	0	4	-
29	0	0	0	20	-	**29**	0	0	0	11	-
30	0	0	0	9	0.25	**30**	0	0	0	13.5	0.5
31	0	0	0	7	-	**31**	0	0	0	5	-
32	0	0	0	6	-	**32**	0	0	0	7.5	-
33	0	0	0	14	-	**33**	0	0	0	5.5	-
34	0	0	0	7	-	**34**	0	0	0	22	-
35	0	0	0	13	-	**35**	0	0	0	17	-
36	0	0	0	96	-	**36**	0	0	0	13	-
37	0	0	0	9	-	**37**	0	0	0	6.5	-
38	0	0	0	9.5	-	**38**	0	0	0	6	-
39	0	0	0	6	-	**39**	0	0	0	3	-
40	0	0	0	6.5	0.5	**40**	0	0	0	7.5	0.25
41	0	0	0	6	-	**41**	0	0	0	3.5	-
42	0	0	0	8.5	-	**42**	0	0	0	11	-
43	0	0	0	5	-	**43**	0	0	0	24	-
44	0	0	0	0.5	-	**44**	0	0	0	21	-
45	0	0	0	21	-	**45**	0	0	0	12.5	-
46	0	0	0	8	-	**46**	0	0	0	11.5	-
47	0	0	0	5.5	-	**47**	0	0	0	20	-
48	0	0	0	6	-	**48**	0	0	0	10	-
49	0	0	0	9	-	**49**	0	0	0	5	-
50	0	0	0	11	0.5	**50**	0	0	0	5	0
51	0	0	0	6	-	**51**	0	0	0	4	-
52	0	0	0	6	-	**52**	0	0	0	9	-
53	0	0	0	5.5	-	**53**	0	0	0	8	-
54	0	0	0	19	-	**54**	0	0	0	2.5	-
55	0	0	0	8	-	**55**	0	0	0	16	-
56	0	0	0	8	-	**56**	0	0	0	20	-
57	0	0	0	17	-	**57**	0	0	0	4	-
58	0	0	0	9	-	**58**	0	0	0	10.5	-
59	0	0	0	13	-	**59**	0	0	0	3	-
60	0	0	0	11.5	0.25	**60**	0	0	0	2.5	0
61	0	0	0	20	-	**61**	0	0	0	7	-
62	0	0	0	22	-	**62**	0	0	0	5	-
63	0	0	0	12	-	**63**	0	0	0	2.5	-
64	0	0	0	18	-	**64**	0	0	0	19	-
65	0	0	0	10	-	**65**	0	0	0	3.5	-
66	0	0	0	9.5	-	**66**	0	0	0	4.5	-
67	0	0	0	10	-	**67**	0	0	0	9.5	-
68	0	0	0	8	-	**68**	0	0	0	6.5	-
69	0	0	0	13	-	**69**	0	0	0	10.5	-
70	0	0	0	6.5	0	**70**	0	0	0	11	0.25
71	0	0	0	13.5	-	**71**	0	0	0	9.5	-
72	0	0	0	7.5	-	**72**	0	0	0	7	-
73	0	0	0	14	-	**73**	0	0	0	10.5	-
74	0	0	0	4.5	-	**74**	0	0	0	6.5	-
75	0	0	0	5.5	-	**75**	0	0	0	5.5	-
76	0	0	0	5	-	**76**	0	0	0	5	-
77	0	0	0	4.5	-	**77**	0	0	0	19	-
78	0	0	0	10.5	-	**78**	0	0	0	13	-
79	0	0	0	8.5	-	**79**	0	0	0	4	-
80	0	0	0	14.5	0	**80**	0	0	0	16	0
81	0	0	0	9	-	**81**	0	0	0	5	-
82	0	0	0	6	-	**82**	0	0	0	7	-
83	0	0	0	16.5	-	**83**	0	0	0	13	-
84	0	0	0	6.5	-	**84**	0	0	0	6	-
85	0	0	0	14	-	**85**	0	0	0	4.5	-
86	0	0	0	7	-	**86**	0	0	0	9.5	-
87	0	0	0	23	-	**87**	0	0	0	6	-
88	0	0	0	14	-	**88**	0	0	0	6.5	-
89	0	0	0	10	-	**89**	0	0	0	7	-
90	0	0	0	15.5	0.25	**90**	0	0	0	4	0
91	0	0	0	9	-	**91**	0	0	0	3.5	-
92	0	0	0	10	-	**92**	0	0	0	10	-
93	0	0	0	11	-	**93**	0	0	0	9.5	-
94	0	0	0	9	-	**94**	0	0	0	23	-
95	0	0	0	3.5	-	**95**	0	0	0	15.5	-
96	0	0	0	3	-	**96**	0	0	0	13.5	-
97	0	0	0	5	-	**97**	0	0	0	3.5	-
98	0	0	0	5	-	**98**	0	0	0	2	-
99	0	0	0	7.5	-	**99**	0	0	0	8	-
100	0	0	0	9	0	**100**	0	0	0	8	0
Average Cic, Cip and Embed. =	**0.00**	**0.00**	**0.00**	**10.835**	**0.25**	**Average Cic, Cip and Embed. =**	**0.00**	**0.00**	**0.00**	**9.29**	**0.20**
Old Calcite Index (CI)		**0.00**				**Old Calcite Index (CI)**		**0.00**			
New Calcite Index (CI')		**0.00**				**New Calcite Index (CI')**		**0.00**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_HENUP-3						RG_FO26-1					
2021-09-16						2021-09-16					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	12.5	-	1	0	0	0	12	-
2	0	0	0	21	-	2	0	0	0	6	-
3	0	0	0	8.5	-	3	0	0.1	1	11	-
4	0	0	0	9	-	4	0	0	0	10	-
5	0	0	0	6	-	5	0	0	0	4.5	-
6	0	0	0	6	-	6	0	0	0	5.5	-
7	0	0	0	13	-	7	0	0.3	1	17	-
8	0	0	0	10.5	-	8	0	0	0	5	-
9	0	0	0	8.5	-	9	0	0	0	5	-
10	0	0	0	14.5	0.25	10	0	0	0	4	0
11	0	0	0	3.5	-	11	0	0	0	2.5	-
12	0	0	0	8	-	12	0	0	0	10.5	-
13	0	0	0	5.5	-	13	0	0.1	1	6	-
14	0	0	0	3	-	14	0	0	0	8	-
15	0	0	0	6	-	15	0	0	0	7.5	-
16	0	0	0	3.5	-	16	0	0	0	9	-
17	0	0	0	11.5	-	17	0	0	0	6.5	-
18	0	0	0	11.5	-	18	0	0	0	4	-
19	0	0	0	5	-	19	0	0	0	1	-
20	0	0	0	4	0	20	0	0	0	5.5	0.25
21	0	0	0	6.5	-	21	0	0	0	4	-
22	0	0	0	11.5	-	22	0	0.1	1	14.5	-
23	0	0	0	13.5	-	23	0	0	0	7	-
24	0	0	0	8	-	24	0	0	0	1	-
25	0	0	0	11.5	-	25	0	0.1	1	8	-
26	0	0	0	5	-	26	0	0	0	7.5	-
27	0	0	0	4	-	27	0	0	0	9.5	-
28	0	0	0	8	-	28	0	0	0	4	-
29	0	0	0	7	-	29	0	0	0	5	-
30	0	0	0	22	0	30	0	0	0	6	0.25
31	0	0	0	4	-	31	0	0.2	1	10.5	-
32	0	0	0	8	-	32	0	0	0	4	-
33	0	0	0	5	-	33	0	0	0	8	-
34	0	0	0	9.5	-	34	0	0	0	3.5	-
35	0	0	0	7.5	-	35	0	0	0	8	-
36	0	0	0	3.5	-	36	0	0	0	5	-
37	0	0	0	5	-	37	0	0.3	1	15	-
38	0	0	0	5	-	38	0	0	0	5.5	-
39	0	0	0	4	-	39	0	0	0	4.5	-
40	0	0	0	7	0	40	0	0	0	3	0.25
41	0	0	0	10	-	41	0	0	0	4	-
42	0	0	0	7.5	-	42	0	0	0	5	-
43	0	0	0	7.5	-	43	0	0.1	1	17	-
44	0	0	0	5	-	44	0	0	0	8	-
45	0	0	0	6	-	45	0	0	0	4	-
46	0	0	0	10	-	46	0	0	0	7.5	-
47	0	0	0	4	-	47	0	0	0	3.5	-
48	0	0	0	7	-	48	0	0.2	1	9	-
49	0	0	0	9	-	49	0	0	0	7.5	-
50	0	0	0	5	0.25	50	0	0	0	5	0.5
51	0	0	0	14	-	51	0	0	0	4	-
52	0	0	0	11	-	52	0	0	0	7	-
53	0	0	0	7	-	53	0	0	0	3.5	-
54	0	0	0	6	-	54	0	0	0	5	-
55	0	0	0	9	-	55	0	0	0	11	-
56	0	0	0	8.5	-	56	0	0	0	4	-
57	0	0	0	6	-	57	0	0	0	11.5	-
58	0	0	0	3	-	58	0	0	0	2.5	-
59	0	0	0	11	-	59	0	0	0	6	-
60	0	0	0	9	0	60	0	0	0	3.5	0.25
61	0	0	0	27	-	61	0	0	0	5.5	-
62	0	0	0	9.5	-	62	0	0	0	13.5	-
63	0	0	0	6	-	63	0	0	0	3.5	-
64	0	0	0	14	-	64	0	0.3	1	8	-
65	0	0	0	13	-	65	0	0	0	7.5	-
66	0	0	0	5.5	-	66	0	0	0	4	-
67	0	0	0	12	-	67	0	0	0	7	-
68	0	0	0	11	-	68	0	0	0	5.5	-
69	0	0	0	12	-	69	0	0	0	8.5	-
70	0	0	0	4	0.25	70	0	0	0	10	0.5
71	0	0	0	10.5	-	71	0	0	0	3	-
72	0	0	0	12	-	72	0	0	0	7	-
73	0	0	0	5	-	73	0	0	0	7	-
74	0	0	0	9	-	74	0	0	0	4	-
75	0	0	0	8.5	-	75	0	0	0	3	-
76	0	0	0	3.5	-	76	0	0	0	3.5	-
77	0	0	0	11.5	-	77	0	0	0	11	-
78	0	0	0	21	-	78	0	0.3	1	13	-
79	0	0	0	8	-	79	0	0	0	3	-
80	0	0	0	14	0.25	80	0	0	0	4	0.25
81	0	0	0	7	-	81	0	0.2	1	11.5	-
82	0	0	0	7.5	-	82	0	0	0	6	-
83	0	0	0	7.5	-	83	0	0	0	5	-
84	0	0	0	7	-	84	0	0	0	9	-
85	0	0	0	6.5	-	85	0	0	0	5.5	-
86	0	0	0	27	-	86	0	0	0	6.5	-
87	0	0	0	4	-	87	0	0	0	1	-
88	0	0	0	8	-	88	0	0	0	4.5	-
89	0	0	0	10	-	89	0	0	0	3.5	-
90	0	0	0	3.5	0	90	0	0	0	9	0
91	0	0	0	4	-	91	0	0	0	3	-
92	0	0	0	13	-	92	0	0	0	9.5	-
93	0	0	0	17	-	93	0	0	0	4	-
94	0	0	0	8	-	94	0	0	0	3	-
95	0	0	0	6	-	95	0	0	0	2	-
96	0	0	0	10	-	96	0	0	0	9	-
97	0	0	0	11	-	97	0	0	0	6	-
98	0	0	0	9	-	98	0	0.1	1	8.5	-
99	0	0	0	10	-	99	0	0	0	4	-
100	0	0	0	4	0	100	0	0	0	5	0
Average Cic, Cip and Embed. =	0.00	0.00	0.00	8.79	0.10	Average Cic, Cip and Embed. =	0.00	0.02	0.13	6.495	0.23
Old Calcite Index (CI)		0.00				Old Calcite Index (CI)		0.13			
New Calcite Index (CI')		0.00				New Calcite Index (CI')		0.02			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO26-2						RG_FO26-3					
2021-09-16						2021-09-16					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	5.5	-	1	0	0	0	6.5	-
2	0	0	0	7	-	2	0	0	0	13	-
3	0	0	0	10	-	3	0	0	0	8	-
4	0	0	0	4	-	4	0	0	0	6.5	-
5	0	0	0	4.5	-	5	0	0.1	1	7	-
6	0	0	0	11	-	6	0	0	0	3.5	-
7	0	0	0	2	-	7	0	0	0	17	-
8	0	0	0	6	-	8	0	0	0	4.5	-
9	0	0	0	14	-	9	0	0	0	13	-
10	0	0	0	7	-	10	0	0	0	6	0.25
11	0	0	0	0.2	-	11	0	0.2	1	17.5	-
12	0	0	0	3.5	0.5	12	0	0	0	7.5	-
13	0	0	0	7	-	13	0	0	0	8	-
14	0	0	0	4.5	-	14	0	0	0	3	-
15	0	0	0	2	-	15	0	0	0	3.5	-
16	0	0	0	2.5	-	16	0	0	0	5	-
17	0	0	0	8.5	-	17	0	0.3	1	15	-
18	0	0	0	4	-	18	0	0	0	9	-
19	0	0	0	8.5	-	19	0	0	0	5	-
20	0	0	0	4.5	0.25	20	0	0	0	4	-
21	0	0	0	9.5	-	21	0	0	0	4.5	0
22	0	0	0	4.5	-	22	0	0	0	9.5	-
23	0	0	0	14	-	23	0	0	0	7	-
24	0	0	0	5.5	-	24	0	0	0	12.5	-
25	0	0	0	5	-	25	0	0	0	9	-
26	0	0.1	1	16	-	26	0	0	0	9	-
27	0	0	0	8	-	27	0	0	0	8	-
28	0	0	0	5	-	28	0	0	0	2.5	-
29	0	0.1	1	7	-	29	0	0	0	4.5	-
30	0	0	0	5	-	30	0	0.4	1	15	-
31	0	0	0	3	-	31	0	0	0	9	-
32	0	0	0	6.5	0.5	32	0	0	0	10	-
33	0	0	0	5.5	-	33	0	0	0	7	0.25
34	0	0	0	7.5	-	34	0	0	0	9.5	-
35	0	0	0	11	-	35	0	0.1	1	7	-
36	0	0	0	7.5	-	36	0	0	0	4.5	-
37	0	0	0	6.5	-	37	0	0	0	3	-
38	0	0	0	7.5	-	38	0	0	0	0.2	-
39	0	0	0	9	-	39	0	0	0	6.5	-
40	0	0	0	6.5	-	40	0	0.1	1	16.5	-
41	0	0	0	16	0.25	41	0	0	0	4.5	0.25
42	0	0	0	6	-	42	0	0	0	7	-
43	0	0	0	5.5	-	43	0	0.2	1	17	-
44	0	0	0	5	-	44	0	0	0	8	-
45	0	0	0	14.5	-	45	0	0	0	8	-
46	0	0	0	3	-	46	0	0	0	10.5	-
47	0	0	0	6	-	47	0	0	0	8	-
48	0	0	0	8	-	48	0	0	0	8	-
49	0	0	0	8	-	49	0	0	0	8	-
50	0	0.1	1	11.5	0.5	50	0	0.3	1	20	0.25
51	0	0	0	5.5	-	51	0	0	0	12	-
52	0	0	0	8.5	-	52	0	0	0	4	-
53	0	0	0	6.5	-	53	0	0	0	6	-
54	0	0	0	7	-	54	0	0	0	4	-
55	0	0	0	5.5	-	55	0	0	0	16	-
56	0	0	0	4.5	-	56	0	0	0	2.5	-
57	0	0	0	7	-	57	0	0.2	1	7	-
58	0	0	0	6	-	58	0	0	0	13	-
59	0	0	0	5.5	-	59	0	0	0	11	-
60	0	0	0	9	0.25	60	0	0	0	5	-
61	0	0	0	4	-	61	0	0	0	4	-
62	0	0	0	6.5	-	62	0	0	0	11	0.5
63	0	0	0	8.5	-	63	0	0	0	6.5	-
64	0	0.5	1	11.5	-	64	0	0	0	4.5	-
65	0	0	0	9	-	65	0	0	0	6	-
66	0	0	0	3	-	66	0	0	0	9	-
67	0	0	0	3.5	-	67	0	0	0	2.5	-
68	0	0	0	7	-	68	0	0	0	9.5	-
69	0	0	0	5	-	69	0	0	0	2	-
70	0	0	0	7	-	70	0	0	0	2.5	-
71	0	0	0	6.5	0.5	71	0	0	0	2.5	0.5
72	0	0.1	1	5.5	-	72	0	0	0	8	-
73	0	0	0	0.2	-	73	0	0	0	3.5	-
74	0	0	0	6	-	74	0	0	0	12.5	-
75	0	0	0	6.5	-	75	0	0	0	0.1	-
76	0	0	0	8	-	76	0	0	0	7	-
77	0	0	0	12	-	77	0	0	0	9	-
78	0	0	0	8	-	78	0	0	0	5	-
79	0	0	0	2	-	79	0	0	0	7.5	-
80	0	0	0	13	0.5	80	0	0	0	6	0.5
81	0	0	0	4	-	81	0	0	0	9.5	-
82	0	0	0	6	-	82	0	0	0	9	-
83	0	0	0	6	-	83	0	0.5	1	9	-
84	0	0	0	5	-	84	0	0	0	4	-
85	0	0	0	7.5	-	85	0	0	0	4.5	-
86	0	0	0	10	-	86	0	0	0	5	-
87	0	0	0	6.5	-	87	0	0	0	4	-
88	0	0	0	3	-	88	0	0	0	4	-
89	0	0	0	0.2	-	89	0	0	0	7	-
90	0	0	0	9.5	-	90	0	0	0	11	0.25
91	0	0	0	4.5	0	91	0	0	0	4.5	-
92	0	0	0	14	-	92	0	0	0	6	-
93	0	0	0	8.5	-	93	0	0	0	3.5	-
94	0	0	0	1.5	-	94	0	0.1	1	4.5	-
95	0	0	0	5.5	-	95	0	0	0	4.5	-
96	0	0	0	8.5	-	96	0	0	0	5.5	-
97	0	0	0	3.5	-	97	0	0	0	1	-
98	0	0	0	21	-	98	0	0.1	1	13	-
99	0	0	0	16	-	99	0	0	0	7.5	-
100	0	0	0	12.5	0.5	100	0	0	0	11.5	0.5
Average Cic, Cip and Embed. =	0.00	0.01	0.05	7.006	0.38	Average Cic, Cip and Embed. =	0.00	0.03	0.12	7.438	0.33
Old Calcite Index (CI)		0.05				Old Calcite Index (CI)		0.12			
New Calcite Index (CI')		0.01				New Calcite Index (CI')		0.03			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FODHE-1						RG_FODHE-2					
2021-09-13						2021-09-13					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0.5	1	9	-	**1**	0	0.1	1	7.5	-
2	0	0	0	6	-	**2**	0	0.1	1	6	-
3	0	0	0	4	-	**3**	0	0.2	1	16	-
4	0	0.1	1	14.5	-	**4**	0	0.1	1	12	-
5	0	0.5	1	12	-	**5**	0	0	0	7	-
6	0	0	0	10	-	**6**	0	0.1	1	16	-
7	0	0	0	7.5	-	**7**	0	0	0	7	-
8	0	0	0	7.5	-	**8**	0	0	0	4.5	-
9	0	0	0	17.5	-	**9**	0	0.1	1	6.5	-
10	0	0.1	1	16.5	0	**10**	0	0.4	1	10	0
11	0	0	0	5.5	-	**11**	0	0	0	8	-
12	0	0.1	1	5	-	**12**	0	0.2	1	12	-
13	0	0	0	16.5	-	**13**	0	0	0	4.5	-
14	0	0	0	8.5	-	**14**	0	0	0	1.5	-
15	0	0	0	9	-	**15**	0	0.1	1	6.5	-
16	0	0.1	1	7	-	**16**	0	0	0	7.5	-
17	0	0	0	6	-	**17**	0	0	0	6	-
18	0	0	0	4.5	-	**18**	0	0	0	7	-
19	0	0.1	1	8	-	**19**	0	0.1	1	9	-
20	0	0	0	7.5	-	**20**	0	0.1	1	15	0.25
21	0	0.3	1	9	-	**21**	0	0	0	6	-
22	0	0.4	1	7.5	0.25	**22**	0	0	0	7	-
23	0	0	0	19.5	-	**23**	0	0.1	1	7	-
24	0	0	0	6	-	**24**	0	0	0	6	-
25	0	0.3	1	7.5	-	**25**	0	0.3	1	8	-
26	0	0	0	4.5	-	**26**	0	0.2	1	5.5	-
27	0	0	0	7.5	-	**27**	0	0.1	1	4.5	-
28	0	0	0	7	-	**28**	0	0	0	4.5	-
29	0	0	0	6	-	**29**	0	0.1	1	6	-
30	0	0.1	1	7.5	0	**30**	0	0.7	1	6	0
31	0	0	0	15	-	**31**	0	0	0	5	-
32	0	0	0	5	-	**32**	0	0.3	1	11	-
33	0	0.1	1	12.5	-	**33**	0	0	0	7	-
34	0	0.1	1	10.5	-	**34**	0	0	0	7.5	-
35	0	0.1	1	8.5	-	**35**	0	0	0	6.5	-
36	0	0	0	8	-	**36**	0	0	0	8	-
37	0	0.1	1	7.5	-	**37**	0	0.4	1	26.5	-
38	0	0	0	7	-	**38**	0	0.1	1	10	-
39	0	0.1	1	10	-	**39**	0	0.1	1	9.5	-
40	0	0.1	1	4.5	0	**40**	0	0.1	1	8	0.25
41	0	0.3	1	12	-	**41**	0	0.1	1	4.5	-
42	0	0.4	1	10	-	**42**	0	0	0	10	-
43	0	0	0	5.5	-	**43**	0	0	0	7	-
44	0	0	0	9	-	**44**	0	0	0	10.5	-
45	0	0.1	1	10	-	**45**	0	0.1	1	10.5	-
46	0	0.1	1	13	-	**46**	0	0	0	8	-
47	0	0.1	1	9	-	**47**	0	0	0	7.5	-
48	0	0	0	5	-	**48**	0	0.1	1	14	-
49	0	0.2	1	9.5	-	**49**	0	0	0	5	-
50	0	0.1	1	17	0.25	**50**	0	0	0	11	0
51	0	0.2	1	10	-	**51**	0	0.1	1	10	-
52	0	0.1	1	8.5	-	**52**	0	0	0	11	-
53	0	0.1	1	11	-	**53**	0	0	0	11	-
54	0	0	0	7	-	**54**	0	0	0	6.5	-
55	0	0.1	1	7.5	-	**55**	0	0	0	11.5	-
56	0	0	0	11	-	**56**	0	0.1	1	6	-
57	0	0.1	1	13	-	**57**	0	0	0	12	-
58	0	0.1	1	7.5	-	**58**	0	0.1	1	13	-
59	0	0.1	1	12	-	**59**	0	0	0	9	-
60	0	0.2	1	10	0	**60**	0	0	0	8	0
61	0	0	0	5.5	-	**61**	0	0.2	1	8	-
62	0	0.2	1	11.2	-	**62**	0	0.6	1	11.5	-
63	0	0	0	9	-	**63**	0	0.3	1	11	-
64	0	0.1	1	5	-	**64**	0	0.1	1	8.5	-
65	0	0.2	1	6.5	-	**65**	0	0.1	1	7	-
66	0	0	0	8	-	**66**	0	0.3	1	7.5	-
67	0	0.2	1	8	-	**67**	0	0.1	1	11	-
68	0	0	0	8.5	-	**68**	0	0.1	1	6	-
69	0	0	0	8	-	**69**	0	0.1	1	7	-
70	0	0	0	9	-	**70**	0	0	0	5.5	0.25
71	0	0.3	1	8	-	**71**	0	0.1	1	8	-
72	0	0	0	11	-	**72**	0	0.1	1	11	-
73	0	0.1	1	5	-	**73**	0	0	0	9.5	-
74	0	0.4	1	9	-	**74**	0	0	0	6.5	-
75	0	0.2	1	9.5	0	**75**	0	0.1	1	9	-
76	0	0	0	8.5	-	**76**	0	0.3	1	15	-
77	0	0.4	1	21	-	**77**	0	0	0	8	-
78	0	0	0	8	-	**78**	0	0	0	8	-
79	0	0.1	1	10.5	-	**79**	0	0	0	12	-
80	0	0.1	1	9	0.25	**80**	0	0.2	1	11.5	0.5
81	0	0	0	12	-	**81**	0	0	0	4.5	-
82	0	0	0	7	-	**82**	0	0	0	10	-
83	0	0	0	11	-	**83**	0	0.1	1	3.5	-
84	0	0.1	1	9	-	**84**	0	0.1	1	7	-
85	0	0.3	1	7.5	-	**85**	0	0.1	1	8	-
86	0	0.4	1	20	-	**86**	0	0.1	1	6	-
87	0	0.1	1	12.5	-	**87**	0	0	0	14	-
88	0	0	0	8	-	**88**	0	0.1	1	15	-
89	0	0.1	1	8	-	**89**	0	0	0	10	-
90	0	0	0	9	0.25	**90**	0	0.3	1	9	-
91	0	0	0	0.2	-	**91**	0	0.1	1	6	0.25
92	0	0	0	6	-	**92**	0	0.3	1	10	-
93	0	0	0	5.5	-	**93**	0	0	0	9.5	-
94	0	0.2	1	11	-	**94**	0	0.2	1	8	-
95	0	0.4	1	7	-	**95**	0	0	0	8	-
96	0	0	0	5	-	**96**	0	0	0	5	-
97	0	0.1	1	5.5	-	**97**	0	0.2	1	12	-
98	0	0.4	1	8	-	**98**	0	0.1	1	12.5	-
99	0	0	0	5	-	**99**	0	0.1	1	9	-
100	0	0.4	1	10.5	0.25	**100**	0	0	0	8	0
Average Cic, Cip and Embed. =	**0.00**	**0.10**	**0.53**	**8.959**	**0.13**	**Average Cic, Cip and Embed. =**	**0.00**	**0.09**	**0.54**	**8.715**	**0.15**
Old Calcite Index (CI)		**0.53**				**Old Calcite Index (CI)**		**0.54**			
New Calcite Index (CI')		**0.10**				**New Calcite Index (CI')**		**0.09**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FODHE-3						RG_FOUCL-1					
2021-09-13						2021-09-13					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	5.5	-	1	0	0	0	4.5	-
2	0	0.2	1	12	-	2	0	0	0	5.5	-
3	0	0.1	1	8	-	3	0	0	0	10	-
4	0	0	0	8	-	4	0	0	0	4	-
5	0	0	0	8.5	-	5	0	0	0	2	-
6	0	0	0	8	-	6	0	0	0	11	-
7	0	0.1	1	10.5	-	7	0	0	0	5	-
8	0	0	0	6	-	8	0	0	0	3	-
9	0	0.1	1	12	-	9	0	0	0	6	-
10	0	0	0	8	-	10	0	0.1	1	11	0.25
11	0	0	0	6.5	-	11	0	0	0	0	-
12	0	0	0	7.5	0	12	0	0	0	10	-
13	0	0	0	6.5	-	13	0	0	0	7	-
14	0	0	0	7	-	14	0	0	0	4	-
15	0	0	0	11.5	-	15	0	0	0	3.5	-
16	0	0	0	8.5	-	16	0	0	0	5.5	-
17	0	0.1	1	17.5	-	17	0	0	0	9	-
18	0	0	0	9.5	-	18	0	0	0	6.5	-
19	0	0.1	1	9	-	19	0	0	0	4	-
20	0	0	0	9.5	-	20	0	0	0	4	0
21	0	0	0	8.5	0	21	0	0	0	6.5	-
22	0	0	0	8	-	22	0	0	0	6	-
23	0	0	0	8.5	-	23	0	0	0	7	-
24	0	0.2	1	10.5	-	24	0	0	0	7.5	-
25	0	0	0	6.5	-	25	0	0	0	5.5	-
26	0	0	0	9.5	-	26	0	0	0	6.5	-
27	0	0	0	14	-	27	0	0	0	5	-
28	0	0	0	3	-	28	0	0	0	14	-
29	0	0	0	4	-	29	0	0	0	10	-
30	0	0	0	7.5	-	30	0	0	0	3.5	0.75
31	0	0	0	7	-	31	0	0	0	10.5	-
32	0	0	0	7	-	32	0	0	0	7	-
33	0	0	0	10	0	33	0	0	0	7	-
34	0	0	0	9	-	34	0	0	0	8	-
35	0	0	0	8	-	35	0	0	0	20	-
36	0	0	0	8	-	36	0	0	0	11.5	-
37	0	0	0	8	-	37	0	0	0	6	-
38	0	0	0	12	-	38	0	0	0	7	-
39	0	0	0	6.5	-	39	0	0	0	5	-
40	0	0.2	1	6	-	40	0	0.1	1	6	0.25
41	0	0.2	1	3	0	41	0	0	0	10.5	-
42	0	0	0	5	-	42	0	0	0	6	-
43	0	0	0	7	-	43	0	0	0	8	-
44	0	0	0	7	-	44	0	0	0	7	-
45	0	0	0	9	-	45	0	0	0	6	-
46	0	0.1	1	6.5	-	46	0	0	0	10.5	-
47	0	0	0	7	-	47	0	0	0	7.5	-
48	0	0	0	6.5	-	48	0	0	0	6.5	-
49	0	0.1	1	10	-	49	0	0	0	4	-
50	0	0	0	9.5	0	50	0	0	0	6	0.25
51	0	0	0	11	-	51	0	0	0	3.5	-
52	0	0	0	5	-	52	0	0	0	5	-
53	0	0	0	5.5	-	53	0	0	0	7.5	-
54	0	0	0	12	-	54	0	0	0	6	-
55	0	0	0	7.5	-	55	0	0	0	3.5	-
56	0	0	0	6	-	56	0	0	0	6	-
57	0	0	0	5.5	-	57	0	0	0	2	-
58	0	0.1	1	7	-	58	0	0	0	6.5	-
59	0	0.1	1	9	-	59	0	0	0	9	-
60	0	0.1	1	13.5	0.5	60	0	0	0	13.5	0
61	0	0	0	4	-	61	0	0	0	9	-
62	0	0	0	7.5	-	62	0	0	0	3	-
63	0	0.1	1	8	-	63	0	0	0	9	-
64	0	0	0	7.5	-	64	0	0	0	4	-
65	0	0	0	6.5	-	65	0	0	0	7.5	-
66	0	0	0	9.5	-	66	0	0	0	2.5	-
67	0	0.2	1	8.5	-	67	0	0	0	6.5	-
68	0	0.1	1	8.5	-	68	0	0	0	8.5	-
69	0	0.3	1	9	-	69	0	0	0	6.5	-
70	0	0	0	2.5	-	70	0	0	0	5	0.75
71	0	0	0	10	0	71	0	0	0	7	-
72	0	0.3	1	10.5	-	72	0	0	0	14	-
73	0	0.5	1	10	-	73	0	0	0	6.5	-
74	0	0	0	9	-	74	0	0	0	28	-
75	0	0.2	1	6	-	75	0	0	0	9.5	-
76	0	0	0	7	-	76	0	0	0	4.5	-
77	0	0	0	15.5	-	77	0	0	0	6	-
78	0	0	0	7	-	78	0	0	0	6.5	-
79	0	0.1	1	10	-	79	0	0	0	4	-
80	0	0	0	10	0	80	0	0	0	6.5	0
81	0	0	0	3.5	-	81	0	0	0	7.5	-
82	0	0	0	9	-	82	0	0	0	5.5	-
83	0	0	0	12	-	83	0	0	0	2.5	-
84	0	0	0	7	-	84	0	0	0	6	-
85	0	0	0	9.5	-	85	0	0	0	4.5	-
86	0	0	0	20	-	86	0	0	0	6	-
87	0	0	0	6.5	-	87	0	0	0	5	-
88	0	0	0	9	-	88	0	0	0	6.5	-
89	0	0	0	13	-	89	0	0	0	7	-
90	0	0.2	1	10	-	90	0	0	0	5.5	0.5
91	0	0	0	15.5	0.5	91	0	0	0	5	-
92	0	0	0	8.5	-	92	0	0	0	9	-
93	0	0	0	3.5	-	93	0	0	0	6.5	-
94	0	0.2	1	8.2	-	94	0	0	0	6	-
95	0	0	0	8	-	95	0	0	0	9.5	-
96	0	0	0	6.5	-	96	0	0	0	4	-
97	0	0	0	6.5	-	97	0	0	0	7	-
98	0	0	0	3.5	-	98	0	0	0	8	-
99	0	0.8	1	8.5	-	99	0	0	0	9	-
100	0	0	0	7	0.25	100	0	0	0	3.5	0.75
Average Cic, Cip and Embed. =	0.00	0.05	0.25	8.352	0.13	Average Cic, Cip and Embed. =	0.00	0.00	0.02	6.87	0.35
Old Calcite Index (CI)		0.25				Old Calcite Index (CI)		0.02			
New Calcite Index (CI')		0.05				New Calcite Index (CI')		0.00			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUCL-2						RG_FOUCL-3					
2021-09-13						2021-09-13					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	5	-	**1**	0	0	0	6	-
2	0	0	0	2.5	-	**2**	0	0	0	8	-
3	0	0	0	6	-	**3**	0	0	0	7.5	-
4	0	0	0	2.5	-	**4**	0	0	0	6.5	-
5	0	0	0	5.5	-	**5**	0	0	0	10	-
6	0	0	0	5.5	-	**6**	0	0	0	10.5	-
7	0	0	0	7.5	-	**7**	0	0	0	7.5	-
8	0	0	0	5.5	-	**8**	0	0	0	4.5	-
9	0	0	0	8	-	**9**	0	0	0	9	-
10	0	0	0	8	0.25	**10**	0	0	0	10	0
11	0	0	0	5	-	**11**	0	0	0	6.5	-
12	0	0	0	2	-	**12**	0	0	0	10	-
13	0	0	0	6.5	-	**13**	0	0	0	7	-
14	0	0	0	5	-	**14**	0	0	0	11.5	-
15	0	0	0	5	-	**15**	0	0	0	6	-
16	0	0	0	3	-	**16**	0	0	0	9.5	-
17	0	0	0	5.5	-	**17**	0	0	0	11.5	-
18	0	0	0	15.5	-	**18**	0	0	0	9	-
19	0	0	0	6.5	-	**19**	0	0	0	5.5	-
20	0	0	0	7	0	**20**	0	0	0	4	0.5
21	0	0	0	7.5	-	**21**	0	0	0	4.5	-
22	0	0	0	3	-	**22**	0	0	0	7.5	-
23	0	0	0	4	-	**23**	0	0.1	1	9	-
24	0	0	0	3.5	-	**24**	0	0	0	11.5	-
25	0	0	0	6	-	**25**	0	0	0	6	-
26	0	0	0	4	-	**26**	0	0.1	1	8.5	-
27	0	0	0	4	-	**27**	0	0	0	14	-
28	0	0	0	10	-	**28**	0	0	0	3.5	-
29	0	0	0	3	-	**29**	0	0	0	11	-
30	0	0	0	4	0.25	**30**	0	0	0	9	0
31	0	0	0	6	-	**31**	0	0	0	6	-
32	0	0	0	8	-	**32**	0	0	0	15.5	-
33	0	0	0	10	-	**33**	0	0	0	6	-
34	0	0	0	8	-	**34**	0	0	0	10	-
35	0	0	0	10	-	**35**	0	0	0	4	-
36	0	0	0	7.5	-	**36**	0	0	0	10.5	-
37	0	0	0	9.5	-	**37**	0	0	0	11	-
38	0	0	0	5.5	-	**38**	0	0	0	6.5	-
39	0	0	0	6	-	**39**	0	0	0	6.5	-
40	0	0.3	1	7	0.25	**40**	0	0	0	7.5	0.25
41	0	0	0	9.5	-	**41**	0	0	0	3.5	-
42	0	0	0	6	-	**42**	0	0	0	7	-
43	0	0	0	4.5	-	**43**	0	0	0	4.5	-
44	0	0	0	9	-	**44**	0	0	0	4.5	-
45	0	0	0	2.5	-	**45**	0	0	0	7	-
46	0	0	0	4	-	**46**	0	0	0	4.5	-
47	0	0	0	5.5	-	**47**	0	0	0	10.5	-
48	0	0	0	6.5	-	**48**	0	0	0	4.5	-
49	0	0	0	5	-	**49**	0	0	0	4	-
50	0	0	0	9	0.25	**50**	0	0	0	7.5	0.25
51	0	0	0	3.5	-	**51**	0	0	0	5.5	-
52	0	0	0	3.5	-	**52**	0	0	0	5	-
53	0	0	0	5	-	**53**	0	0	0	4	-
54	0	0	0	8	-	**54**	0	0	0	10	-
55	0	0	0	5	-	**55**	0	0	0	3.5	-
56	0	0	0	7	-	**56**	0	0	0	5.5	-
57	0	0	0	7	-	**57**	0	0	0	7	-
58	0	0	0	7.5	-	**58**	0	0	0	7	-
59	0	0	0	3.5	-	**59**	0	0	0	3.5	-
60	0	0	0	5	0	**60**	0	0	0	6.5	0
61	0	0	0	5	-	**61**	0	0	0	9	-
62	0	0	0	7.5	-	**62**	0	0	0	6	-
63	0	0	0	6	-	**63**	0	0	0	11.5	-
64	0	0	0	5	-	**64**	0	0	0	11.5	-
65	0	0	0	6	-	**65**	0	0	0	4	-
66	0	0	0	8	-	**66**	0	0	0	3	-
67	0	0	0	6	-	**67**	0	0	0	6	-
68	0	0	0	0.5	-	**68**	0	0	0	11	-
69	0	0	0	3	-	**69**	0	0	0	6	-
70	0	0	0	4.5	0.25	**70**	0	0	0	7.5	0
71	0	0	0	8.5	-	**71**	0	0	0	15	-
72	0	0	0	6	-	**72**	0	0	0	15	-
73	0	0	0	11	-	**73**	0	0	0	5	-
74	0	0	0	3	-	**74**	0	0	0	12	-
75	0	0	0	9	-	**75**	0	0	0	7	-
76	0	0	0	8.5	-	**76**	0	0	0	4.5	-
77	0	0	0	7	-	**77**	0	0	0	7.5	-
78	0	0	0	5	-	**78**	0	0	0	6.5	-
79	0	0	0	3.5	-	**79**	0	0	0	3.5	-
80	0	0	0	6	0	**80**	0	0	0	2.5	0.5
81	0	0	0	7	-	**81**	0	0	0	10	-
82	0	0	0	635	-	**82**	0	0	0	5	-
83	0	0	0	935	-	**83**	0	0	0	3	-
84	0	0	0	5	-	**84**	0	0.1	1	4.5	-
85	0	0	0	5	-	**85**	0	0	0	5	-
86	0	0	0	3	-	**86**	0	0	0	2.5	-
87	0	0	0	5.5	-	**87**	0	0	0	6	-
88	0	0	0	4.5	-	**88**	0	0	0	11	-
89	0	0	0	8	-	**89**	0	0	0	8.5	-
90	0	0	0	5.5	0.25	**90**	0	0	0	4	0.25
91	0	0	0	2.5	-	**91**	0	0	0	4	-
92	0	0	0	10	-	**92**	0	0	0	6.5	-
93	0	0	0	5.5	-	**93**	0	0	0	7	-
94	0	0	0	7	-	**94**	0	0	0	13	-
95	0	0	0	7	-	**95**	0	0	0	7.5	-
96	0	0	0	4	-	**96**	0	0	0	9	-
97	0	0	0	6	-	**97**	0	0	0	4.5	-
98	0	0	0	8	-	**98**	0	0	0	2	-
99	0	0	0	8	-	**99**	0	0	0	3.5	-
100	0	0	0	7.5	0.25	**100**	0	0	0	7	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.00**	**0.01**	**21.58**	**0.18**	**Average Cic, Cip and Embed. =**	**0.00**	**0.00**	**0.03**	**7.205**	**0.20**
Old Calcite Index (CI)		**0.01**				**Old Calcite Index (CI)**		**0.03**			
New Calcite Index (CI')		**0.00**				**New Calcite Index (CI')**		**0.00**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUNGD-1						RG_FOUNGD-2					
2021-09-17						2021-09-17					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	7	-	**1**	0	0	0	7	-
2	0	0	0	6.5	-	**2**	0	0	0	5	-
3	0	0	0	4	-	**3**	0	0	0	2.5	-
4	0	0	0	7	-	**4**	0	0	0	4	-
5	0	0	0	6	-	**5**	0	0	0	4	-
6	0	0	0	7	-	**6**	0	0	0	4.5	-
7	0	0	0	4	-	**7**	0	0	0	6	-
8	0	0	0	6.5	-	**8**	0	0	0	7	-
9	0	0	0	5	-	**9**	0	0	0	7.5	-
10	0	0	0	4.5	0.25	**10**	0	0	0	7.5	0
11	0	0	0	2	-	**11**	0	0	0	4	-
12	0	0	0	3.5	-	**12**	0	0	0	4.5	-
13	0	0	0	5.5	-	**13**	0	0	0	10	-
14	0	0	0	3.5	-	**14**	0	0	0	7	-
15	0	0	0	3.5	-	**15**	0	0	0	6	-
16	0	0	0	4	-	**16**	0	0.2	1	9	-
17	0	0	0	3	-	**17**	0	0.5	1	7	-
18	0	0	0	1	-	**18**	0	0	0	7.5	-
19	0	0	0	3.5	-	**19**	0	0	0	5.5	-
20	0	0	0	6.5	0	**20**	0	0	0	3.5	0
21	0	0	0	5	-	**21**	0	0.2	1	6	-
22	0	0	0	8.5	-	**22**	0	0	0	4	-
23	0	0	0	5	-	**23**	0	0	0	6	-
24	0	0	0	2	-	**24**	0	0	0	5.5	-
25	0	0	0	1.5	-	**25**	0	0	0	9.5	-
26	0	0	0	6	-	**26**	0	0	0	4.5	-
27	0	0	0	6.5	-	**27**	0	0	0	4	-
28	0	0	0	3	-	**28**	0	0	0	4	-
29	0	0	0	4.5	-	**29**	0	0	0	4	-
30	0	0	0	4	0	**30**	0	0	0	5.5	0
31	0	0	0	3.5	-	**31**	0	0	0	5	-
32	0	0	0	3	-	**32**	0	0	0	3.5	-
33	0	0	0	5	-	**33**	0	0	0	4.5	-
34	0	0	0	3	-	**34**	0	0	0	2	-
35	0	0	0	5	-	**35**	0	0	0	5	-
36	0	0	0	8	-	**36**	0	0	0	3	-
37	0	0	0	6	-	**37**	0	0	0	5	-
38	0	0	0	4	-	**38**	0	0	0	4.5	-
39	0	0	0	2	-	**39**	0	0	0	10.5	-
40	0	0	0	5	0	**40**	0	0	0	6.5	0
41	0	0	0	5.5	-	**41**	0	0	0	7.5	-
42	0	0	0	2.5	-	**42**	0	0	0	9	-
43	0	0	0	6	-	**43**	0	0.4	1	10.5	-
44	0	0	0	2.5	-	**44**	0	0	0	7	-
45	0	0	0	2.5	-	**45**	0	0	0	4	-
46	0	0	0	5	-	**46**	0	0	0	8	-
47	0	0	0	8.5	-	**47**	0	0.3	1	8.5	-
48	0	0	0	1.5	-	**48**	0	0	0	13	-
49	0	0	0	2.5	-	**49**	0	0	0	6	-
50	0	0	0	8.5	0.5	**50**	0	0	0	5	0.25
51	0	0	0	7	-	**51**	0	0	0	8.5	-
52	0	0	0	6.5	-	**52**	0	0	0	5.5	-
53	0	0	0	7	-	**53**	0	0	0	3.5	-
54	0	0	0	8	-	**54**	0	0	0	4.5	-
55	0	0	0	6	-	**55**	0	0	0	4	-
56	0	0	0	3	-	**56**	0	0	0	4.5	-
57	0	0	0	5.5	-	**57**	0	0	0	5	-
58	0	0.3	1	10	-	**58**	0	0	0	6	-
59	0	0	0	8	-	**59**	0	0	0	16	-
60	0	0	0	8	0	**60**	0	0	0	5	0
61	0	0	0	7	-	**61**	0	0	0	5	-
62	0	0	0	4	-	**62**	0	0	0	4	-
63	0	0	0	3	-	**63**	0	0.3	1	6	-
64	0	0.1	1	15	-	**64**	0	0	0	7	-
65	0	0	0	8	-	**65**	0	0	0	8	-
66	0	0	0	5	-	**66**	0	0.5	1	8.5	-
67	0	0	0	4	-	**67**	0	0.5	1	4	-
68	0	0	0	2.5	-	**68**	0	0	0	6.5	-
69	0	0	0	2.5	-	**69**	0	0	0	9	-
70	0	0	0	6.5	0.25	**70**	0	0.7	1	5.5	0
71	0	0	0	3.5	-	**71**	0	0	0	7	-
72	0	0	0	6	-	**72**	0	0	0	5.5	-
73	0	0	0	7	-	**73**	0	0	0	5.5	-
74	0	0	0	11.5	-	**74**	0	0.5	1	7	-
75	0	0	0	8	-	**75**	0	0	0	5	-
76	0	0.2	1	8	-	**76**	0	0	0	4	-
77	0	0	0	4.5	-	**77**	0	0	0	4	-
78	0	0	0	6	-	**78**	0	0	0	8	-
79	0	0	0	6.5	-	**79**	0	0	0	6.5	-
80	0	0.4	1	18	0.75	**80**	0	0	0	6	0
81	0	0	0	7	-	**81**	0	0	0	4	-
82	0	0.3	1	14	-	**82**	0	0	0	6	-
83	0	0	0	5.5	-	**83**	0	0	0	3	-
84	0	0	0	6	-	**84**	0	0	0	3.5	-
85	0	0	0	4	-	**85**	0	0	0	5	-
86	0	0	0	3	-	**86**	0	0	0	6	-
87	0	0	0	4	-	**87**	0	0	0	5	-
88	0	0	0	5	-	**88**	0	0	0	5.5	-
89	0	0	0	9	-	**89**	0	0	0	4.5	-
90	0	0.3	1	12	0.5	**90**	0	0	0	6.5	0
91	0	0	0	5	-	**91**	0	0	0	4	-
92	0	0	0	8	-	**92**	0	0	0	9.5	-
93	0	0	0	8	-	**93**	0	0	0	5	-
94	0	0	0	4	-	**94**	0	0.3	1	6	-
95	0	0	0	4	-	**95**	0	0	0	8	-
96	0	0	0	5	-	**96**	0	0	0	4	-
97	0	0	0	3	-	**97**	0	0	0	3	-
98	0	0.5	1	7	-	**98**	0	0.2	1	5	-
99	0	0	0	11	-	**99**	0	0	0	4	-
100	0	0	0	6	0	**100**	0	0	0	5	0
Average Cic, Cip and Embed. =	**0.00**	**0.02**	**0.07**	**5.65**	**0.23**	**Average Cic, Cip and Embed. =**	**0.00**	**0.05**	**0.12**	**5.87**	**0.03**
Old Calcite Index (CI)		**0.07**				**Old Calcite Index (CI)**		**0.12**			
New Calcite Index (CI')		**0.02**				**New Calcite Index (CI')**		**0.05**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUNGD-3						RG_FODNGD-1					
2021-09-17						2021-09-17					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	4.5	-	**1**	0	0	0	9.5	-
2	0	0	0	4.5	-	**2**	0	0	0	4.5	-
3	0	0	0	5	-	**3**	0	0	0	8	-
4	0	0	0	6.5	-	**4**	0	0	0	4	-
5	0	0	0	6	-	**5**	0	0	0	6	-
6	0	0	0	6	-	**6**	0	0	0	9.5	-
7	0	0	0	5	-	**7**	0	0	0	4	-
8	0	0	0	8.5	-	**8**	0	0	0	16.5	-
9	0	0	0	6	-	**9**	0	0	0	8	-
10	0	0	0	2	0	**10**	0	0	0	4.5	0
11	0	0	0	6.5	-	**11**	0	0	0	3.5	-
12	0	0	0	6.5	-	**12**	0	0	0	7	-
13	0	0	0	2	-	**13**	0	0	0	10.5	-
14	0	0	0	9	-	**14**	0	0	0	2	-
15	0	0	0	1.5	-	**15**	0	0	0	5	-
16	0	0	0	5	-	**16**	0	0	0	7	-
17	0	0	0	8.5	-	**17**	0	0	0	7.5	-
18	0	0	0	3.5	-	**18**	0	0	0	1.5	-
19	0	0	0	0.2	-	**19**	0	0	0	5	-
20	0	0	0	7	0	**20**	0	0	0	6.5	0.25
21	0	0	0	6	-	**21**	0	0	0	9	-
22	0	0	0	5	-	**22**	0	0	0	6	-
23	0	0	0	2.5	-	**23**	0	0	0	10	-
24	0	0	0	3.5	-	**24**	0	0	0	6.5	-
25	0	0	0	3.5	-	**25**	0	0	0	2.5	-
26	0	0	0	5.5	-	**26**	0	0	0	6.5	-
27	0	0	0	9	-	**27**	0	0	0	5	-
28	0	0	0	2.5	-	**28**	0	0	0	4.5	-
29	0	0	0	5	-	**29**	0	0	0	6.5	-
30	0	0	0	6.5	0.25	**30**	0	0	0	6.5	0.25
31	0	0	0	5.5	-	**31**	0	0	0	8	-
32	0	0	0	6.5	-	**32**	0	0	0	7	-
33	0	0	0	3	-	**33**	0	0	0	9.5	-
34	0	0	0	5	-	**34**	0	0	0	4	-
35	0	0	0	4.5	-	**35**	0	0	0	7.5	-
36	0	0	0	2	-	**36**	0	0	0	16	-
37	0	0	0	3	-	**37**	0	0	0	8	-
38	0	0	0	3.5	-	**38**	0	0	0	12	-
39	0	0	0	5	-	**39**	0	0	0	4	-
40	0	0	0	6.5	0	**40**	0	0	0	6.5	0
41	0	0	0	6.5	-	**41**	0	0	0	3.5	-
42	0	0	0	8.5	-	**42**	0	0	0	3.5	-
43	0	0	0	9	-	**43**	0	0.5	1	17	-
44	0	0	0	6	-	**44**	0	0	0	5	-
45	0	0	0	7.5	-	**45**	0	0	0	8	-
46	0	0	0	5	-	**46**	0	0	0	19	-
47	0	0	0	4	-	**47**	0	0.4	1	4	-
48	0	0	0	4	-	**48**	0	0	0	3	-
49	0	0	0	6	-	**49**	0	0.4	1	7	-
50	0	0	0	4	0	**50**	0	0	0	5	0
51	0	0	0	1.5	-	**51**	0	0	0	2	-
52	0	0	0	1	-	**52**	0	0	0	7	-
53	0	0	0	2.5	-	**53**	0	0	0	4	-
54	0	0	0	3.5	-	**54**	0	0.1	1	8	-
55	0	0	0	3.5	-	**55**	0	0.4	1	9	-
56	0	0	0	3	-	**56**	0	0	0	8	-
57	0	0	0	3	-	**57**	0	0.6	1	10.5	-
58	0	0	0	4	-	**58**	0	0	0	6	-
59	0	0	0	6.5	-	**59**	0	0	0	10	-
60	0	0	0	4	0	**60**	0	0.4	1	8	0
61	0	0	0	7	-	**61**	0	0	0	8	-
62	0	0	0	5	-	**62**	0	0	0	5	-
63	0	0	0	4	-	**63**	0	0.5	1	10	-
64	0	0	0	3.5	-	**64**	0	0	0	9	-
65	0	0	0	4	-	**65**	0	0	0	10	-
66	0	0	0	5	-	**66**	0	0	0	7	-
67	0	0	0	4	-	**67**	0	0	0	4	-
68	0	0	0	3	-	**68**	0	0	0	8	-
69	0	0	0	8	-	**69**	0	0	0	6	-
70	0	0	0	6	0	**70**	0	0.1	1	5	0
71	0	0	0	6.5	-	**71**	0	0	0	7	-
72	0	0	0	2	-	**72**	0	0	0	6	-
73	0	0.3	1	7	-	**73**	0	0	0	11	-
74	0	0	0	4.5	-	**74**	0	0.5	1	6	-
75	0	0	0	2.5	-	**75**	0	0	0	4	-
76	0	0.5	1	8	-	**76**	0	0	0	8	-
77	0	0.9	1	9	-	**77**	0	0.3	1	8.5	-
78	0	0.5	1	5	-	**78**	0	0	0	22	-
79	0	0.1	1	6.1	-	**79**	0	0	0	16	-
80	0	0.4	1	6.5	0	**80**	0	0.3	1	8	0
81	0	0.2	1	5	-	**81**	0	0	0	16	-
82	0	0.1	1	7	-	**82**	0	0	0	6.5	-
83	0	0.2	1	8	-	**83**	0	0.1	1	4	-
84	0	0.1	1	9	-	**84**	0	0	0	10.5	-
85	0	0	0	6	-	**85**	0	0	0	7	-
86	0	0	0	5.5	-	**86**	0	0	0	11	-
87	0	0	0	5	-	**87**	0	0	0	9	-
88	0	0	0	7	-	**88**	0	0	0	7	-
89	0	0	0	6	-	**89**	0	0	0	6	-
90	0	0	0	4.5	0.25	**90**	0	0	0	4.5	0.25
91	0	0.7	1	10	-	**91**	0	0	0	6	-
92	0	0	0	4	-	**92**	0	0	0	5	-
93	0	0	0	3	-	**93**	0	0	0	5	-
94	0	0.5	1	7	-	**94**	0	0	0	4	-
95	0	0	0	5.5	-	**95**	0	0	0	7	-
96	0	0.6	1	5	-	**96**	0	0	0	3.5	-
97	0	0.5	1	8	-	**97**	0	0	0	8.5	-
98	0	0	0	10	-	**98**	0	0.2	1	9	-
99	0	0.5	1	5	-	**99**	0	0	0	4	-
100	0	0	0	3.5	0	**100**	0	0.6	1	6	0
Average Cic, Cip and Embed. =	**0.00**	**0.06**	**0.15**	**5.208**	**0.05**	**Average Cic, Cip and Embed. =**	**0.00**	**0.05**	**0.15**	**7.31**	**0.08**
Old Calcite Index (CI)		**0.15**				**Old Calcite Index (CI)**		**0.15**			
New Calcite Index (CI')		**0.06**				**New Calcite Index (CI')**		**0.05**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FODNGD-2						RG_FODNGD-3					
2021-09-17						2021-09-17					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	6	-	1	0	0	0	4	-
2	0	0	0	4	-	2	0	0	0	4	-
3	0	0	0	6	-	3	0	0	0	2.5	-
4	0	0	0	5	-	4	0	0	0	6	-
5	0	0	0	3	-	5	0	0	0	2	-
6	0	0	0	10	-	6	0	0	0	4	-
7	0	0	0	1.5	-	7	0	0	0	5	-
8	0	0	0	5	-	8	0	0	0	10	-
9	0	0	0	2	-	9	0	0	0	7.5	-
10	0	0	0	6	0	10	0	0	0	3.5	0
11	0	0	0	5	-	11	0	0	0	7	-
12	0	0	0	6.5	-	12	0	0	0	5	-
13	0	0	0	6	-	13	0	0	0	3	-
14	0	0	0	4.5	-	14	0	0	0	11	-
15	0	0	0	6	-	15	0	0	0	5.5	-
16	0	0	0	6.5	-	16	0	0	0	6	-
17	0	0	0	1	-	17	0	0	0	2	-
18	0	0	0	8	-	18	0	0	0	2.5	-
19	0	0	0	6	-	19	0	0	0	3.5	-
20	0	0	0	3.5	0	20	0	0	0	12	0.75
21	0	0	0	7.5	-	21	0	0	0	3.5	-
22	0	0	0	5	-	22	0	0	0	11.5	-
23	0	0	0	4	-	23	0	0	0	2.5	-
24	0	0	0	4.5	-	24	0	0	0	7	-
25	0	0	0	9.5	-	25	0	0	0	3.5	-
26	0	0	0	8	-	26	0	0	0	7	-
27	0	0	0	5	-	27	0	0	0	9	-
28	0	0	0	9	-	28	0	0	0	5	-
29	0	0	0	4	-	29	0	0	0	6.5	-
30	0	0	0	6	0	30	0	0	0	7	0.25
31	0	0	0	9	-	31	0	0	0	5.5	-
32	0	0	0	6	-	32	0	0	0	5	-
33	0	0	0	6.5	-	33	0	0	0	10	-
34	0	0	0	8.5	-	34	0	0	0	5	-
35	0	0	0	4.5	-	35	0	0	0	4.5	-
36	0	0	0	9.5	-	36	0	0	0	3.5	-
37	0	0	0	5	-	37	0	0	0	5	-
38	0	0	0	5	-	38	0	0	0	3.5	-
39	0	0	0	5	-	39	0	0	0	9.5	-
40	0	0	0	6	0	40	0	0	0	15.5	0.5
41	0	0	0	4.5	-	41	0	0	0	7.5	-
42	0	0	0	5	-	42	0	0	0	8.5	-
43	0	0	0	4	-	43	0	0	0	5.5	-
44	0	0	0	3.5	-	44	0	0	0	14	-
45	0	0	0	5	-	45	0	0	0	5	-
46	0	0	0	8.5	-	46	0	0	0	9	-
47	0	0	0	6.5	-	47	0	0	0	2	-
48	0	0	0	7	-	48	0	0	0	8.5	-
49	0	0	0	7.5	-	49	0	0	0	12.5	-
50	0	0	0	13	0.5	50	0	0	0	8.5	0
51	0	0	0	10.5	-	51	0	0	0	7	-
52	0	0	0	2.5	-	52	0	0.2	1	8	-
53	0	0	0	5.5	-	53	0	0	0	9	-
54	0	0	0	4	-	54	0	0	0	9	-
55	0	0	0	18	-	55	0	0.5	1	8	-
56	0	0	0	4.5	-	56	1	0.1	1	13.5	-
57	0	0	0	6.5	-	57	0	0.4	1	6	-
58	0	0	0	5	-	58	0	0.5	1	9	-
59	0	0	0	6	-	59	0	0	0	6	-
60	0	0	0	3.5	0	60	0	0	0	5.5	0
61	0	0	0	5	-	61	0	0.7	1	10	-
62	0	0	0	6	-	62	0	0.5	1	12	-
63	0	0	0	6.5	-	63	0	0.5	1	8	-
64	0	0	0	5	-	64	0	0.5	1	5	-
65	0	0	0	17	-	65	0	0	0	7	-
66	0	0	0	3.5	-	66	0	0	0	5	-
67	0	0	0	5	-	67	0	0	0	7	-
68	0	0	0	5.5	-	68	0	0	0	3	-
69	0	0	0	2	-	69	0	0.1	1	9	-
70	0	0	0	4.5	0	70	0	0	0	5	0.25
71	0	0	0	5	-	71	0	0	0	4	-
72	0	0	0	16	-	72	0	0	0	6	-
73	0	0	0	6.5	-	73	0	0	0	5	-
74	0	0	0	13	-	74	0	0	0	7	-
75	0	0	0	6.5	-	75	0	0.6	1	13	-
76	0	0	0	9	-	76	0	0.2	1	10	-
77	0	0	0	10	-	77	0	0	0	11	-
78	0	0	0	12.5	-	78	0	0	0	7	-
79	0	0	0	5.5	-	79	0	0	0	10.5	-
80	0	0	0	8	0.25	80	0	0	0	6	0
81	0	0	0	5	-	81	0	0	0	7	-
82	0	0	0	6.5	-	82	0	0	0	5	-
83	0	0	0	6.5	-	83	0	0	0	4	-
84	0	0	0	8.5	-	84	0	0.3	1	14	-
85	0	0	0	7	-	85	0	0.4	1	9	-
86	0	0	0	14.5	-	86	0	0	0	5	-
87	0	0	0	5	-	87	0	0	0	3	-
88	0	0	0	5.5	-	88	0	0	0	7	-
89	0	0	0	8	-	89	0	0	0	5	-
90	0	0	0	1.5	0	90	0	0	0	12	0.25
91	0	0	0	3	-	91	0	0	0	4	-
92	0	0	0	2	-	92	0	0	0	6	-
93	0	0	0	16.5	-	93	0	0	0	3.5	-
94	0	0	0	7	-	94	0	0	0	7	-
95	0	0	0	12	-	95	0	0	0	5	-
96	0	0	0	4	-	96	0	0	0	9	-
97	0	0	0	5	-	97	0	0	0	10	-
98	0	0	0	4.5	-	98	0	0	0	6	-
99	0	0	0	14	-	99	0	0	0	3	-
100	0	0	0	4.5	0	100	0	0	0	5	0.25
Average Cic, Cip and Embed. =	0.00	0.00	0.00	6.52	0.08	Average Cic, Cip and Embed. =	0.01	0.06	0.14	6.775	0.23
Old Calcite Index (CI)	0.00					Old Calcite Index (CI)	0.15				
New Calcite Index (CI')	0.00					New Calcite Index (CI')	0.07				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_MP1-1						RG_MP1-2					
2021-09-15						2021-09-15					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0.1	1	7	-	**1**	0	0	0	5.5	-
2	0	0.4	1	10.5	-	**2**	0	0	0	8.5	-
3	0	0.6	1	11.5	-	**3**	0	0	0	4.5	-
4	0	0.2	1	8	-	**4**	0	0	0	6.5	-
5	0	0	0	3	-	**5**	0	0	0	7.5	-
6	0	0.1	1	6	-	**6**	0	0	0	5	-
7	0	0.2	1	10	-	**7**	0	0	0	4.5	-
8	0	0.6	1	6	-	**8**	0	0	0	8	-
9	0	0.1	1	4	-	**9**	0	0	0	4.5	-
10	0	0	0	6	0.75	**10**	0	0	0	8	0.5
11	0	0.2	1	10	-	**11**	0	0	0	7	-
12	0	0	0	2	-	**12**	0	0	0	3.5	-
13	0	0.3	1	13.3	-	**13**	0	0	0	8.5	-
14	0	0	0	1	-	**14**	0	0	0	5	-
15	0	0	0	4	-	**15**	0	0	0	5	-
16	0	0	0	6	-	**16**	0	0	0	6	-
17	0	0.2	1	10	-	**17**	0	0	0	6	-
18	0	0	0	6	-	**18**	0	0	0	4	-
19	0	0	0	7	-	**19**	0	0	0	6.5	-
20	0	0	0	4	0.5	**20**	0	0	0	7	0.25
21	0	0	0	6.5	-	**21**	0	0.2	1	5.5	-
22	0	0.1	1	9	-	**22**	0	0	0	6	-
23	0	0	0	3	-	**23**	0	0	0	5	-
24	0	0	0	3	-	**24**	0	0	0	5	-
25	0	0	0	11	-	**25**	0	0	0	4	-
26	0	0.1	1	3	-	**26**	0	0	0	9	-
27	0	0.1	1	6	-	**27**	0	0.1	1	10	-
28	0	0	0	4	-	**28**	0	0	0	3.5	-
29	0	0.1	1	8	-	**29**	0	0	0	5	-
30	0	0	0	3	0.25	**30**	0	0	0	10	0
31	0	0	0	5	-	**31**	0	0	0	5.4	-
32	0	0	0	5.5	-	**32**	0	0	0	4.5	-
33	0	0	0	8	-	**33**	0	0	0	6	-
34	0	0.1	1	7	-	**34**	0	0	0	10.5	-
35	0	0.4	1	7	-	**35**	0	0	0	4	-
36	0	0.3	1	6	-	**36**	0	0	0	6	-
37	0	0	0	8	-	**37**	0	0	0	3.5	-
38	0	0.8	1	9.5	-	**38**	0	0	0	8	-
39	0	0	0	5.5	-	**39**	0	0.1	1	8	-
40	0	0	0	2.5	0.25	**40**	0	0	0	5	0
41	0	0.2	1	6	-	**41**	0	0	0	8	-
42	0	0.4	1	9.5	-	**42**	0	0	0	6.5	-
43	0	0.4	1	8.5	-	**43**	0	0	0	5.5	-
44	0	0	0	2	-	**44**	0	0	0	6.5	-
45	0	0	0	6.5	-	**45**	0	0.1	1	6.5	-
46	0	0	0	6.5	-	**46**	0	0	0	4	-
47	0	0.5	1	18	-	**47**	0	0	0	7.5	-
48	0	0	0	7	-	**48**	0	0	0	3.5	-
49	0	0.6	1	16	-	**49**	0	0	0	8	-
50	0	0.1	1	3	0.5	**50**	0	0	0	3	0
51	0	0.1	1	8	-	**51**	0	0	0	5.5	-
52	0	0.1	1	7	-	**52**	0	0	0	5.5	-
53	0	0	0	7	-	**53**	0	0	0	6	-
54	0	0	0	6	-	**54**	0	0	0	6	-
55	0	0	0	7	-	**55**	0	0	0	7	-
56	0	0.4	1	10	-	**56**	0	0	0	3.5	-
57	0	0.1	1	11	-	**57**	0	0	0	4	-
58	0	0	0	5.5	-	**58**	0	0	0	6	-
59	0	0	0	4.5	-	**59**	0	0	0	2	-
60	0	0	0	2	0.25	**60**	0	0	0	5.5	0.25
61	0	0	0	7	-	**61**	0	0	0	4.5	-
62	0	0	0	5	-	**62**	0	0.1	1	11	-
63	0	0	0	4	-	**63**	0	0	0	5	-
64	0	0.2	1	9	-	**64**	0	0	0	4	-
65	0	0	0	3	-	**65**	0	0.1	1	9.5	-
66	0	0	0	7	-	**66**	0	0	0	7	-
67	0	0	0	5	-	**67**	0	0	0	2	-
68	0	0	0	4	-	**68**	0	0.1	1	6	-
69	0	0	0	6	-	**69**	0	0	0	8	-
70	0	0	0	1	0	**70**	0	0	0	5.5	0.25
71	0	0	0	7	-	**71**	0	0	0	6.5	-
72	0	0.1	1	5.5	-	**72**	0	0	0	5	-
73	0	0	0	5	-	**73**	0	0	0	7	-
74	0	0	0	6	-	**74**	0	0.1	1	4.5	-
75	0	0	0	4	-	**75**	0	0	0	5.5	-
76	0	0.1	1	9	-	**76**	0	0	0	6	-
77	0	0	0	2	-	**77**	0	0	0	7	-
78	0	0	0	8	-	**78**	0	0	0	6.5	-
79	0	0	0	5.5	-	**79**	0	0	0	6.5	-
80	0	0	0	5	0.75	**80**	0	0	0	6.5	0.5
81	0	0	0	6	-	**81**	0	0	0	9.5	-
82	0	0.3	1	6.5	-	**82**	0	0	0	6	-
83	0	0	0	5.5	-	**83**	0	0	0	4	-
84	0	0.1	1	2.5	-	**84**	0	0	0	2.5	-
85	0	0	0	6.5	-	**85**	0	0	0	6	-
86	0	0	0	6	-	**86**	0	0.1	1	11	-
87	0	0.1	1	8.5	-	**87**	0	0	0	10	-
88	0	0	0	16	-	**88**	0	0	0	5.5	-
89	0	0	0	4.5	-	**89**	0	0	0	7.5	-
90	0	0.1	1	6	0.25	**90**	0	0	0	5.5	0.25
91	0	0	0	2	-	**91**	0	0	0	7.5	-
92	0	0	0	6	-	**92**	0	0	0	6	-
93	0	0.1	1	6.5	-	**93**	0	0	0	6	-
94	0	0	0	4.5	-	**94**	0	0	0	2.5	-
95	0	0	0	6.5	-	**95**	0	0	0	10	-
96	0	0	0	4.5	-	**96**	0	0	0	12.5	-
97	0	0	0	6	-	**97**	0	0	0	7	-
98	0	0	0	7	-	**98**	0	0	0	5	-
99	0	0	0	12	-	**99**	0	0	0	4	-
100	0	0	0	15	0.25	**100**	0	0	0	5.5	0
Average Cic, Cip and Embed. =	**0.00**	**0.09**	**0.37**	**6.528**	**0.38**	**Average Cic, Cip and Embed. =**	**0.00**	**0.01**	**0.09**	**6.119**	**0.20**
Old Calcite Index (CI)		**0.37**				**Old Calcite Index (CI)**		**0.09**			
New Calcite Index (CI')		**0.09**				**New Calcite Index (CI')**		**0.01**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_MP1-3						RG_FOUSH-1					
2021-09-15						2021-09-16					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	4	-	1	0	0	0	7	-
2	0	0	0	11	-	2	0	0	0	4	-
3	0	0	0	4	-	3	0	0	0	6.5	-
4	0	0	0	8.5	-	4	0	0.2	1	18	-
5	0	0	0	5.5	-	5	0	0	0	6.5	-
6	0	0	0	7.5	-	6	0	0	0	7	-
7	0	0	0	6	-	7	0	0	0	6.5	-
8	0	0	0	4.5	-	8	0	0	0	6	-
9	0	0	0	7.5	-	9	0	0.2	1	14	-
10	0	0	0	6.5	0.5	10	0	0	0	8	0.5
11	0	0	0	8.5	-	11	0	0	0	9	-
12	0	0	0	4.5	-	12	0	0	0	7.5	-
13	0	0	0	7	-	13	0	0	0	7	-
14	0	0	0	6.5	-	14	0	0	0	14	-
15	0	0	0	5	-	15	0	0	0	8	-
16	0	0	0	5	-	16	0	0	0	11	-
17	0	0	0	10.5	-	17	0	0	0	5.5	-
18	0	0	0	6	-	18	0	0	0	9	-
19	0	0	0	7	-	19	0	0	0	5.5	-
20	0	0	0	4	0.75	20	0	0	0	4	0.25
21	0	0	0	7.5	-	21	0	0	0	6	-
22	0	0	0	7.5	-	22	0	0	0	6	-
23	0	0	0	2	-	23	0	0	0	4	-
24	0	0	0	6	-	24	0	0	0	21	-
25	0	0	0	5.5	-	25	0	0	0	6	-
26	0	0	0	4.5	-	26	0	0	0	6.5	-
27	0	0	0	8.5	-	27	0	0	0	15	-
28	0	0	0	7	-	28	0	0	0	11.5	-
29	0	0	0	4	-	29	0	0	0	6	-
30	0	0	0	5	0.25	30	0	0	0	14	0.5
31	0	0	0	8.5	-	31	0	0	0	18	-
32	0	0	0	10.5	-	32	0	0	0	4.5	-
33	0	0	0	4.5	-	33	0	0	0	5.5	-
34	0	0	0	7	-	34	0	0	0	3	-
35	0	0	0	8	-	35	0	0	0	7.5	-
36	0	0	0	9.5	-	36	0	0	0	6	-
37	0	0	0	3	-	37	0	0	0	9	-
38	0	0	0	3.5	-	38	0	0	0	5.5	-
39	0	0	0	3.5	-	39	0	0.3	1	17.5	-
40	0	0	0	10	0.25	40	0	0	0	7	0
41	0	0	0	6	-	41	0	0	0	11	-
42	0	0	0	4	-	42	0	0	0	17	-
43	0	0	0	5.5	-	43	0	0	0	5.5	-
44	0	0	0	15	-	44	0	0	0	5	-
45	0	0	0	5.5	-	45	0	0	0	1.5	-
46	0	0	0	5	-	46	0	0	0	3.5	-
47	0	0	0	5.5	-	47	0	0	0	9	-
48	0	0	0	4.5	-	48	0	0	0	12	-
49	0	0	0	5	-	49	0	0.4	1	10	-
50	0	0	0	6	0	50	0	0	0	4	0.5
51	0	0	0	4	-	51	0	0.4	1	11.5	-
52	0	0	0	9	-	52	0	0.1	1	9	-
53	0	0.3	1	12	-	53	0	0	0	5.5	-
54	0	0	0	12.5	-	54	0	0	0	7	-
55	0	0	0	7	-	55	0	0.3	1	7.5	-
56	0	0	0	6	-	56	0	0	0	11.5	-
57	0	0	0	9.5	-	57	0	0.2	1	5.5	-
58	0	0	0	6	-	58	0	0	0	3.5	-
59	0	0	0	8	-	59	0	0.5	1	11	-
60	0	0	0	8.5	0.25	60	0	0	0	5	0.25
61	0	0	0	7	-	61	0	0.3	1	7	-
62	0	0	0	5.5	-	62	0	0	0	12.5	-
63	0	0	0	3.5	-	63	0	0	0	26	-
64	0	0	0	6.5	-	64	0	0	0	3.5	-
65	0	0	0	7	-	65	0	0	0	6	-
66	0	0	0	3	-	66	0	0	0	4	-
67	0	0	0	6.5	-	67	0	0.1	1	11.5	-
68	0	0	0	9	-	68	0	0	0	7	-
69	0	0	0	8.5	-	69	0	0.5	1	11	-
70	0	0	0	11	0.5	70	0	0	0	8.5	0.25
71	0	0	0	9	-	71	0	0.2	1	9.5	-
72	0	0	0	7.5	-	72	0	0	0	4.5	-
73	0	0.1	1	10	-	73	0	0.1	1	8	-
74	0	0	0	9.5	-	74	0	0	0	6.5	-
75	0	0	0	3.5	-	75	0	0.2	1	8	-
76	0	0	0	6	-	76	0	0	0	6.5	-
77	0	0	0	5	-	77	0	0	0	6.5	-
78	0	0	0	7	-	78	0	0	0	3	-
79	0	0.2	1	7	-	79	0	0.1	1	9	-
80	0	0	0	4.5	0.75	80	0	0	0	5.5	0.25
81	0	0	0	8.5	-	81	0	0	0	21	-
82	0	0	0	11.5	-	82	0	0.5	1	15	-
83	0	0	0	6.5	-	83	0	0	0	5	-
84	0	0	0	4.5	-	84	0	0.2	1	7	-
85	0	0	0	4	-	85	0	0.2	1	5	-
86	0	0	0	7	-	86	0	0.7	1	7	-
87	0	0	0	8	-	87	0	0	0	8	-
88	0	0	0	3.5	-	88	0	0.3	1	9.5	-
89	0	0	0	7	-	89	0	0.2	1	10	-
90	0	0.1	1	7.5	0.25	90	0	0	0	6.5	0.25
91	0	0	0	6.5	-	91	0	0.1	1	8.5	-
92	0	0	0	8	-	92	0	0	0	12	-
93	0	0	0	5.5	-	93	0	0	0	23	-
94	0	0	0	8	-	94	0	0	0	7	-
95	0	0	0	6.5	-	95	0	0.2	1	8.5	-
96	0	0	0	6	-	96	0	0.3	1	11.5	-
97	0	0	0	4.5	-	97	0	0.1	1	7	-
98	0	0	0	7.5	-	98	0	0	0	4	-
99	0	0	0	6	-	99	0	1	1	10.5	-
100	0	0.1	1	6	0.25	100	0	0	0	8.5	0
Average Cic, Cip and Embed. =	0.00	0.01	0.05	6.68	0.38	Average Cic, Cip and Embed. =	0.00	0.08	0.27	8.575	0.28
Old Calcite Index (CI)		0.05				Old Calcite Index (CI)		0.27			
New Calcite Index (CI')		0.01				New Calcite Index (CI')		0.08			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUSH-2						RG_FOUSH-3					
2021-09-16						2021-09-16					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	7.5	-	**1**	-	-	-	-	-
2	0	0.1	1	14.5	-	**2**	0	0	0	9.5	-
3	0	0	0	12	-	**3**	0	0	0	3.5	-
4	0	0	0	4.5	-	**4**	0	0	0	5.5	-
5	0	0	0	6.5	-	**5**	0	0	0	9.5	-
6	0	0	0	8	-	**6**	0	0	0	8.5	-
7	0	0.1	1	8	-	**7**	0	0	0	7.5	-
8	0	0	0	9	-	**8**	0	0	0	4.5	-
9	0	0	0	13	-	**9**	0	0	0	9.5	-
10	0	0	0	6.5	-	**10**	0	0	0	7	0
11	0	0	0	9.5	0	**11**	0	0.1	1	5.5	-
12	0	0	0	7	-	**12**	0	0	0	8	-
13	0	0	0	10.1	-	**13**	0	0	0	6.5	-
14	0	0	0	6	-	**14**	0	0	0	4	-
15	0	0	0	21	-	**15**	0	0	0	8	-
16	0	0	0	9.5	-	**16**	0	0	0	10	-
17	0	0	0	7.5	-	**17**	0	0	0	10.5	-
18	0	0	0	8	-	**18**	0	0	0	6	-
19	0	0.3	1	16	-	**19**	0	0.1	1	15	-
20	0	0	0	7	0	**20**	0	0	0	6	0.5
21	0	0	0	8.5	-	**21**	0	0	0	6	-
22	0	0	0	8.5	-	**22**	0	0	0	6	-
23	0	0	0	12	-	**23**	0	0	0	11	-
24	0	0.1	1	12	-	**24**	0	0	0	5	-
25	0	0	0	4	-	**25**	0	0	0	4.5	-
26	0	0	0	7	-	**26**	0	0	0	4	-
27	0	0	0	5	-	**27**	0	0	0	6.5	-
28	0	0.1	1	9	-	**28**	0	0	0	11	-
29	0	0	0	7	-	**29**	0	0	0	9	-
30	0	0	0	2.5	0.5	**30**	0	0	0	13	0
31	0	0	0	6	-	**31**	0	0	0	3.5	-
32	0	0	0	19	-	**32**	0	0	0	4	-
33	0	0	0	12.5	-	**33**	0	0	0	11	-
34	0	0	0	15	-	**34**	0	0	0	0.1	-
35	0	0	0	2.5	-	**35**	0	0	0	7.5	-
36	0	0	0	8.5	-	**36**	0	0	0	7	-
37	0	0	0	4	-	**37**	0	0	0	5	-
38	0	0.2	1	17	-	**38**	0	0	0	5.5	-
39	0	0	0	8	-	**39**	0	0	0	12	-
40	0	0	0	17	-	**40**	0	0	0	10	0.5
41	0	0	0	6	-	**41**	0	0	0	14	-
42	0	0.2	1	11	0.5	**42**	0	0	0	8	-
43	0	0	0	10	-	**43**	0	0.1	1	18	-
44	0	0	0	9.5	-	**44**	0	0	0	20	-
45	0	0.1	1	8	-	**45**	0	0	0	5.5	-
46	0	0.2	1	6	-	**46**	0	0	0	5	-
47	0	0	0	4.5	-	**47**	0	0	0	8	-
48	0	0	0	6.5	-	**48**	0	0	0	11.5	-
49	0	0	0	10	-	**49**	0	0	0	10	-
50	0	0	0	6	0.25	**50**	0	0	0	5.5	0.25
51	0	0	0	5.5	-	**51**	0	0	0	5.5	-
52	0	0.1	1	7	-	**52**	0	0	0	6	-
53	0	0	0	9	-	**53**	0	0	0	9	-
54	0	0	0	12.5	-	**54**	0	0	0	8.5	-
55	0	0	0	3	-	**55**	0	0	0	4.5	-
56	0	0.1	1	6.5	-	**56**	0	0	0	4	-
57	0	0	0	11	-	**57**	0	0	0	12.5	-
58	0	0	0	10	-	**58**	0	0	0	5	-
59	0	0.1	1	12.5	-	**59**	0	0	0	15.5	-
60	0	0	0	7.5	0.25	**60**	0	0	0	4	0.25
61	0	0	0	8	-	**61**	0	0	0	11	-
62	0	0	0	4.5	-	**62**	0	0.1	1	13.5	-
63	0	0	0	9	-	**63**	0	0	0	8.5	-
64	0	0	0	0.1	-	**64**	0	0	0	6	-
65	0	0.1	1	10.5	-	**65**	0	0	0	13	-
66	0	0	0	9	-	**66**	0	0	0	6.5	-
67	0	0	0	11.5	-	**67**	0	0	0	9	-
68	0	0	0	7.5	-	**68**	0	0	0	6	-
69	0	0	0	4.5	-	**69**	0	0	0	15	-
70	0	0.1	1	8	0.5	**70**	0	0	0	7	0.25
71	0	0	0	13	-	**71**	0	0	0	8.5	-
72	0	0	0	11.5	-	**72**	0	0	0	7.5	-
73	0	0	0	6	-	**73**	0	0	0	14	-
74	0	0	0	8	-	**74**	0	0	0	7.5	-
75	0	0	0	7.5	-	**75**	0	0	0	10	-
76	0	0	0	4.5	-	**76**	0	0	0	3	-
77	0	0	0	6	-	**77**	0	0	0	9	-
78	0	0.1	1	11	-	**78**	0	0	0	1	-
79	0	0	0	10.5	-	**79**	0	0	0	8	-
80	0	0	0	4	0.5	**80**	0	0	0	9.5	0.5
81	0	0	0	6.5	-	**81**	0	0	0	9	-
82	0	0	0	3	-	**82**	0	0	0	11	-
83	0	0.3	1	8	-	**83**	0	0	0	6	-
84	0	0	0	12.5	-	**84**	0	0	0	6.5	-
85	0	0.4	1	7	-	**85**	0	0	0	7.5	-
86	0	0	0	10	-	**86**	0	0	0	8	-
87	0	0	0	7.5	-	**87**	0	0	0	6.5	-
88	0	0	0	10	-	**88**	0	0	0	4.5	-
89	0	0	0	2	-	**89**	0	0	0	5.5	-
90	0	0	0	13.5	0.25	**90**	0	0	0	10	0.5
91	0	0	0	6	-	**91**	0	0	0	10	-
92	0	0	0	6.5	-	**92**	0	0	0	6	-
93	0	0.3	1	10.5	-	**93**	0	0	0	5	-
94	0	0.4	1	15.5	-	**94**	0	0	0	9.5	-
95	0	0	0	7	-	**95**	0	0	0	2.5	-
96	0	0	0	7	-	**96**	0	0	0	7	-
97	0	0	0	7	-	**97**	0	0	0	9	-
98	0	0	0	6	-	**98**	0	0	0	6.5	-
99	0	0	0	7	-	**99**	0	0	0	5	-
100	0	0	0	6	0.5	**100**	0	0	0	5.5	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.03**	**0.19**	**8.512**	**0.33**	**Average Cic, Cip and Embed. =**	**0.00**	**0.00**	**0.04**	**7.87979798**	**0.30**
Old Calcite Index (CI)		**0.19**				**Old Calcite Index (CI)**		**0.04**			
New Calcite Index (CI')		**0.03**				**New Calcite Index (CI')**		**0.00**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUKI-1						RG_FOUKI-2					
2021-09-20						2021-09-20					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	9	-	**1**	0	0	0	5.5	-
2	0	0	0	13	-	**2**	0	0.1	1	11.5	-
3	0	0	0	3.5	-	**3**	0	0	0	15	-
4	0	0	0	8.5	-	**4**	0	0.2	1	11.5	-
5	0	0.2	1	14.5	-	**5**	0	0	0	9.5	-
6	0	0	0	8	-	**6**	0	0.1	1	7	-
7	0	0	0	7	-	**7**	0	0.1	1	6	-
8	0	0.4	1	7.5	-	**8**	0	0	0	11.6	-
9	0	0.1	1	8	-	**9**	0	0	0	15	-
10	0	0	0	9.5	0.25	**10**	0	0	0	6.5	0.5
11	0	0.2	1	10	-	**11**	0	0	0	3.5	-
12	0	0.3	1	10.5	-	**12**	0	0	0	2.5	-
13	0	0.2	1	14	-	**13**	0	0	0	8	-
14	0	0	0	9.5	-	**14**	0	0	0	7.5	-
15	0	0.11	1	10.5	-	**15**	0	0.2	1	10	-
16	0	0	0	11	-	**16**	0	0.3	1	15	-
17	0	0	0	4	-	**17**	0	0	0	7	-
18	0	0.3	1	11	-	**18**	0	0	0	12	-
19	0	0	0	9.5	-	**19**	0	0	0	6	-
20	0	0	0	5	0.5	**20**	0	0.1	1	9	0.5
21	0	0.1	1	5.5	-	**21**	0	0.1	1	14.5	-
22	0	0	0	5	-	**22**	0	0	0	9	-
23	0	0	0	9.5	-	**23**	0	0	0	8	-
24	0	0	0	3	-	**24**	0	0	0	7	-
25	0	0.3	1	11	-	**25**	0	0.1	1	9	-
26	0	0	0	6.5	-	**26**	0	0	0	9	-
27	0	0	0	9	-	**27**	0	0	0	4	-
28	0	0.1	1	13	-	**28**	0	0	0	8.5	-
29	0	0.1	1	11	-	**29**	0	0	0	3	-
30	0	0.1	1	5	0.5	**30**	0	0	0	9	0.25
31	0	0	0	11	-	**31**	0	0	0	11	-
32	0	0	0	10.5	-	**32**	0	0	0	4.5	-
33	0	0.3	1	11.5	-	**33**	0	0	0	10	-
34	0	0.1	1	10.5	-	**34**	0	0.1	1	8.5	-
35	0	0	0	4.5	-	**35**	0	0	0	5	-
36	0	0	0	3	-	**36**	0	0	0	5.5	-
37	0	0.1	1	8.5	-	**37**	0	0	0	3.5	-
38	0	0.1	1	8.5	-	**38**	0	0.1	1	15	-
39	0	0.1	1	12	-	**39**	0	0.1	1	16.5	-
40	0	0	0	8	0.25	**40**	0	0.1	1	10	0.25
41	0	0.1	1	7.5	-	**41**	0	0	0	11.5	-
42	0	0.1	1	10.5	-	**42**	0	0.1	1	11	-
43	0	0	0	8	-	**43**	0	0	0	5.5	-
44	0	0.2	1	21	-	**44**	0	0	0	5.5	-
45	0	0.2	1	12	-	**45**	0	0	0	8	-
46	0	0.1	1	10.5	-	**46**	0	0.1	1	10	-
47	0	0	0	20	-	**47**	0	0	0	6	-
48	0	0	0	9	-	**48**	0	0.1	1	12	-
49	0	0	0	8.5	-	**49**	0	0	0	4	-
50	0	0	0	16.5	0.25	**50**	0	0.1	1	8	0.25
51	0	0.3	1	14	-	**51**	0	0	0	9	-
52	0	0	0	7	-	**52**	0	0	0	5.5	-
53	0	0.1	1	8	-	**53**	0	0	0	5.5	-
54	0	0.1	1	12.5	-	**54**	0	0.1	1	12.5	-
55	0	0.1	1	11	-	**55**	0	0.1	1	6	-
56	0	0	0	8	-	**56**	0	0	0	4.5	-
57	0	0	0	6	-	**57**	0	0	0	13	-
58	0	0.7	1	17	-	**58**	0	0.1	1	12.5	-
59	0	0	0	10	-	**59**	0	0.3	1	10	-
60	0	0	0	19	0.25	**60**	0	0	0	4.5	0.25
61	0	0	0	6.5	-	**61**	0	0	0	6	-
62	0	0	0	8	-	**62**	0	0	0	4	-
63	0	0	0	11	-	**63**	0	0	0	3.5	-
64	0	0	0	10	-	**64**	0	0	0	10	-
65	0	0	0	5	-	**65**	0	0	0	5	-
66	0	0.4	1	16	-	**66**	0	0	0	17	-
67	0	0	0	7	-	**67**	0	0.1	1	8.5	-
68	0	0.2	1	5	-	**68**	0	0.3	1	6	-
69	0	0	0	7.5	-	**69**	0	0	0	4	-
70	0	0	0	4	0.25	**70**	0	0	0	6	0.5
71	0	0	0	7	-	**71**	0	0	0	6	-
72	0	0.1	1	15	-	**72**	0	0	0	6	-
73	0	0.1	1	5	-	**73**	0	0.9	1	9	-
74	0	0.5	1	1	-	**74**	0	0	0	4	-
75	0	0	0	6	-	**75**	0	0	0	9	-
76	0	0	0	9	-	**76**	0	0.4	1	14	-
77	0	0	0	4	-	**77**	0	0.2	1	14	-
78	0	0	0	5.5	-	**78**	0	0.1	1	9.5	-
79	0	0	0	5.5	-	**79**	0	0.1	1	7	-
80	0	0	0	5.5	0.25	**80**	0	0	0	6	0.75
81	0	0.4	1	14	-	**81**	0	0	0	8.5	-
82	0	0	0	9.5	-	**82**	0	0	0	2.5	-
83	0	0.1	1	11.5	-	**83**	0	0.2	1	11	-
84	0	0.1	1	10	-	**84**	0	0	0	7	-
85	0	0	0	9	-	**85**	0	0	0	5	-
86	0	0	0	11	-	**86**	0	0.1	1	11.5	-
87	0	0	0	7	-	**87**	0	0	0	7	-
88	0	0	0	5	-	**88**	0	0	0	11	-
89	0	0	0	9	-	**89**	0	0.8	1	3	-
90	0	0.1	1	11	0.25	**90**	0	0	0	3.5	0.25
91	0	0	0	7.5	-	**91**	0	0.1	1	6.5	-
92	0	0.1	1	4	-	**92**	0	0	0	15.5	-
93	0	0	0	7.5	-	**93**	0	0.7	1	10	-
94	0	0	0	8	-	**94**	0	0.2	1	10	-
95	0	0	0	17	-	**95**	0	0.1	1	8	-
96	0	0	0	15.2	-	**96**	0	0	0	10	-
97	0	0	0	7	-	**97**	0	0	0	9.5	-
98	0	0	0	7	-	**98**	0	0	0	4	-
99	0	0	0	3.5	-	**99**	0	0	0	4	-
100	0	0.3	1	9	0.25	**100**	0	0.1	1	11.5	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.08**	**0.39**	**9.122**	**0.30**	**Average Cic, Cip and Embed. =**	**0.00**	**0.07**	**0.36**	**8.281**	**0.38**
Old Calcite Index (CI)		**0.39**				**Old Calcite Index (CI)**		**0.36**			
New Calcite Index (CI')		**0.08**				**New Calcite Index (CI')**		**0.07**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUKI-3						RG_FOBKS-1					
2021-09-20						2021-09-09					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	6.5	-	**1**	0	0	0	4.5	-
2	0	0.2	1	10.5	-	**2**	0	0	0	4.1	-
3	0	0.1	1	6.5	-	**3**	0	0	0	11.1	-
4	0	0	0	6.5	-	**4**	0	0	0	7.5	-
5	0	0.1	1	5	-	**5**	0	0	0	7.2	-
6	0	0	0	7	-	**6**	0	0	0	10.6	-
7	0	0	0	6.5	-	**7**	0	0	0	4.1	-
8	0	0	0	6.5	-	**8**	0	0	0	3.4	-
9	0	0	0	11	-	**9**	0	0	0	9.4	-
10	0	0.1	1	7	0.25	**10**	0	0	0	5.5	0
11	0	0.1	1	8	-	**11**	0	0	0	1	-
12	0	0	0	6	-	**12**	0	0	0	10.5	-
13	0	0	0	6	-	**13**	0	0	0	6.1	-
14	0	0.1	1	-	-	**14**	0	0.3	1	9.5	-
15	0	0	0	3.5	-	**15**	0	0	0	8.6	-
16	0	0.1	1	10	-	**16**	0	0	0	10.5	-
17	0	0	0	5	-	**17**	0	0	0	5.5	-
18	0	0.2	1	7	-	**18**	0	0	0	5.1	-
19	0	0	0	4.5	-	**19**	0	0	0	6.1	-
20	0	0	0	5	0	**20**	0	0	0	9.1	0.25
21	0	0.1	1	12	-	**21**	0	0	0	7.5	-
22	0	0.1	1	8	-	**22**	0	0	0	10.5	-
23	0	0	0	4	-	**23**	0	0.2	1	16.1	-
24	0	0	0	6	-	**24**	0	0.1	1	15.5	-
25	0	0	0	9	-	**25**	0	0	0	7.1	-
26	0	0.2	1	7	-	**26**	0	0.4	1	10.1	-
27	0	0.1	1	15	-	**27**	0	0.1	1	12.5	-
28	0	0	0	7	-	**28**	0	0.3	1	11.1	-
29	0	0	0	6	-	**29**	0	0.2	1	21.5	-
30	0	0	0	5	0	**30**	0	0	0	5.1	0
31	0	0	0	4	-	**31**	0	0	0	11.5	-
32	0	0	0	10	-	**32**	0	0	0	10.5	-
33	0	0.4	1	6	-	**33**	0	0	0	10.1	-
34	0	0.2	1	7	-	**34**	0	0	0	5	-
35	0	0	0	9	-	**35**	0	0	0	4.5	-
36	0	0	0	4.5	-	**36**	0	0	0	6.5	-
37	0	0.2	1	16	-	**37**	0	0	0	7.1	-
38	0	0	0	8	-	**38**	0	0	0	8.6	-
39	0	0.3	1	11	-	**39**	0	0	0	6.1	-
40	0	0.1	1	15	0.25	**40**	0	0	0	3.5	0.25
41	0	0	0	6	-	**41**	0	0	0	9	-
42	0	0.1	1	8	-	**42**	0	0	0	11	-
43	0	0.1	1	7	-	**43**	0	0	0	11.5	-
44	0	0	0	4	-	**44**	0	0	0	7.5	-
45	0	0	0	3	-	**45**	0	0	0	11.1	-
46	0	0	0	3.5	-	**46**	0	0	0	8.5	-
47	0	0.1	1	6.5	-	**47**	0	0	0	4.2	-
48	0	0	0	7	-	**48**	0	0	0	9	-
49	0	0	0	9	-	**49**	0	0.1	1	9	-
50	0	0	0	5	0	**50**	0	0.2	1	10.3	0
51	0	0.1	1	6.5	-	**51**	0	0	0	9.5	-
52	0	0	0	8	-	**52**	0	0.4	1	6.1	-
53	0	0.1	1	11	-	**53**	0	0.1	1	6.5	-
54	0	0.1	1	5	-	**54**	0	0	0	7.1	-
55	0	0	0	6	-	**55**	0	0	0	13.5	-
56	0	0.4	1	7	-	**56**	0	0	0	6.5	-
57	0	0	0	5	-	**57**	0	0	0	10	-
58	0	0.1	1	6	-	**58**	0	0	0	12	-
59	0	0	0	7	-	**59**	0	0.2	1	14.5	-
60	0	0	0	9.5	0.25	**60**	0	0	0	8.5	0
61	0	0	0	5	-	**61**	0	0.1	1	5.5	-
62	0	0.2	1	10	-	**62**	0	0.4	1	15	-
63	0	0.1	1	6	-	**63**	0	0.1	1	14.5	-
64	0	0	0	7	-	**64**	0	0	0	4.5	-
65	0	0.5	1	9	-	**65**	0	0	0	6	-
66	0	0.1	1	6	-	**66**	0	0	0	6.1	-
67	0	0	0	7	-	**67**	0	0	0	8	-
68	0	0	0	7	-	**68**	0	0	0	7.2	-
69	0	0	0	4.5	-	**69**	0	0	0	3.9	-
70	0	0.1	1	7	0.25	**70**	0	0	0	9	0
71	0	0.1	1	11	-	**71**	0	0	0	19.5	-
72	0	0	0	9	-	**72**	0	0	0	12.5	-
73	0	0	0	12	-	**73**	0	0	0	6.1	-
74	0	0	0	5.5	-	**74**	0	0	0	4.1	-
75	0	0.2	1	8	-	**75**	0	0	0	17.2	-
76	0	0.2	1	10	-	**76**	0	0	0	5.6	-
77	0	0	0	10	-	**77**	0	0	0	8.5	-
78	0	0.1	1	6	-	**78**	0	0	0	8.5	-
79	0	0.3	1	9	-	**79**	0	0	0	9.5	-
80	0	0	0	5.5	0	**80**	0	0	0	11.2	0.5
81	0	0	0	12	-	**81**	0	0	0	22	-
82	0	0	0	9	-	**82**	0	0	0	0.9	-
83	0	0	0	9.5	-	**83**	0	0	0	2	-
84	0	0	0	15	-	**84**	0	0	0	10	-
85	0	0.1	1	11.5	-	**85**	0	0	0	15	-
86	0	0	0	9	-	**86**	0	0.4	1	21	-
87	0	0.3	1	6.5	-	**87**	0	0	0	15.6	-
88	0	0	0	6	-	**88**	0	0	0	5.1	-
89	0	0.3	1	11	-	**89**	0	0	0	11.1	-
90	0	0	0	9	0	**90**	0	0	0	5	0
91	0	0	0	10	-	**91**	0	0	0	2.5	-
92	0	0	0	6	-	**92**	0	0	0	1.5	-
93	0	0.1	1	11	-	**93**	0	0	0	3.2	-
94	0	0	0	10.5	-	**94**	0	0.7	1	15.4	-
95	0	0	0	2.5	-	**95**	0	0	0	6.5	-
96	0	0.3	1	9.5	-	**96**	0	0	0	10.7	-
97	0	0.2	1	6.5	-	**97**	0	0.5	1	13.2	-
98	0	0	0	8.5	-	**98**	0	0	0	5.5	-
99	0	0	0	8	-	**99**	0	0	0	5.6	-
100	0	0.1	1	9	0	**100**	0	0.1	1	8.5	0
Average Cic, Cip and Embed. =	**0.00**	**0.07**	**0.42**	**7.697**	**0.10**	**Average Cic, Cip and Embed. =**	**0.00**	**0.05**	**0.19**	**8.778**	**0.10**
Old Calcite Index (CI)	**0.42**					**Old Calcite Index (CI)**	**0.19**				
New Calcite Index (CI')	**0.07**					**New Calcite Index (CI')**	**0.05**				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBKS-2						RG_FOBKS-3					
2021-09-09						2021-09-09					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	10.6	-	**1**	0	0	0	9.6	-
2	0	0	0	8.1	-	**2**	0	0.7	1	15	-
3	0	0	0	5.5	-	**3**	0	0	0	9.6	-
4	0	0	0	18.1	-	**4**	0	0	0	10.5	-
5	0	0	0	5.6	-	**5**	0	0.4	1	13	-
6	0	0	0	8.5	-	**6**	0	0	0	9	-
7	0	0	0	9	-	**7**	0	0	0	8.1	-
8	0	0	0	5.5	-	**8**	0	0	0	8.2	-
9	0	0.3	1	8.5	-	**9**	0	0	0	9.3	-
10	0	0.8	1	16	0.25	**10**	0	0	0	2.5	0
11	0	0.7	1	5.5	-	**11**	0	0	0	11.5	-
12	0	0.4	1	13	-	**12**	0	0	0	12.1	-
13	1	0.5	1	17	-	**13**	0	0	0	12.5	-
14	1	0.3	1	10	-	**14**	0	0	0	16.1	-
15	1	0	0	9	-	**15**	0	0.5	1	30	-
16	0	0	0	7	-	**16**	0	0.1	1	13.1	-
17	0	0	0	2.5	-	**17**	0	0	0	12	-
18	0	0	0	10	-	**18**	0	0	0	14	-
19	0	0	0	14	-	**19**	0	0	0	8.1	-
20	0	0.4	1	18	0.5	**20**	0	0	0	5.1	0
21	0	0	0	15	-	**21**	0	0	0	7.5	-
22	0	0	0	10.5	-	**22**	0	0.1	1	9.1	-
23	0	0	0	10	-	**23**	0	0.1	1	9.1	-
24	0	0	0	11	-	**24**	0	0.1	1	14	-
25	0	0	0	12.5	-	**25**	0	0	0	5.1	-
26	0	0	0	6.5	-	**26**	0	0	0	6	-
27	0	0	0	11	-	**27**	0	0	0	9.5	-
28	0	0	0	4	-	**28**	0	0.1	1	16.1	-
29	0	0	0	2	-	**29**	0	0	0	6.1	-
30	0	0	0	3.7	0	**30**	0	0	0	2.4	0
31	0	0	0	10.2	-	**31**	0	0.1	1	7.1	-
32	0	0	0	7.2	-	**32**	0	0	0	2.1	-
33	0	0	0	10.9	-	**33**	0	0	0	4.1	-
34	0	0	0	6.6	-	**34**	0	0	0	5.1	-
35	0	0	0	9	-	**35**	0	0.4	1	19.2	-
36	0	0	0	1.3	-	**36**	0	0	0	5.3	-
37	0	0	0	2.6	-	**37**	0	0	0	10.9	-
38	0	0	0	4.4	-	**38**	0	0	0	7.5	-
39	0	0	0	12.3	-	**39**	0	0.4	1	15.4	-
40	1	0.7	1	14.3	0.5	**40**	0	0	0	5	0
41	1	0.4	1	19.3	-	**41**	0	0.1	1	9.6	-
42	0	0.5	1	11	-	**42**	0	0	0	6.5	-
43	0	0	0	11	-	**43**	0	0	0	10.9	-
44	0	0	0	6.5	-	**44**	0	0	0	1	-
45	1	0.4	1	10.4	-	**45**	0	0.1	1	11	-
46	0	0.3	1	14.1	-	**46**	0	0	0	3.5	-
47	0	0	0	12.1	-	**47**	0	0	0	5	-
48	0	0	0	10.6	-	**48**	0	0	0	5.5	-
49	0	0	0	6	-	**49**	0	0	0	2.3	-
50	0	0	0	11.3	0	**50**	0	0.1	1	5	0.25
51	0	0	0	4.5	-	**51**	0	0	0	4.5	-
52	0	0	0	4.4	-	**52**	0	0	0	4.3	-
53	0	0	0	7.2	-	**53**	0	0	0	8	-
54	0	0	0	10.5	-	**54**	0	0	0	3	-
55	0	0	0	12.5	-	**55**	0	0	0	3.4	-
56	0	0.2	1	18.1	-	**56**	0	0	0	4.5	-
57	0	0	0	5	-	**57**	0	0	0	10.6	-
58	0	0	0	2.5	-	**58**	0	0	0	2.3	-
59	0	0	0	12.6	-	**59**	0	0	0	9.1	-
60	0	0	0	13	0.25	**60**	0	0	0	7	0.5
61	0	0	0	5	-	**61**	0	0.2	1	11	-
62	0	0	0	1.4	-	**62**	0	0	0	17.1	-
63	0	0	0	3	-	**63**	0	0	0	5.1	-
64	0	0	0	11.4	-	**64**	0	0	0	8.1	-
65	0	0	0	10.6	-	**65**	0	0.1	1	5.1	-
66	0	0	0	4.6	-	**66**	0	0	0	9.5	-
67	0	0	0	2.1	-	**67**	0	0	0	1	-
68	0	0	0	14.4	-	**68**	0	0	0	8.1	-
69	0	0	0	2.6	-	**69**	0	0	0	2.5	-
70	0	0	0	14.5	0	**70**	0	0	0	1.1	0
71	0	0	0	4.5	-	**71**	0	0	0	2.4	-
72	0	0	0	3.1	-	**72**	0	0	0	10	-
73	0	0	0	4	-	**73**	0	0.1	1	11.5	-
74	0	0.5	1	18.5	-	**74**	0	0	0	6	-
75	0	0	0	10.5	-	**75**	0	0	0	8	-
76	0	0	0	9	-	**76**	0	0	0	5	-
77	0	0	0	14.5	-	**77**	0	0	0	2.5	-
78	0	0.8	1	14	-	**78**	0	0	0	10	-
79	1	0.4	1	8.5	-	**79**	0	0	0	3.1	-
80	0	0	0	17.5	0.5	**80**	0	0.1	1	9.5	0.25
81	0	0	0	6	-	**81**	0	0	0	6.2	-
82	0	0	0	6.2	-	**82**	0	0	0	9.6	-
83	0	0	0	9	-	**83**	0	0.1	1	10.5	-
84	0	0	0	5	-	**84**	0	0	0	6	-
85	0	0	0	3.1	-	**85**	0	0	0	6.4	-
86	0	0	0	5	-	**86**	0	0	0	5.5	-
87	0	0	0	3.1	-	**87**	0	0	0	41.4	-
88	0	0.4	1	4.4	-	**88**	0	0	0	9.5	-
89	0	0	0	2.5	-	**89**	0	0	0	4.1	-
90	0	0	0	1.4	0	**90**	0	0	0	11.2	0.75
91	0	0	0	9.5	-	**91**	0	0	0	1	-
92	0	0	0	8.1	-	**92**	0	0	0	6.1	-
93	0	0	0	7.2	-	**93**	0	0	0	5	-
94	0	0	0	4	-	**94**	0	0.1	1	13.5	-
95	0	0	0	6.5	-	**95**	0	0	0	7.1	-
96	0	0	0	7.6	-	**96**	0	0	0	9.2	-
97	0	0	0	10.6	-	**97**	0	0.5	1	16	-
98	0	0.2	1	7	-	**98**	0	0	0	2.1	-
99	0	0	0	10	-	**99**	0	0	0	16.1	-
100	0	0.3	1	7.5	0	**100**	0	0	0	7	0.25
Average Cic, Cip and Embed. =	**0.07**	**0.09**	**0.19**	**8.664**	**0.20**	**Average Cic, Cip and Embed. =**	**0.00**	**0.05**	**0.21**	**8.43**	**0.20**
Old Calcite Index (CI)	**0.26**					**Old Calcite Index (CI)**	**0.21**				
New Calcite Index (CI')	**0.16**					**New Calcite Index (CI')**	**0.05**				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_SCOUTDS-1						RG_SCOUTDS-2					
2021-09-14						2021-09-14					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	7	-	**1**	0	0	0	7	-
2	0	0	0	10	-	**2**	0	0	0	7	-
3	0	0	0	14	-	**3**	0	0	0	3	-
4	0	0	0	12	-	**4**	0	0	0	4.5	-
5	0	0.3	1	15	-	**5**	0	0	0	6	-
6	0	0	0	8	-	**6**	0	0	0	10	-
7	0	0	0	13.5	-	**7**	0	0	0	6	-
8	0	0	0	5	-	**8**	0	0	0	10	-
9	0	0	0	5	-	**9**	0	0	0	5	-
10	0	0.1	1	8	0	**10**	0	0	0	3.5	0.25
11	0	0	0	14	-	**11**	0	0	0	8	-
12	0	0.4	1	7.5	-	**12**	0	0	0	7	-
13	0	0.3	1	9	-	**13**	0	0	0	6	-
14	0	0	0	6	-	**14**	0	0	0	4.5	-
15	0	0	0	17	-	**15**	0	0	0	7	-
16	0	0	0	7.5	-	**16**	0	0	0	3	-
17	0	0	0	9.5	-	**17**	0	0	0	8.5	-
18	0	0.3	1	7.5	-	**18**	0	0	0	5	-
19	0	0	0	10	-	**19**	0	0	0	4.5	-
20	0	0.1	1	10.5	0.25	**20**	0	0	0	5.5	0.5
21	0	0	0	4.5	-	**21**	0	0	0	9	-
22	0	0.1	1	8.5	-	**22**	0	0	0	5	-
23	0	0	0	6.5	-	**23**	0	0	0	5.5	-
24	0	0.3	1	19	-	**24**	0	0	0	4.5	-
25	0	0	0	6	-	**25**	0	0	0	8	-
26	0	0	0	7	-	**26**	0	0	0	4	-
27	0	0	0	8	-	**27**	0	0	0	6.5	-
28	0	0	0	8	-	**28**	0	0	0	7	-
29	0	0	0	4	-	**29**	0	0	0	6	-
30	0	0	0	10	0.5	**30**	0	0	0	8	0.5
31	0	0	0	3	-	**31**	0	0	0	8	-
32	0	0	0	12.5	-	**32**	0	0	0	6	-
33	0	0	0	6	-	**33**	0	0	0	6.5	-
34	0	0	0	4	-	**34**	0	0	0	3	-
35	0	0	0	5	-	**35**	0	0	0	4.5	-
36	0	0	0	6	-	**36**	0	0	0	6	-
37	0	0	0	3	-	**37**	0	0	0	9	-
38	0	0	0	4.5	-	**38**	0	0	0	9	-
39	0	0	0	7	-	**39**	0	0	0	4	-
40	0	0	0	12	0.75	**40**	0	0	0	4.5	0.25
41	0	0	0	2.5	-	**41**	0	0	0	3.5	-
42	0	0	0	7.5	-	**42**	0	0	0	6.5	-
43	0	0.3	1	8	-	**43**	0	0	0	4.5	-
44	0	0.1	1	10	-	**44**	0	0	0	4	-
45	0	0.3	1	7.5	-	**45**	0	0	0	5.5	-
46	0	0	0	5	-	**46**	0	0	0	7	-
47	0	0	0	4.5	-	**47**	0	0	0	5	-
48	0	0.2	1	7.5	-	**48**	0	0	0	3.5	-
49	0	0.1	1	6.5	-	**49**	0	0	0	7	-
50	0	0	0	13	0.5	**50**	0	0	0	5.5	0.25
51	0	0	0	7	-	**51**	0	0	0	9.5	-
52	0	0.1	1	10	-	**52**	0	0	0	9	-
53	0	0	0	6.5	-	**53**	0	0	0	8.5	-
54	0	0	0	4.5	-	**54**	0	0	0	5.5	-
55	0	0	0	14	-	**55**	0	0	0	5	-
56	0	0.1	1	10	-	**56**	0	0	0	3	-
57	0	0.1	1	8	-	**57**	0	0	0	6.5	-
58	0	0	0	8.5	-	**58**	0	0	0	4	-
59	0	0	0	12	-	**59**	0	0	0	5	-
60	0	0	0	17	0.25	**60**	0	0	0	4	0.25
61	0	0	0	6.5	-	**61**	0	0	0	6	-
62	0	0	0	6.5	-	**62**	0	0	0	3.5	-
63	0	0	0	5	-	**63**	0	0	0	3.5	-
64	0	0	0	10.5	-	**64**	0	0	0	5.5	-
65	0	0	0	7	-	**65**	0	0	0	11	-
66	0	0	0	14	-	**66**	0	0	0	11	-
67	0	0	0	9	-	**67**	0	0	0	2.5	-
68	0	0	0	10	-	**68**	0	0	0	9.5	-
69	0	0.3	1	8	-	**69**	0	0	0	6	-
70	0	0	0	9	0.25	**70**	0	0	0	5.5	0.25
71	0	0	0	3.5	-	**71**	0	0	0	8	-
72	0	0	0	9	-	**72**	0	0	0	8	-
73	0	0	0	6.5	-	**73**	0	0	0	6	-
74	0	0	0	11.5	-	**74**	0	0	0	6	-
75	0	0	0	4	-	**75**	0	0	0	2.5	-
76	0	0	0	5	-	**76**	0	0	0	5	-
77	0	0	0	7	-	**77**	0	0	0	5.5	-
78	0	0	0	7.5	-	**78**	0	0	0	6.5	-
79	0	0.2	1	19	-	**79**	0	0	0	5	-
80	0	0	0	5	0	**80**	0	0	0	2.5	0
81	0	0	0	8	-	**81**	0	0	0	5	-
82	0	0	0	6	-	**82**	0	0	0	6.5	-
83	0	0	0	5	-	**83**	0	0	0	10	-
84	0	0.3	1	6.5	-	**84**	0	0	0	12.5	-
85	0	0	0	6.5	-	**85**	0	0	0	9	-
86	0	0	0	9	-	**86**	0	0	0	10	-
87	0	0	0	7.5	-	**87**	0	0	0	5	-
88	0	0	0	12.5	-	**88**	0	0	0	7.5	-
89	0	0	0	21	-	**89**	0	0	0	7	-
90	0	0	0	6	0.75	**90**	0	0	0	7	0.25
91	0	0	0	5	-	**91**	0	0	0	10	-
92	0	0	0	6	-	**92**	0	0	0	3	-
93	0	0	0	5	-	**93**	0	0	0	4.5	-
94	0	0	0	6	-	**94**	0	0	0	6	-
95	0	0	0	3	-	**95**	0	0	0	4	-
96	0	0	0	7	-	**96**	0	0	0	7	-
97	0	0	0	9.5	-	**97**	0	0	0	6	-
98	0	0	0	6	-	**98**	0	0	0	3	-
99	0	0	0	4.5	-	**99**	0	0	0	7	-
100	0	0	0	10	0.25	**100**	0	0	0	8	0.5
Average Cic, Cip and Embed. =	**0.00**	**0.04**	**0.19**	**8.235**	**0.35**	**Average Cic, Cip and Embed. =**	**0.00**	**0.00**	**0.00**	**6.14**	**0.30**
Old Calcite Index (CI)		**0.19**				**Old Calcite Index (CI)**		**0.00**			
New Calcite Index (CI')		**0.04**				**New Calcite Index (CI')**		**0.00**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_SCOUTDS-3						RG_FOBSC-1					
2021-09-14						2021-09-10					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	2.5	-	1	0	0	0	2.5	-
2	0	0	0	1.5	-	2	0	0	0	11.1	-
3	0	0	0	4	-	3	0	0	0	6	-
4	0	0	0	5	-	4	0	0	0	5.6	-
5	0	0	0	7	-	5	0	0	0	13.5	-
6	0	0	0	5.5	-	6	0	0	0	7.6	-
7	0	0	0	2.5	-	7	0	0	0	5	-
8	0	0	0	3	-	8	0	0	0	10.6	-
9	0	0	0	2.6	-	9	0	0	0	11.5	-
10	0	0	0	3	0.25	10	0	0	0	6.5	0.25
11	0	0	0	6.5	-	11	0	0	0	8.2	-
12	0	0	0	2.5	-	12	0	0	0	6.6	-
13	0	0	0	5.5	-	13	0	0	0	5.5	-
14	0	0	0	4	-	14	0	0	0	9.2	-
15	0	0	0	7	-	15	0	0	0	10	-
16	0	0	0	3	-	16	0	0	0	8	-
17	0	0	0	6	-	17	0	0	0	8.1	-
18	0	0	0	6.5	-	18	0	0	0	7	-
19	0	0	0	6	-	19	0	0	0	4.4	-
20	0	0	0	4.5	0.5	20	0	0	0	6.1	0
21	0	0	0	7.5	-	21	0	0	0	4.1	-
22	0	0	0	3	-	22	0	0	0	3.5	-
23	0	0	0	4	-	23	0	0	0	11.5	-
24	0	0	0	3.5	-	24	0	0	0	6	-
25	0	0	0	7.5	-	25	0	0	0	9	-
26	0	0	0	4.5	-	26	0	0	0	5.5	-
27	0	0	0	4.5	-	27	0	0	0	7.1	-
28	0	0	0	3	-	28	0	0	0	5.5	-
29	0	0	0	4	-	29	0	0	0	12.1	-
30	0	0	0	3.5	0.5	30	0	0	0	10	0
31	0	0	0	3	-	31	0	0	0	3.5	-
32	0	0	0	9	-	32	0	0	0	6	-
33	0	0	0	6	-	33	0	0	0	10.5	-
34	0	0	0	6	-	34	0	0	0	8.5	-
35	0	0	0	4	-	35	0	0	0	6.6	-
36	0	0	0	5	-	36	0	0	0	10.1	-
37	0	0	0	4.5	-	37	0	0	0	7	-
38	0	0	0	4	-	38	0	0	0	4	-
39	0	0	0	4	-	39	0	0	0	2.1	-
40	0	0	0	4	0.5	40	0	0	0	9.7	0.25
41	0	0	0	6	-	41	0	0	0	9	-
42	0	0	0	7	-	42	0	0	0	4.5	-
43	0	0	0	5	-	43	0	0	0	5.5	-
44	0	0	0	4	-	44	0	0	0	2.1	-
45	0	0	0	4	-	45	0	0	0	4.5	-
46	0	0	0	3.5	-	46	0	0	0	4.1	-
47	0	0	0	6.5	-	47	0	0	0	7.5	-
48	0	0	0	2.5	-	48	0	0	0	4	-
49	0	0	0	5.5	-	49	0	0	0	3	-
50	0	0	0	3.5	0.25	50	0	0	0	3.1	0
51	0	0	0	4.5	-	51	0	0	0	3.6	-
52	0	0	0	5	-	52	0	0	0	7	-
53	0	0	0	4	-	53	0	0	0	10.6	-
54	0	0	0	7	-	54	0	0	0	3.5	-
55	0	0	0	2	-	55	0	0	0	22.5	-
56	0	0	0	2.5	-	56	0	0	0	12.1	-
57	0	0	0	3	-	57	0	0	0	10.1	-
58	0	0	0	4.5	-	58	0	0	0	4.3	-
59	0	0	0	3.5	-	59	0	0	0	4.3	-
60	0	0	0	4	0.5	60	0	0	0	5	0
61	0	0	0	2.5	-	61	0	0	0	3.5	-
62	0	0	0	5	-	62	0	0	0	12.2	-
63	0	0	0	4	-	63	0	0	0	2.1	-
64	0	0	0	5.5	-	64	0	0	0	6.3	-
65	0	0	0	3.5	-	65	0	0	0	4.6	-
66	0	0	0	4	-	66	0	0	0	7.4	-
67	0	0	0	1.5	-	67	0	0	0	7.5	-
68	0	0	0	5	-	68	0	0	0	6.6	-
69	0	0	0	3.5	-	69	0	0	0	7.7	-
70	0	0	0	3.5	0.75	70	0	0	0	6	0.5
71	0	0	0	4.5	-	71	0	0	0	3.1	-
72	0	0	0	5.5	-	72	0	0	0	4.5	-
73	0	0	0	4.5	-	73	0	0	0	2.1	-
74	0	0	0	7	-	74	0	0	0	5.6	-
75	0	0	0	6	-	75	0	0	0	3	-
76	0	0	0	2.5	-	76	0	0	0	3.3	-
77	0	0	0	5.5	-	77	0	0	0	6.1	-
78	0	0	0	3	-	78	0	0	0	9.2	-
79	0	0	0	4	-	79	0	0	0	7.5	-
80	0	0	0	3	0.25	80	0	0	0	9	0.75
81	0	0	0	5	-	81	0	0	0	3.1	-
82	0	0	0	2.5	-	82	0	0	0	5.1	-
83	0	0	0	4.5	-	83	0	0	0	3	-
84	0	0	0	4.5	-	84	0	0	0	5.4	-
85	0	0	0	4	-	85	0	0	0	7	-
86	0	0	0	3	-	86	0	0	0	9.2	-
87	0	0	0	5.5	-	87	0	0	0	7.3	-
88	0	0	0	4.5	-	88	0	0	0	8.7	-
89	0	0	0	2.5	-	89	0	0	0	4.5	-
90	0	0	0	3	0.25	90	0	0.1	1	14.5	0.25
91	0	0	0	4.5	-	91	0	0	0	13.1	-
92	0	0	0	4.5	-	92	0	0	0	5.4	-
93	0	0	0	4	-	93	0	0	0	6.1	-
94	0	0	0	2.5	-	94	0	0	0	6.1	-
95	0	0	0	6.5	-	95	0	0	0	5.7	-
96	0	0	0	6	-	96	0	0	0	6.3	-
97	0	0	0	4	-	97	0	0	0	3.3	-
98	0	0	0	0.5	-	98	0	0	0	3.6	-
99	0	0	0	3	-	99	0	0	0	2	-
100	0	0	0	5.5	0.75	100	0	0	0	8.5	0.25
Average Cic, Cip and Embed. =	0.00	0.00	0.00	4.336	0.45	Average Cic, Cip and Embed. =	0.00	0.00	0.01	6.708	0.23
Old Calcite Index (CI)	0.00					Old Calcite Index (CI)	0.01				
New Calcite Index (CI')	0.00					New Calcite Index (CI')	0.00				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBSC-2						RG_FOBSC-3					
2021-09-10						2021-09-10					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0.1	1	7	-	**1**	0	0	0	6.5	-
2	0	0	0	5.5	-	**2**	0	0	0	3.5	-
3	0	0	0	6	-	**3**	0	0	0	4.4	-
4	0	0	0	6	-	**4**	0	0	0	7.7	-
5	0	0	0	6.6	-	**5**	0	0	0	8.5	-
6	0	0	0	10.1	-	**6**	0	0	0	7.5	-
7	0	0	0	3.5	-	**7**	0	0	0	6	-
8	0	0	0	8.2	-	**8**	0	0	0	1.5	-
9	0	0	0	5.3	-	**9**	0	0	0	4.7	-
10	0	0	0	10.4	0	**10**	0	0	0	13	0
11	0	0	0	7.3	-	**11**	0	0	0	3.5	-
12	0	0	0	10.4	-	**12**	0	0	0	5.5	-
13	0	0.6	1	22.5	-	**13**	0	0	0	13	-
14	0	0	0	3.7	-	**14**	0	0	0	8.5	-
15	0	0	0	8	-	**15**	0	0	0	13	-
16	0	0.6	1	36	-	**16**	0	0	0	11	-
17	0	0.1	1	21.1	-	**17**	0	0	0	7	-
18	0	0.4	1	8.1	-	**18**	0	0	0	9	-
19	0	0	0	7.5	-	**19**	0	0	0	8	-
20	0	0.4	1	6.5	0.25	**20**	0	0.4	1	14	0
21	0	0	0	7	-	**21**	0	0	0	9	-
22	0	0	0	9	-	**22**	0	0	0	3.7	-
23	0	0	0	2.5	-	**23**	0	0	0	10	-
24	0	0	0	8.5	-	**24**	0	0.5	1	11	-
25	0	0.5	1	16.1	-	**25**	0	0.5	1	9.2	-
26	0	0.1	1	5	-	**26**	0	0	0	7.5	-
27	0	0	0	9.5	-	**27**	0	0.2	1	9	-
28	0	0	0	9	-	**28**	0	0.2	1	10.7	-
29	0	0	0	8	-	**29**	0	0.3	1	3	-
30	0	0.4	1	9.1	0	**30**	0	0	0	7.5	0
31	0	0	0	8	-	**31**	0	0	0	5.3	-
32	0	0	0	5.5	-	**32**	0	0	0	9.4	-
33	0	0	0	11	-	**33**	0	0	0	8.5	-
34	0	0	0	4.1	-	**34**	0	0	0	13	-
35	0	0	0	11	-	**35**	0	0	0	8.5	-
36	0	0	0	4.3	-	**36**	0	0	0	12.5	-
37	0	0.1	1	7.2	-	**37**	0	0	0	6.5	-
38	0	0.4	1	11.5	-	**38**	0	0	0	4	-
39	0	0.2	1	15.5	-	**39**	0	0	0	12	-
40	0	0.5	1	14	0.25	**40**	0	0	0	9.5	0.25
41	0	0.6	1	4.1	-	**41**	0	0	0	8	-
42	0	0.4	1	9.5	-	**42**	0	0	0	8.5	-
43	0	0	0	3.1	-	**43**	0	0	0	5.8	-
44	0	0	0	12.3	-	**44**	0	0	0	10.5	-
45	0	0	0	7.5	-	**45**	0	0	0	11	-
46	0	0	0	3	-	**46**	0	0	0	6	-
47	0	0	0	2.1	-	**47**	0	0	0	10.2	-
48	0	0	0	9.5	-	**48**	0	0	0	6.3	-
49	0	0	0	8.2	-	**49**	0	0	0	8.3	-
50	0	0	0	1.5	0.25	**50**	0	0	0	7	0
51	0	0.1	1	2.3	-	**51**	0	0	0	10	-
52	0	0	0	6.5	-	**52**	0	0	0	9.8	-
53	0	0	0	10.5	-	**53**	0	0	0	11.5	-
54	0	0	0	5	-	**54**	0	0	0	10.3	-
55	0	0	0	5	-	**55**	0	0	0	10.5	-
56	0	0.3	1	7.5	-	**56**	0	0	0	11	-
57	0	0.3	1	10	-	**57**	0	0	0	9	-
58	0	0.2	1	12.4	-	**58**	0	0	0	11	-
59	0	0	0	9.4	-	**59**	0	0	0	8.3	-
60	0	0	0	4.5	0	**60**	0	0	0	8	0
61	0	0	0	8.1	-	**61**	0	0	0	12	-
62	0	0	0	6.1	-	**62**	0	0	0	9.5	-
63	0	0	0	9.3	-	**63**	0	0	0	9	-
64	0	0	0	5.4	-	**64**	0	0.1	1	14	-
65	0	0	0	2.1	-	**65**	0	0	0	4.7	-
66	0	0	0	5.4	-	**66**	0	0.1	1	6	-
67	0	0	0	7.1	-	**67**	0	0	0	4	-
68	0	0	0	3.1	-	**68**	0	0.2	1	11	-
69	0	0	0	8.5	-	**69**	0	0	0	5	-
70	0	0	0	10.6	0	**70**	0	0	0	12.3	0
71	0	0	0	14	-	**71**	0	0	0	9	-
72	0	0.1	1	10.5	-	**72**	0	0.1	1	10	-
73	0	0.1	1	11.3	-	**73**	0	0	0	7	-
74	0	0.1	1	9.7	-	**74**	0	0	0	5.5	-
75	0	0.1	1	13.4	-	**75**	0	0	0	7.5	-
76	0	0.1	1	5.3	-	**76**	0	0	0	6	-
77	0	0	0	3	-	**77**	0	0	0	14.5	-
78	0	0	0	4.4	-	**78**	0	0	0	5.3	-
79	0	0	0	3	-	**79**	0	0	0	18	-
80	0	0.1	1	7	0.25	**80**	0	0	0	4	0
81	0	0	0	2.3	-	**81**	0	0	0	8	-
82	0	0	0	4.6	-	**82**	0	0	0	7.5	-
83	0	0	0	3.2	-	**83**	0	0	0	10	-
84	0	0	0	8.1	-	**84**	0	0	0	10	-
85	0	0.7	1	14.6	-	**85**	0	0	0	9.8	-
86	0	0.6	1	10.3	-	**86**	0	0	0	13.5	-
87	0	0	0	6.4	-	**87**	0	0	0	6.7	-
88	0	0	0	3.1	-	**88**	0	0	0	2	-
89	0	0	0	7.7	-	**89**	0	0	0	5.8	-
90	0	0	0	7.4	0.25	**90**	0	0	0	9	0
91	0	0	0	8.1	-	**91**	0	0	0	9	-
92	0	0	0	7.1	-	**92**	0	0	0	7.8	-
93	0	0	0	1.1	-	**93**	0	0	0	12	-
94	0	0	0	4.6	-	**94**	0	0	0	9	-
95	0	0	0	5.1	-	**95**	0	0	0	13	-
96	0	0	0	6.6	-	**96**	0	0	0	7	-
97	0	0	0	4.3	-	**97**	0	0	0	13	-
98	0	0.1	1	18.6	-	**98**	0	0	0	11	-
99	0	0	0	12.1	-	**99**	0	0	0	15.5	-
100	0	0.1	1	13.1	0.25	**100**	0	0	0	11.5	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.08**	**0.29**	**8.051**	**0.15**	**Average Cic, Cip and Embed. =**	**0.00**	**0.03**	**0.10**	**8.72**	**0.05**
Old Calcite Index (CI)		**0.29**				**Old Calcite Index (CI)**		**0.10**			
New Calcite Index (CI')		**0.08**				**New Calcite Index (CI')**		**0.03**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBCP-1						RG_FOBCP-2					
2021-09-14						2021-09-14					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	4	-	**1**	0	0	0	6	-
2	0	0.1	1	8	-	**2**	0	0	0	1.5	-
3	0	0.1	1	6.5	-	**3**	0	0	0	6.5	-
4	0	0.2	1	7	-	**4**	0	0	0	10.5	-
5	0	0	0	7	-	**5**	0	0	0	7.5	-
6	0	0	0	7	-	**6**	0	0	0	6	-
7	0	0.5	1	8	-	**7**	0	0	0	1.5	-
8	0	0	0	8	-	**8**	0	0	0	2	-
9	0	0	0	9	-	**9**	0	0.1	1	12.5	-
10	0	0.5	1	9.5	0.5	**10**	0	0	0	11	0.5
11	0	0	0	5.5	-	**11**	0	0	0	1.5	-
12	0	0	0	6	-	**12**	0	0.1	1	7	-
13	0	0	0	7.5	-	**13**	0	0.1	1	14	-
14	0	0	0	5.5	-	**14**	0	0	0	7	-
15	0	0	0	8	-	**15**	0	0	0	9.5	-
16	0	0	0	7.5	-	**16**	0	0	0	4.5	-
17	0	0	0	5.5	-	**17**	0	0	0	5.5	-
18	0	0	0	4.5	-	**18**	0	0	0	6	-
19	0	0	0	8.5	-	**19**	0	0	0	6.5	-
20	0	0	0	4	0	**20**	0	0	0	7	0
21	0	0	0	5.5	-	**21**	0	0	0	8	-
22	0	0	0	5	-	**22**	0	0	0	4	-
23	0	0	0	13	-	**23**	0	0	0	5.5	-
24	0	0	0	16.5	-	**24**	0	0	0	6	-
25	0	0	0	15	-	**25**	0	0	0	9	-
26	0	0.1	1	5	-	**26**	0	0	0	4.5	-
27	0	0	0	3.5	-	**27**	0	0	0	5	-
28	0	0	0	4	-	**28**	0	0	0	8	-
29	0	0	0	5	-	**29**	0	0	0	6.5	-
30	0	0	0	7	0	**30**	0	0	0	10	0
31	0	0	0	7.5	-	**31**	0	0.1	1	6.5	-
32	0	0	0	8.5	-	**32**	0	0	0	7.5	-
33	0	0	0	5	-	**33**	0	0	0	5.5	-
34	0	0	0	5	-	**34**	0	0.1	1	5	-
35	0	0	0	6.1	-	**35**	0	0	0	5	-
36	0	0	0	2	-	**36**	0	0.1	1	8	-
37	0	0	0	20	-	**37**	0	0	0	9.5	-
38	0	0	0	3.5	-	**38**	0	0	0	12	-
39	0	0	0	5	-	**39**	0	0	0	4.5	-
40	0	0	0	8	0.5	**40**	0	0	0	7.5	0.25
41	0	0.4	1	5	-	**41**	0	0	0	2	-
42	0	0	0	4.5	-	**42**	0	0	0	8	-
43	0	0	0	8.7	-	**43**	0	0	0	11	-
44	0	0	0	4.5	-	**44**	0	0	0	11	-
45	0	0	0	5	-	**45**	0	0	0	2	-
46	0	0	0	4.5	-	**46**	0	0	0	6	-
47	0	0	0	18.8	-	**47**	0	0	0	10.5	-
48	0	0	0	4.5	-	**48**	0	0	0	11	-
49	0	0	0	8	-	**49**	0	0	0	3	-
50	0	0	0	3.5	0	**50**	0	0	0	7	0
51	0	0	0	7	-	**51**	0	0	0	7.3	-
52	0	0	0	4	-	**52**	0	0.1	1	5.2	-
53	0	0	0	11	-	**53**	0	0	0	4.3	-
54	0	0	0	5.5	-	**54**	0	0	0	7.5	-
55	0	0	0	11.5	-	**55**	0	0.1	1	6.5	-
56	0	0	0	6	-	**56**	0	0	0	6.5	-
57	0	0	0	3.5	-	**57**	0	0	0	13	-
58	0	0	0	7.5	-	**58**	0	0	0	13.5	-
59	0	0	0	9	-	**59**	0	0	0	8	-
60	0	0	0	6	0	**60**	0	0	0	7	0.25
61	0	0.1	1	5	-	**61**	0	0.6	1	8.5	-
62	0	0	0	9	-	**62**	0	0	0	6.5	-
63	0	0	0	16	-	**63**	0	0.6	1	11	-
64	0	0	0	8.5	-	**64**	0	0	0	6.5	-
65	0	0	0	10	-	**65**	0	0	0	7.5	-
66	0	0	0	5.5	-	**66**	0	0.8	1	16	-
67	0	0	0	6.5	-	**67**	0	0	0	5.5	-
68	0	0.1	1	4.5	-	**68**	0	0.2	1	11	-
69	0	0.1	1	7	-	**69**	0	0	0	8.5	-
70	0	0	0	8	0.5	**70**	0	0	0	3	0
71	0	0	0	15	-	**71**	0	0	0	5.5	-
72	0	0.2	1	4.5	-	**72**	0	0	0	9	-
73	0	0	0	5	-	**73**	0	0	0	10.5	-
74	0	0	0	6	-	**74**	0	0	0	1.5	-
75	0	0	0	6.5	-	**75**	0	0	0	4	-
76	0	0	0	4	-	**76**	0	0	0	12.5	-
77	0	0	0	5	-	**77**	0	0	0	11.5	-
78	0	0	0	5.5	-	**78**	0	0	0	14.5	-
79	0	0.1	1	9	-	**79**	0	0	0	12.5	-
80	0	0	0	6.5	0	**80**	0	0	0	12	0
81	0	0.1	1	6	-	**81**	0	0	0	3.5	-
82	0	0	0	11	-	**82**	0	0	0	4	-
83	0	0	0	6.5	-	**83**	0	0	0	6	-
84	0	0	0	6	-	**84**	0	0	0	5	-
85	0	0	0	7	-	**85**	0	0	0	5	-
86	0	0	0	3	-	**86**	0	0.1	1	8	-
87	0	0	0	3	-	**87**	0	0	0	4	-
88	0	0	0	3.5	-	**88**	0	0	0	9	-
89	0	0	0	5.5	-	**89**	0	0	0	14	-
90	0	0	0	3.5	0	**90**	0	0	0	8.5	0.25
91	0	0	0	5.6	-	**91**	0	0	0	11	-
92	0	0	0	17.5	-	**92**	0	0	0	9	-
93	0	0	0	7.5	-	**93**	0	0	0	4	-
94	0	0	0	15.5	-	**94**	0	0	0	6	-
95	0	0.1	1	9	-	**95**	0	0	0	4	-
96	0	0	0	7	-	**96**	0	0	0	8	-
97	0	0.1	1	11	-	**97**	0	0	0	8	-
98	0	0	0	16	-	**98**	0	0	0	2.5	-
99	0	0	0	8.5	-	**99**	0	0.4	1	6	-
100	0	0	0	5.5	0	**100**	0	0.6	1	10	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.03**	**0.15**	**7.297**	**0.15**	**Average Cic, Cip and Embed. =**	**0.00**	**0.04**	**0.15**	**7.343**	**0.15**
Old Calcite Index (CI)		**0.15**				**Old Calcite Index (CI)**		**0.15**			
New Calcite Index (CI')		**0.03**				**New Calcite Index (CI')**		**0.04**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBCP-3						RG_FOBCP-4					
2021-09-13						2021-09-13					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0.1	1	12.5	-	**1**	0	0	0	7.5	-
2	0	0.1	1	5.5	-	**2**	0	0	0	1.7	-
3	0	0.1	1	8	-	**3**	0	0	0	8	-
4	0	0.1	1	7	-	**4**	0	0	0	2	-
5	0	0.1	1	8.5	-	**5**	0	0.6	1	18.6	-
6	0	0	0	3.5	-	**6**	0	0.3	1	12	-
7	0	0	0	19	-	**7**	0	0	0	3	-
8	0	0	0	5	-	**8**	0	0	0	3.4	-
9	0	0	0	6	-	**9**	0	0.2	1	10.5	-
10	0	0	0	4.5	0	**10**	0	0.1	1	5	0
11	0	0	0	7.2	-	**11**	0	0.1	1	5	-
12	0	0	0	4	-	**12**	0	0.3	1	12.5	-
13	0	0	0	10	-	**13**	0	0	0	5	-
14	0	0	0	4	-	**14**	0	0	0	3.1	-
15	0	0.1	1	8	-	**15**	1	0.5	1	12	-
16	0	0.1	1	8.5	-	**16**	0	0	0	4.5	-
17	0	0.1	1	11	-	**17**	0	0	0	9.5	-
18	0	0	0	3.5	-	**18**	0	0	0	5.6	-
19	0	0.1	1	8	-	**19**	1	0.8	1	16.5	-
20	0	0.2	1	13	0.5	**20**	0	0.5	1	11.5	0.5
21	0	0	0	8.5	-	**21**	0	0	0	5.5	-
22	0	0.3	1	5	-	**22**	0	0	0	9.5	-
23	0	0.4	1	5	-	**23**	0	0.1	1	10	-
24	0	0.2	1	6	-	**24**	0	0.1	1	7	-
25	0	0.5	1	11.5	-	**25**	0	0	0	5.1	-
26	0	0.2	1	5.5	-	**26**	0	0	0	2.5	-
27	0	0.4	1	6.5	-	**27**	0	0	0	4	-
28	0	0.4	1	15	-	**28**	0	0	0	11.1	-
29	0	0.2	1	7	-	**29**	0	0	0	8	-
30	0	0	0	3.5	0.5	**30**	0	1	1	17	0
31	0	0	0	4	-	**31**	0	0.6	1	12.5	-
32	0	0.4	1	11	-	**32**	0	0	0	9.6	-
33	0	0.3	1	10	-	**33**	0	0.7	1	12	-
34	0	0.1	1	8	-	**34**	0	0	0	11	-
35	0	0.1	1	9	-	**35**	0	0.1	1	6	-
36	0	0.5	1	11.5	-	**36**	0	0	0	13	-
37	0	0.1	1	6	-	**37**	0	0	0	9.5	-
38	0	0.1	1	10	-	**38**	1	0.5	1	6.5	-
39	0	0.9	1	12	-	**39**	1	0.3	1	6.5	-
40	0	0	0	6.5	0	**40**	0	0.1	1	6.5	0.25
41	0	0	0	4	-	**41**	0	0.7	1	5.5	-
42	0	0.1	1	10	-	**42**	0	0	0	4	-
43	0	0	0	5	-	**43**	0	0.8	1	13	-
44	0	0.8	1	9.5	-	**44**	0	0	0	13.5	-
45	0	0.2	1	8.5	-	**45**	0	0	0	8	-
46	0	0.5	1	8.3	-	**46**	0	0	0	3.5	-
47	0	0	0	5	-	**47**	0	0	0	9.5	-
48	0	0.3	1	10	-	**48**	0	0	0	8.6	-
49	0	0	0	6	-	**49**	0	0	0	7.4	-
50	0	0.4	1	9	0.25	**50**	0	0	0	8.4	0
51	0	0.9	1	10	-	**51**	0	0.2	1	9.6	-
52	0	0.5	1	11	-	**52**	0	0	0	13.5	-
53	0	0.1	1	8	-	**53**	0	0.1	1	10	-
54	0	0.2	1	11	-	**54**	0	0	0	3	-
55	0	0.1	1	6.5	-	**55**	0	0.8	1	5	-
56	0	0.5	1	14	-	**56**	0	0	0	4.3	-
57	0	-	-	0.2	-	**57**	0	0.1	1	8.5	-
58	0	0.1	1	7.5	-	**58**	0	0	0	7	-
59	0	0.1	1	4	-	**59**	0	0	0	3.1	-
60	0	0.1	1	2.5	0	**60**	0	0	0	5.3	0.25
61	0	0.4	1	2.5	-	**61**	0	0	0	6.4	-
62	0	0.1	1	4	-	**62**	0	0.1	1	4.1	-
63	0	0.5	1	17.5	-	**63**	0	0.8	1	5	-
64	0	0.1	1	6.8	-	**64**	0	0	0	7.5	-
65	0	0.7	1	8	-	**65**	0	0	0	6.8	-
66	0	0.1	1	10.5	-	**66**	0	0	0	4.3	-
67	0	0.5	1	8	-	**67**	0	0.1	1	15.1	-
68	0	0.5	1	20	-	**68**	0	0	0	7.3	-
69	0	0.6	1	10.5	-	**69**	0	0	0	2.9	-
70	0	0.5	1	8	0	**70**	0	0	0	2.9	0
71	0	0.5	1	8.5	-	**71**	0	0	0	3.3	-
72	0	0.6	1	7.5	-	**72**	0	0	0	4.9	-
73	0	0.3	1	10	-	**73**	0	0.1	1	5	-
74	0	0.2	1	3	-	**74**	0	0	0	4.9	-
75	0	0.1	1	7	-	**75**	0	0	0	5.6	-
76	0	0.3	1	9.5	-	**76**	0	-	-	0.2	-
77	0	0.4	1	7.5	-	**77**	0	0	0	5.3	-
78	0	0.5	1	7.5	-	**78**	0	0	0	6.5	-
79	1	0.8	1	7.5	-	**79**	0	0	0	2	-
80	1	0.8	1	8.5	0.5	**80**	0	0.5	1	8	0.5
81	0	0	0	6.5	-	**81**	0	0	0	12	-
82	0	0.1	1	10.5	-	**82**	0	0	0	13	-
83	0	0.1	1	10.5	-	**83**	0	0	0	7.1	-
84	0	0	0	5.5	-	**84**	0	0	0	5.1	-
85	0	0	0	10.5	-	**85**	0	0	0	6.3	-
86	0	0	0	7	-	**86**	0	0	0	8.4	-
87	0	0	0	5	-	**87**	0	0	0	12	-
88	0	0	0	3	-	**88**	0	0	0	2.4	-
89	0	0	0	6	-	**89**	0	0.1	1	5.1	-
90	0	0	0	4	0	**90**	0	0	0	5.7	0.25
91	0	0	0	5.5	-	**91**	0	0	0	4.4	-
92	0	0.1	1	23	-	**92**	0	0	0	3.3	-
93	0	0	0	8.5	-	**93**	0	0	0	5.4	-
94	0	0	0	8	-	**94**	0	0.1	1	4.6	-
95	0	0.3	1	3	-	**95**	0	0	0	5	-
96	0	0.1	1	5.5	-	**96**	0	0	0	7.1	-
97	0	0	0	2.5	-	**97**	0	0	0	4.3	-
98	0	0	0	3	-	**98**	0	0	0	3.2	-
99	0	0	0	10	-	**99**	0	0.8	1	11.5	-
100	0	0	0	5.5	0.5	**100**	0	0	0	17.5	0.25
Average Cic, Cip and Embed. =	**0.02**	**0.21**	**0.67**	**7.835**	**0.23**	**Average Cic, Cip and Embed. =**	**0.04**	**0.12**	**0.32**	**7.318**	**0.20**
Old Calcite Index (CI)		**0.69**				**Old Calcite Index (CI)**		**0.36**			
New Calcite Index (CI')		**0.23**				**New Calcite Index (CI')**		**0.16**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBCP-5						RG_FRCP1SW-1					
2021-09-13						2021-09-15					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	9.2	-	**1**	0	0	0	8	-
2	0	0	0	11.5	-	**2**	0	0	0	6.5	-
3	0	0	0	6	-	**3**	0	0	0	9	-
4	0	0	0	6.3	-	**4**	0	0	0	6	-
5	0	0	0	7	-	**5**	0	0	0	13.5	-
6	0	0	0	3.6	-	**6**	0	0	0	5.5	-
7	0	0	0	8.5	-	**7**	0	0	0	10.5	-
8	0	0	0	9.5	-	**8**	0	0	0	11.5	-
9	0	0	0	2	-	**9**	0	0.1	1	15.5	-
10	0	0	0	2.5	0.25	**10**	0	0	0	8.5	0
11	0	0	0	5.5	-	**11**	0	0	0	9.5	-
12	0	0	0	15	-	**12**	0	0	0	10	-
13	0	0	0	4	-	**13**	0	0.1	1	7.5	-
14	0	0	0	16	-	**14**	0	0	0	5.5	-
15	0	0	0	3.1	-	**15**	0	0	0	9.5	-
16	0	0	0	8	-	**16**	0	0	0	5.5	-
17	0	0	0	4.3	-	**17**	0	0	0	7	-
18	0	0	0	2.1	-	**18**	0	0.1	1	6	-
19	0	0	0	2.4	-	**19**	0	0	0	9.5	-
20	0	0	0	6.5	0.75	**20**	0	0	0	5	0.25
21	0	0	0	2.5	-	**21**	0	0	0	8.5	-
22	0	0	0	4.5	-	**22**	0	0.1	1	8.5	-
23	0	0	0	7.1	-	**23**	0	0.3	1	10	-
24	0	0	0	4	-	**24**	0	0.1	1	6	-
25	0	0	0	9	-	**25**	0	0.1	1	6.5	-
26	0	0	0	2.3	-	**26**	0	0	0	6	-
27	0	0	0	4.1	-	**27**	0	0	0	7.5	-
28	0	0	0	6.2	-	**28**	0	0.3	1	8.5	-
29	0	0	0	2.5	-	**29**	0	0	0	7.5	-
30	0	0	0	7.1	0.25	**30**	0	0	0	8	-
31	0	0	0	3	-	**31**	0	0	0	6.5	-
32	0	0	0	2.6	-	**32**	0	0	0	6	-
33	0	0	0	3.1	-	**33**	0	0.2	1	4	-
34	0	0	0	9.6	-	**34**	0	0.1	1	8.5	-
35	0	0	0	3.6	-	**35**	0	0.1	1	8.5	-
36	0	0	0	4.4	-	**36**	0	0.4	1	12.5	-
37	0	0	0	3.7	-	**37**	0	0	0	3.5	-
38	0	0	0	4.6	-	**38**	0	0	0	7	-
39	0	0	0	4.5	-	**39**	0	0	0	3	-
40	0	0	0	5.1	0	**40**	0	0.2	1	12	-
41	0	0	0	2.2	-	**41**	0	0	0	8.5	0.5
42	0	0	0	6	-	**42**	0	0.3	1	7	-
43	0	0	0	5.1	-	**43**	0	0	0	6.5	-
44	0	0	0	4	-	**44**	0	0.9	1	4	-
45	0	0	0	8.6	-	**45**	0	0.1	1	6	-
46	0	0	0	3.9	-	**46**	0	0.2	1	11.5	-
47	1	1	1	13	-	**47**	0	0	0	9	-
48	1	0.7	1	13	-	**48**	0	0	0	6	-
49	0	0	0	6	-	**49**	0	0.3	1	7.5	-
50	1	0.5	1	8.5	0.25	**50**	0	0.6	1	7	0.25
51	0	0	0	4	-	**51**	0	0.4	1	9.5	-
52	0	0	0	8.6	-	**52**	0	0.9	1	6.5	-
53	0	0	0	6.5	-	**53**	0	0	0	5.5	-
54	0	0	0	10.5	-	**54**	0	0	0	7	-
55	0	0.1	1	6.1	-	**55**	0	0.1	1	8	-
56	0	0.1	1	5.5	-	**56**	0	0.4	1	5.5	-
57	0	0	0	20.5	-	**57**	0	0	0	4	-
58	0	0	0	8	-	**58**	0	0	0	4.5	-
59	0	0.1	1	8.5	-	**59**	0	0.4	1	16	-
60	0	0	0	6.5	0	**60**	0	0	0	10.5	-
61	0	0.5	1	15	-	**61**	0	0.7	1	8.5	0.25
62	0	0.7	1	23	-	**62**	0	0.1	1	7	-
63	0	0.9	1	8.5	-	**63**	0	0.5	1	4.5	-
64	0	0.6	1	13.5	-	**64**	0	0	0	5	-
65	0	0.8	1	11	-	**65**	0	0	0	8	-
66	1	0.9	1	11	-	**66**	0	0.3	1	4.5	-
67	2	1	1	7.5	-	**67**	0	0.2	1	14	-
68	0	0	0	2.5	-	**68**	0	0.1	1	8	-
69	0	0	0	4.1	-	**69**	0	0	0	6	-
70	0	0	0	9.1	0	**70**	0	0	0	3	0
71	0	0	0	9	-	**71**	0	0.1	1	11.5	-
72	0	0	0	5.4	-	**72**	0	0	0	9	-
73	0	0	0	6.1	-	**73**	0	0	0	2.5	-
74	0	0	0	5.5	-	**74**	0	0.1	1	7	-
75	0	0	0	6	-	**75**	0	0.2	1	8.5	-
76	0	0	0	11.2	-	**76**	0	0	0	2	-
77	0	0.1	1	8.1	-	**77**	0	0	0	6.5	-
78	0	0	0	9	-	**78**	0	0.1	1	5	-
79	0	0	0	6	-	**79**	0	0	0	9	-
80	0	0	0	7.1	0	**80**	0	0	0	12	-
81	0	0	0	7.2	-	**81**	0	0	0	5	0
82	0	0.6	1	10	-	**82**	0	0	0	4.5	-
83	0	0.5	1	10	-	**83**	0	0	0	3	-
84	0	0.4	1	7.5	-	**84**	0	0	0	3.5	-
85	0	0	0	5.2	-	**85**	0	0	0	8	-
86	0	0	0	5.6	-	**86**	0	0	0	5	-
87	0	0.5	1	13.2	-	**87**	0	0	0	7.5	-
88	1	0.4	1	10	-	**88**	0	0	0	4.5	-
89	0	0	0	7	-	**89**	0	0	0	3	-
90	0	0	0	7.5	0	**90**	0	0.2	1	6.5	-
91	2	1	1	6	-	**91**	0	0	0	5.5	0.5
92	0	0.4	1	5	-	**92**	0	0	0	11.5	-
93	0	0	0	5	-	**93**	0	0	0	5.5	-
94	0	0	0	12.5	-	**94**	0	0	0	8	-
95	0	0	0	7.5	-	**95**	0	0.8	1	5.5	-
96	0	0	0	8.5	-	**96**	0	0	0	4.5	-
97	0	0.2	1	7.3	-	**97**	0	0	0	12.5	-
98	0	0	0	4	-	**98**	0	0.2	1	3.5	-
99	0	0	0	11.5	-	**99**	0	0	0	5	-
100	0	0	0	7.5	0	**100**	0	0.4	1	7	0.25
Average Cic, Cip and Embed. =	**0.09**	**0.12**	**0.22**	**7.181**	**0.15**	**Average Cic, Cip and Embed. =**	**0.00**	**0.11**	**0.38**	**7.285**	**0.22**
Old Calcite Index (CI)		**0.31**				**Old Calcite Index (CI)**		**0.38**			
New Calcite Index (CI')		**0.21**				**New Calcite Index (CI')**		**0.11**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FRCP1SW-2						RG_FRCP1SW-3					
2021-09-15						2021-09-15					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0.1	1	6.5	-	**1**	0	0	0	6	-
2	0	0	0	4	-	**2**	0	0	0	2.5	-
3	0	0.1	1	6	-	**3**	0	0	0	2.5	-
4	0	0.2	1	9	-	**4**	0	0	0	5	-
5	0	0	0	5.5	-	**5**	0	0.4	1	4	-
6	0	0.1	1	7	-	**6**	0	0.4	1	13.5	-
7	0	0.1	1	7	-	**7**	0	0.3	1	6	-
8	0	0.3	1	12	-	**8**	0	0.3	1	6	-
9	0	0.1	1	4.5	-	**9**	0	0	0	2	-
10	0	0.1	1	5	0.5	**10**	0	0.4	1	7	-
11	0	0.1	1	6.5	-	**11**	0	0.4	1	5.5	0.25
12	0	0	0	6	-	**12**	0	0.5	1	6.5	-
13	0	0.1	1	7	-	**13**	0	0	0	4.5	-
14	0	0	0	6.5	-	**14**	0	0	0	9	-
15	0	0.1	1	10	-	**15**	0	0	0	7.5	-
16	0	0	0	7	-	**16**	0	0.5	1	10	-
17	0	0.1	1	3	-	**17**	0	0.3	1	6	-
18	0	0.1	1	4	-	**18**	0	0.4	1	6	-
19	0	0.3	1	10	-	**19**	0	0	0	3.5	-
20	0	0	0	12	0	**20**	0	0	0	7	-
21	0	0.2	1	9	-	**21**	0	0	0	7.5	0.25
22	0	0.2	1	6.5	-	**22**	0	0	0	6.5	-
23	0	0	0	4.5	-	**23**	0	0.3	1	9.5	-
24	0	0.1	1	5.5	-	**24**	0	0.3	1	6	-
25	0	0.1	1	8	-	**25**	0	0	0	8	-
26	0	0	0	8.5	-	**26**	0	0.4	1	8	-
27	0	0.1	1	4	-	**27**	0	0.2	1	5.5	-
28	0	0	0	8.5	-	**28**	0	0	0	6	-
29	0	0	0	2	-	**29**	0	0.5	1	5.5	-
30	0	0.4	1	3.5	0.75	**30**	0	0.3	1	10	0.25
31	0	0	0	3	-	**31**	0	0.5	1	10.5	-
32	0	0	0	2	-	**32**	0	0	0	8	-
33	0	0	0	4.5	-	**33**	0	0	0	8	-
34	0	0.3	1	8.5	-	**34**	0	0.5	1	8	-
35	0	0.1	1	4	-	**35**	0	0.5	1	88.5	-
36	0	0	0	4	-	**36**	0	0.1	1	6	-
37	0	0.2	1	9	-	**37**	0	0	0	9	-
38	0	0.3	1	9.5	-	**38**	0	0.5	1	10.5	-
39	0	0	0	4.5	-	**39**	0	0.5	1	6	-
40	0	0.1	1	5.5	0.25	**40**	0	0.2	1	5	-
41	0	0.1	1	6	-	**41**	0	0.4	1	8	-
42	0	0	0	4	-	**42**	0	0.1	1	7.5	0.25
43	0	0	0	3.5	-	**43**	0	0.3	1	7	-
44	0	0.1	1	4.5	-	**44**	0	0.4	1	9.5	-
45	0	0.2	1	12	-	**45**	0	0.5	1	7.5	-
46	0	0.1	1	8.5	-	**46**	0	0.9	1	10	-
47	0	0	0	4.5	-	**47**	0	0.4	1	7.5	-
48	0	0	0	9	-	**48**	0	0	0	5.5	-
49	0	0.1	1	4	-	**49**	0	0.3	1	10.5	-
50	0	0	0	7.5	0.75	**50**	0	0.8	1	8	0
51	0	0	0	5.5	-	**51**	0	0.3	1	9	-
52	0	0.1	1	7.5	-	**52**	0	1	1	3	-
53	0	0.1	1	11.5	-	**53**	0	0.8	1	4	-
54	0	0	0	3.5	-	**54**	0	0.3	1	2.5	-
55	0	0	0	4	-	**55**	0	0.4	1	3	-
56	0	0.1	1	7	-	**56**	0	0.1	1	3	-
57	0	0.1	1	8.5	-	**57**	0	0.7	1	8.5	-
58	0	0	0	9	-	**58**	0	0.6	1	11	-
59	0	0.1	1	11	-	**59**	0	0.3	1	5.5	-
60	0	0.2	1	10	0.5	**60**	0	0.6	1	6	0.25
61	0	0.1	1	5	-	**61**	0	0.6	1	6	-
62	0	0.1	1	14	-	**62**	0	0.4	1	5.5	-
63	0	0.1	1	6	-	**63**	0	0.4	1	6	-
64	0	0	0	5.5	-	**64**	0	0.5	1	2.5	-
65	0	0	0	13.5	-	**65**	0	0.3	1	4	-
66	0	0.1	1	7	-	**66**	0	0	0	3	-
67	0	0	0	1.5	-	**67**	0	0.9	1	2	-
68	0	0	0	6	-	**68**	0	0.2	1	2	-
69	0	0.2	1	9	-	**69**	0	0.1	1	3	-
70	0	0.3	1	8.5	0.5	**70**	0	0.8	1	3	-
71	0	0	0	6	-	**71**	0	0.6	1	6	0
72	0	0.1	1	5	-	**72**	0	0.2	1	6	-
73	0	0.2	1	12	-	**73**	0	0.4	1	7	-
74	0	0.1	1	8	-	**74**	0	0.1	1	7.5	-
75	0	0	0	6.5	-	**75**	0	0.5	1	6.5	-
76	0	0	0	4.5	-	**76**	0	0.5	1	3.5	-
77	0	0	0	11.5	-	**77**	0	0.2	1	6	-
78	0	0	0	4.5	-	**78**	0	0.4	1	8	-
79	0	0	0	8	-	**79**	0	0.8	1	1.5	-
80	0	0.3	1	10.5	0.75	**80**	0	0.4	1	8	-
81	0	0	0	4.5	-	**81**	0	0.5	1	7.5	0.25
82	0	0	0	3	-	**82**	0	0.1	1	6	-
83	0	0.1	1	5	-	**83**	0	0.3	1	7	-
84	0	0	0	7	-	**84**	0	0.5	1	6	-
85	0	0	0	3	-	**85**	0	0	0	4.5	-
86	0	0	0	5	-	**86**	0	0.2	1	7	-
87	0	0	0	5.5	-	**87**	0	0.4	1	1.5	-
88	0	0	0	5.5	-	**88**	0	0.7	1	8	-
89	0	0.1	1	7.5	-	**89**	0	0.7	1	4	-
90	0	0	0	7.5	0	**90**	0	0.2	1	7	-
91	0	0.2	1	7.5	-	**91**	0	0.5	1	7	-
92	0	0	0	3	-	**92**	0	1	1	5	0
93	0	0.1	1	9.5	-	**93**	0	0	0	6.5	-
94	0	0.1	1	2.5	-	**94**	0	0.5	1	9.5	-
95	0	0	0	4	-	**95**	0	0.5	1	4	-
96	0	0	0	7.5	-	**96**	0	0.2	1	9	-
97	0	0	0	5.5	-	**97**	0	0.1	1	4	-
98	0	0.1	1	6.5	-	**98**	0	0	0	7	-
99	0	0	0	2.5	-	**99**	0	0	0	6	-
100	0	0	0	4.5	0.25	**100**	0	0.3	1	4.5	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.08**	**0.52**	**6.53**	**0.43**	**Average Cic, Cip and Embed. =**	**0.00**	**0.33**	**0.77**	**7.065**	**0.18**
Old Calcite Index (CI)		**0.52**				**Old Calcite Index (CI)**		**0.77**			
New Calcite Index (CI')		**0.08**				**New Calcite Index (CI')**		**0.33**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FRUPO-1						RG_FRUPO-2					
2021-09-19						2021-09-19					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0.3	1	4	-	**1**	0	0	0	12	-
2	0	0.1	1	9	-	**2**	0	0	0	5.5	-
3	0	0	0	3	-	**3**	0	0.3	1	10.5	-
4	0	0.2	1	5	-	**4**	0	0.3	1	14.5	-
5	0	0.6	1	6	-	**5**	0	0	0	2.5	-
6	0	0.2	1	6.5	-	**6**	0	0	0	3	-
7	0	0.7	1	7	-	**7**	0	0.2	1	13.5	-
8	0	0.2	1	3.5	-	**8**	0	0.4	1	15	-
9	0	0.6	1	6	-	**9**	0	0.3	1	11	-
10	0	0.5	1	4	0	**10**	0	0.2	1	18.5	0.75
11	0	0.1	1	4.5	-	**11**	0	0.1	1	14.5	-
12	0	0.6	1	3.5	-	**12**	0	0.3	1	14.5	-
13	0	0.3	1	4	-	**13**	0	0	0	4	-
14	0	0.2	1	4	-	**14**	0	0	0	4	-
15	0	0.3	1	2.5	-	**15**	0	0.6	1	8.5	-
16	0	0.1	1	5	-	**16**	0	0.1	1	11.5	-
17	0	0.1	1	3	-	**17**	0	0.1	1	4.5	-
18	0	0.1	1	9.5	-	**18**	0	0	0	16	-
19	0	0	0	3	-	**19**	0	0.5	1	19	-
20	0	0	0	0.2	1	**20**	0	0.1	1	11.5	0.25
21	0	0.2	1	2.5	-	**21**	0	0.1	1	12	-
22	0	0	0	5	-	**22**	0	0.3	1	12.5	-
23	0	0.2	1	4	-	**23**	0	0	0	9.5	-
24	0	0.6	1	5	-	**24**	0	0	0	4	-
25	0	0.6	1	5	-	**25**	0	0.6	1	17.5	-
26	0	0.2	1	5	-	**26**	0	0.1	1	4	-
27	0	0.5	1	3	-	**27**	0	0.1	1	8.5	-
28	0	0.1	1	3	-	**28**	0	0	0	9.5	-
29	0	0.1	1	4	-	**29**	0	0.5	1	4	-
30	0	0.2	1	4	0.5	**30**	0	0.1	1	3.5	0.5
31	0	0.8	1	4.5	-	**31**	0	0.1	1	13	-
32	0	0.7	1	5	-	**32**	0	0.4	1	10	-
33	0	0.1	1	4	-	**33**	0	0.5	1	19.5	-
34	0	0.3	1	5.5	-	**34**	0	0.4	1	9.5	-
35	0	0.2	1	3	-	**35**	0	0	0	18	-
36	0	0.5	1	4	-	**36**	0	0	0	7.5	-
37	0	0.1	1	2	-	**37**	0	0.3	1	9	-
38	0	0.8	1	4.5	-	**38**	0	0	0	22	-
39	0	0.1	1	5.5	-	**39**	0	0.3	1	14	-
40	0	1	1	5	0	**40**	0	0.7	1	9	0.25
41	0	0.3	1	5.5	-	**41**	0	0	0	24.5	-
42	0	0.1	1	5.5	-	**42**	0	0.3	1	8.5	-
43	0	0.5	1	5.5	-	**43**	0	0.8	1	14.5	-
44	0	0.6	1	6	-	**44**	0	0.9	1	16	-
45	0	0.4	1	4.5	-	**45**	0	0	0	8.5	-
46	0	0.7	1	6.5	-	**46**	0	0.4	1	11	-
47	0	0	0	4	-	**47**	0	0	0	4	-
48	0	0.8	1	5.5	-	**48**	0	0.6	1	11	-
49	0	0.1	1	4.5	-	**49**	0	0.2	1	14	-
50	0	0.3	1	6	0.25	**50**	0	0.8	1	10	0.25
51	0	0.1	1	5	-	**51**	0	0.6	1	3.5	-
52	0	0.1	1	5.5	-	**52**	0	0.5	1	10	-
53	0	0.3	1	2	-	**53**	0	0.3	1	5	-
54	0	0.2	1	3	-	**54**	0	0.9	1	13	-
55	0	0.1	1	6	-	**55**	0	0.7	1	6	-
56	0	0.4	1	2	-	**56**	0	0.4	1	6	-
57	0	0	0	0.2	-	**57**	0	0.6	1	7.5	-
58	0	0.5	1	5.5	-	**58**	0	0	0	24	-
59	0	0.3	1	7.5	-	**59**	0	0	0	0.8	-
60	0	0.3	1	5.5	0	**60**	0	0.1	1	3.5	0.5
61	0	0.6	1	4	-	**61**	0	0	0	5	-
62	0	0	0	1.5	-	**62**	0	0	0	4	-
63	0	0.8	1	5.5	-	**63**	0	0.1	1	4	-
64	0	0.3	1	4.5	-	**64**	0	0.6	1	14	-
65	0	0.3	1	6	-	**65**	0	0.2	1	9.5	-
66	0	0.8	1	5.5	-	**66**	0	0.7	1	11	-
67	0	0.6	1	4	-	**67**	0	0.8	1	5	-
68	0	0.4	1	6	-	**68**	0	0.8	1	7.5	-
69	0	0.3	1	7	-	**69**	0	0.4	1	13	-
70	0	0	0	3.5	0.25	**70**	0	0.1	1	6.5	0.25
71	0	0.1	1	2.5	-	**71**	0	1	1	11	-
72	0	0.3	1	6	-	**72**	0	0.3	1	6.5	-
73	0	0.2	1	7.5	-	**73**	0	0	0	4	-
74	0	0.4	1	5.5	-	**74**	0	0.2	1	3	-
75	0	0.2	1	7	-	**75**	0	0.5	1	14	-
76	0	0.1	1	5	-	**76**	0	0.5	1	17	-
77	0	0.1	1	2.5	-	**77**	0	1	1	4.5	-
78	0	0.7	1	5	-	**78**	0	0	0	25	-
79	0	0.3	1	3.5	-	**79**	0	0.2	1	5	-
80	0	0.6	1	7	0.25	**80**	0	0.4	1	12	0.75
81	0	0.1	1	3	-	**81**	0	0.9	1	15.5	-
82	0	0.5	1	3	-	**82**	0	0	0	24.5	-
83	0	0.2	1	2.5	-	**83**	0	0.7	1	10	-
84	0	0.4	1	4.5	-	**84**	0	0.1	1	4	-
85	0	0.4	1	6	-	**85**	0	1	1	16	-
86	0	0.1	1	3	-	**86**	0	0.4	1	5.5	-
87	0	0.2	1	4.5	-	**87**	0	0	0	24	-
88	0	1	1	7.5	-	**88**	0	0.6	1	12.5	-
89	0	0.3	1	4	-	**89**	0	0.7	1	15.5	-
90	0	0.5	1	5	0	**90**	0	0.6	1	11	0
91	0	0.8	1	2	-	**91**	0	0.2	1	7.5	-
92	0	0.1	1	6	-	**92**	0	0.4	1	9	-
93	0	0	0	1	-	**93**	0	0.4	1	12	-
94	0	0.2	1	3	-	**94**	0	0.2	1	6	-
95	0	0	0	2	-	**95**	0	0.8	1	9	-
96	0	0.3	1	2	-	**96**	0	0.6	1	14	-
97	0	0	0	1.5	-	**97**	0	0.2	1	9.5	-
98	0	0.1	1	5	-	**98**	0	0.5	1	8	-
99	0	0.3	1	5.5	-	**99**	0	0.4	1	7	-
100	0	0.3	1	4.5	0.25	**100**	0	0	0	3	0
Average Cic, Cip and Embed. =	**0.00**	**0.32**	**0.89**	**4.469**	**0.25**	**Average Cic, Cip and Embed. =**	**0.00**	**0.33**	**0.75**	**10.368**	**0.35**
Old Calcite Index (CI)		**0.89**				**Old Calcite Index (CI)**		**0.75**			
New Calcite Index (CI')		**0.32**				**New Calcite Index (CI')**		**0.33**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FRUPO-3						RG_FODPO-1					
2021-09-19						2021-09-11					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	0	0	0	8	-	**1**	0	0	0	3	-
2	0	0	0	6	-	**2**	0	0	0	3.5	-
3	0	0.7	1	8.5	-	**3**	0	0.1	1	5	-
4	0	0.2	1	4	-	**4**	0	0.6	1	7.1	-
5	0	0	0	5.5	-	**5**	0	0.4	1	5.5	-
6	0	0.4	1	8	-	**6**	0	0.5	1	2.3	-
7	0	0.1	1	7.5	-	**7**	0	0.1	1	2.2	-
8	0	0.2	1	8.5	-	**8**	0	0.3	1	3.5	-
9	0	0.4	1	13	-	**9**	0	0	0	2.5	-
10	0	0.3	1	7	0.25	**10**	0	0	0	2.5	0
11	0	0.5	1	10	-	**11**	0	0	0	4	-
12	0	0.5	1	6	-	**12**	0	0.1	1	5.5	-
13	0	0.1	1	8.5	-	**13**	0	0	0	3.5	-
14	0	0.1	1	10.5	-	**14**	0	0.1	1	3	-
15	0	0.2	1	5	-	**15**	0	0	0	5	-
16	0	0.2	1	3.5	-	**16**	0	0	0	4.1	-
17	0	0.4	1	6	-	**17**	0	0	0	2.2	-
18	0	0.1	1	4.5	-	**18**	0	0	0	1.5	-
19	0	0	0	4	-	**19**	0	0	0	2.5	-
20	0	0.1	1	8	0.25	**20**	0	0.4	1	2.5	0.25
21	0	0.1	1	6	-	**21**	0	0.1	1	2.1	-
22	0	0.4	1	7.5	-	**22**	0	0	0	1.1	-
23	0	0.4	1	8	-	**23**	0	0.5	1	2.5	-
24	0	0.2	1	8	-	**24**	0	0	0	1.5	-
25	0	0.2	1	5	-	**25**	0	0	0	0.6	-
26	0	0	0	7	-	**26**	0	0.1	1	4.5	-
27	0	0.8	1	9	-	**27**	0	0	0	3.5	-
28	0	0	0	6	-	**28**	0	0.3	1	5	-
29	0	0.8	1	11	-	**29**	0	0.1	1	2.5	-
30	0	0.8	1	7	0	**30**	0	0.2	1	3.5	0
31	0	0	0	12.5	-	**31**	0	0	0	1.3	-
32	0	0.3	1	7	-	**32**	0	0.2	1	3	-
33	0	0.1	1	5.5	-	**33**	0	0.6	1	4.5	-
34	0	0.2	1	6	-	**34**	0	0.2	1	4.5	-
35	0	0	0	15	-	**35**	0	0.1	1	3.5	-
36	0	0.1	1	7	-	**36**	0	0.4	1	4	-
37	0	0.2	1	7	-	**37**	0	0.2	1	5.5	-
38	0	0.2	1	7	-	**38**	0	0.1	1	5.7	-
39	0	0	0	7	-	**39**	0	0.1	1	4.5	-
40	0	0.3	1	6	0.25	**40**	0	0	0	4.1	0
41	0	0	0	6	-	**41**	0	0.6	1	4.1	-
42	0	0	0	13	-	**42**	0	0.2	1	3.6	-
43	0	0.4	1	7.5	-	**43**	0	0.2	1	4	-
44	0	0.5	1	12	-	**44**	0	0	0	1.3	-
45	0	0	0	6.5	-	**45**	0	0.5	1	4.5	-
46	0	0.4	1	7	-	**46**	0	0.1	1	3.1	-
47	0	0.6	1	8	-	**47**	0	0.2	1	3.5	-
48	0	0.9	1	7.5	-	**48**	0	0.4	1	5.5	-
49	0	1	1	9	-	**49**	0	0.4	1	4.5	-
50	0	0.3	1	7	0.25	**50**	0	0.2	1	5.5	0
51	0	0.6	1	6.5	-	**51**	0	0.1	1	4	-
52	0	0	0	4	-	**52**	0	0.6	1	7.5	-
53	0	1	1	10	-	**53**	0	0.1	1	4.5	-
54	0	0.1	1	3	-	**54**	0	0	0	3	-
55	0	0.9	1	6.5	-	**55**	0	0	0	4	-
56	0	0.9	1	8.5	-	**56**	0	0	0	4	-
57	0	0.1	1	6.5	-	**57**	0	0.2	1	4.1	-
58	0	0.2	1	8	-	**58**	0	0	0	3.5	-
59	0	0	0	6	-	**59**	0	0.1	1	5.6	-
60	0	0	0	6	0.25	**60**	0	0.4	1	5	0
61	0	0.5	1	8	-	**61**	0	0.2	1	3.5	-
62	0	0	0	4.5	-	**62**	0	0.5	1	5.5	-
63	0	0.1	1	4.5	-	**63**	0	0.2	1	5.5	-
64	0	0.5	1	7	-	**64**	0	0	0	5	-
65	0	0.2	1	6	-	**65**	0	0	0	3.1	-
66	0	0.3	1	5.5	-	**66**	0	0.2	1	2.1	-
67	0	0	0	14.5	-	**67**	0	0	0	2.1	-
68	0	0.2	1	9	-	**68**	0	0.7	1	6.5	-
69	0	0.2	1	7	-	**69**	0	0.6	1	4	-
70	0	0.1	1	5.5	0.25	**70**	0	0	0	4.5	0
71	0	0.1	1	7.5	-	**71**	0	0.4	1	4	-
72	0	0.6	1	7.5	-	**72**	0	0	0	1.3	-
73	0	0.2	1	7.5	-	**73**	0	0.4	1	5.1	-
74	0	0.1	1	7	-	**74**	0	0.5	1	4.5	-
75	0	0.1	1	9	-	**75**	0	0.2	1	2.1	-
76	0	0	0	6.5	-	**76**	0	0	0	4.5	-
77	0	0.4	1	8	-	**77**	0	0	0	3.5	-
78	0	0.5	1	8	-	**78**	0	0.4	1	4.5	-
79	0	0.4	1	5.5	-	**79**	0	0.3	1	4.5	-
80	0	0.1	1	7.5	0	**80**	0	0.3	1	4.1	0
81	0	0.3	1	5.5	-	**81**	0	0	0	3.5	-
82	0	0.3	1	7.5	-	**82**	0	0.3	1	4.5	-
83	0	0.7	1	6	-	**83**	0	0	0	4.5	-
84	0	0.5	1	9.5	-	**84**	0	0	0	3.1	-
85	0	0.4	1	9	-	**85**	0	0	0	4.6	-
86	0	0.4	1	7	-	**86**	0	0	0	1.5	-
87	0	0.7	1	8.5	-	**87**	0	0	0	6	-
88	0	0	0	5	-	**88**	0	0	0	2.5	-
89	0	0	0	4	-	**89**	0	0	0	0.6	-
90	0	0.4	1	5.5	0	**90**	0	0.5	1	5	0.25
91	0	0.6	1	6	-	**91**	0	0.1	1	6.1	-
92	0	0.4	1	10	-	**92**	0	0.1	1	5.6	-
93	0	0.6	1	6	-	**93**	0	0	0	2.6	-
94	0	0.3	1	7.5	-	**94**	0	0	0	1.1	-
95	0	0.3	1	5.5	-	**95**	0	0.5	1	3.3	-
96	0	0	0	3.5	-	**96**	0	0	0	5.1	-
97	0	0	0	2	-	**97**	0	0.4	1	6.1	-
98	0	0.1	1	2	-	**98**	0	0.4	1	4	-
99	0	0.2	1	7	-	**99**	0	0	0	0.5	-
100	0	0.1	1	8	0.25	**100**	0	0.4	1	3.1	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.28**	**0.78**	**7.155**	**0.18**	**Average Cic, Cip and Embed. =**	**0.00**	**0.18**	**0.59**	**3.763**	**0.08**
Old Calcite Index (CI)		**0.78**				**Old Calcite Index (CI)**		**0.59**			
New Calcite Index (CI')		**0.28**				**New Calcite Index (CI')**		**0.18**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FODPO-2						RG_FODPO-3					
2021-09-11						2021-09-11					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0.7	1	5.5	-	**1**	0	0.5	1	4.1	-
2	0	0.1	1	4.4	-	**2**	0	0.5	1	8.3	-
3	0	0.7	1	4.5	-	**3**	0	1	1	7.1	-
4	0	0.4	1	4.5	-	**4**	0	0.9	1	6.4	-
5	0	0.4	1	6.4	-	**5**	0	0.8	1	5	-
6	0	0	0	4	-	**6**	0	1	1	5.3	-
7	0	0.1	1	3.4	-	**7**	0	0.7	1	3.4	-
8	0	0	0	5	-	**8**	0	0.5	1	6.1	-
9	0	0	0	4.7	-	**9**	0	0.5	1	6.3	-
10	0	0.3	1	4.5	0.25	**10**	0	0.1	1	2.1	0
11	0	0.2	1	5	-	**11**	0	0.4	1	5.5	-
12	0	0	0	6	-	**12**	0	0.9	1	4.5	-
13	0	0.5	1	4.4	-	**13**	0	0.4	1	3.6	-
14	0	0.6	1	4	-	**14**	0	0	0	2.6	-
15	0	0.5	1	3.3	-	**15**	0	0	0	3.1	-
16	0	1	1	7.2	-	**16**	0	0	0	2.6	-
17	0	0.6	1	4	-	**17**	0	0.4	1	9.5	-
18	0	0.3	1	6.3	-	**18**	0	0.5	1	6.1	-
19	0	0.5	1	5	-	**19**	0	0.6	1	3.5	-
20	0	0.3	1	4.5	0	**20**	0	0.4	1	2.5	0
21	0	0	0	4.5	-	**21**	0	0.2	1	4.5	-
22	0	0.1	1	5.2	-	**22**	0	0.4	1	3.6	-
23	0	0	0	5.5	-	**23**	0	0.1	1	8	-
24	0	0	0	5.5	-	**24**	0	0.7	1	4.1	-
25	0	0.2	1	5.2	-	**25**	0	0.8	1	5	-
26	0	0.3	1	6.2	-	**26**	0	0.5	1	4.5	-
27	0	0.3	1	2.8	-	**27**	0	0.6	1	4.1	-
28	0	0.1	1	6.2	-	**28**	0	1	1	4.1	-
29	0	0.3	1	4.2	-	**29**	0	0.4	1	2.3	-
30	0	0	0	4	0	**30**	0	0.2	1	4.5	0.25
31	0	0.5	1	5.9	-	**31**	0	0.6	1	5.1	-
32	0	0.5	1	8.8	-	**32**	0	0	0	3.3	-
33	0	0.4	1	3.8	-	**33**	0	0.5	1	2.1	-
34	0	0.6	1	5.7	-	**34**	0	1	1	3.1	-
35	0	1	1	7	-	**35**	0	0	0	6.1	-
36	0	1	1	4.5	-	**36**	0	0.8	1	2.3	-
37	0	0.8	1	6.2	-	**37**	0	0.2	1	3.6	-
38	0	0.4	1	4.3	-	**38**	0	1	1	3.1	-
39	0	0.9	1	5.5	-	**39**	0	0.8	1	5.6	-
40	0	0.5	1	6.5	0.25	**40**	0	0.9	1	2.6	0
41	0	0.3	1	6	-	**41**	0	0.5	1	6.3	-
42	0	0.1	1	6.2	-	**42**	0	0.1	1	4.5	-
43	0	0.1	1	6.4	-	**43**	0	0.1	1	3.3	-
44	0	0	0	6	-	**44**	0	0.3	1	4.1	-
45	0	0.1	1	7	-	**45**	0	0.2	1	5.1	-
46	0	0	0	7.1	-	**46**	0	0.1	1	4.5	-
47	0	0.1	1	4	-	**47**	0	0.1	1	6.1	-
48	0	0.3	1	8	-	**48**	0	0	0	5.1	-
49	0	0.6	1	3.9	-	**49**	0	0.8	1	3.1	-
50	0	0.5	1	5.3	0.5	**50**	0	1	1	7.5	0
51	0	0.8	1	3.3	-	**51**	0	1	1	5.5	-
52	0	1	1	4.7	-	**52**	0	1	1	5.5	-
53	0	0.3	1	5.4	-	**53**	0	0.5	1	1.6	-
54	0	0.5	1	3.5	-	**54**	0	0.7	1	5.1	-
55	0	0.9	1	7.9	-	**55**	0	0.5	1	7	-
56	0	0.8	1	4	-	**56**	0	0.2	1	2.5	-
57	0	0.5	1	3.2	-	**57**	0	0.5	1	5	-
58	0	0.5	1	4.5	-	**58**	0	0.6	1	5.5	-
59	0	0.6	1	4	-	**59**	0	0.1	1	4.6	-
60	0	0.4	1	6	0	**60**	0	0.5	1	3.5	0
61	0	0.4	1	5.2	-	**61**	0	0.4	1	5	-
62	0	0.3	1	5	-	**62**	0	0.5	1	3	-
63	0	0.1	1	6.4	-	**63**	0	1	1	1.1	-
64	0	0	0	6.2	-	**64**	0	0.4	1	5	-
65	0	0.2	1	4.8	-	**65**	0	0.1	1	1.5	-
66	0	0.1	1	4.7	-	**66**	0	0	0	3.1	-
67	0	0.5	1	6.4	-	**67**	0	0	0	4.5	-
68	0	0.4	1	3.7	-	**68**	0	0.4	1	2.5	-
69	0	0.4	1	8	-	**69**	0	0.8	1	5	-
70	0	0.2	1	4	0	**70**	0	0.8	1	4.1	0
71	0	0.7	1	3.8	-	**71**	0	0.5	1	5.5	-
72	0	1	1	5.2	-	**72**	0	1	1	6.5	-
73	0	0.9	1	4.9	-	**73**	0	0.1	1	4.1	-
74	0	0.8	1	6.4	-	**74**	0	0	0	4	-
75	0	0.5	1	4.1	-	**75**	0	0.7	1	4.5	-
76	0	0.4	1	3.1	-	**76**	0	0	0	3	-
77	0	0.8	1	3	-	**77**	0	0.5	1	6	-
78	0	0.7	1	4.8	-	**78**	0	0.4	1	9	-
79	0	0.9	1	5.8	-	**79**	0	0.8	1	5	-
80	0	1	1	6	0	**80**	0	0.7	1	4	0
81	0	0.8	1	8.8	-	**81**	0	0	0	5	-
82	0	0.4	1	7	-	**82**	0	0.2	1	4.3	-
83	0	0.3	1	4.7	-	**83**	0	0	0	2	-
84	0	0	0	7	-	**84**	0	0.7	1	3.5	-
85	0	0.2	1	4.6	-	**85**	0	0.8	1	5	-
86	0	0.1	1	3.2	-	**86**	0	0.2	1	3	-
87	0	0.2	1	4.3	-	**87**	0	0.8	1	5.5	-
88	0	0.3	1	5.3	-	**88**	0	0.8	1	3	-
89	0	0.1	1	4	-	**89**	0	0.2	1	2	-
90	0	0.3	1	3.4	0	**90**	0	0.7	1	5.5	0
91	0	0.4	1	4	-	**91**	0	0.8	1	4	-
92	0	0.3	1	4.5	-	**92**	0	0.5	1	3	-
93	0	0.2	1	3	-	**93**	0	1	1	6	-
94	0	0.7	1	8.2	-	**94**	0	1	1	5	-
95	0	0.3	1	5.3	-	**95**	0	1	1	6	-
96	0	0	0	6.8	-	**96**	0	0.9	1	7.5	-
97	0	0	0	5.5	-	**97**	0	0.6	1	4.5	-
98	0	0	0	4	-	**98**	0	0.5	1	5	-
99	0	0	0	7.2	-	**99**	0	0.3	1	4.5	-
100	0	0.2	1	5.2	0.25	**100**	0	0.6	1	8	0.25
Average Cic, Cip and Embed. =	**0.00**	**0.39**	**0.84**	**5.18**	**0.13**	**Average Cic, Cip and Embed. =**	**0.00**	**0.50**	**0.88**	**4.533**	**0.05**
Old Calcite Index (CI)		**0.84**				**Old Calcite Index (CI)**		**0.88**			
New Calcite Index (CI')		**0.39**				**New Calcite Index (CI')**		**0.50**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO22-1						RG_FO22-2					
2021-09-12						2021-09-12					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	4.1	-	**1**	0	0	0	2.5	-
2	0	0.1	1	2.2	-	**2**	0	0.6	1	5.3	-
3	0	0.4	1	5.1	-	**3**	0	0	0	0.9	-
4	0	0	0	3.7	-	**4**	0	0	0	1.1	-
5	0	0.3	1	2.4	-	**5**	0	0	0	1.5	-
6	0	0.3	1	2.5	-	**6**	0	0.3	1	4.1	-
7	0	0.1	1	1.9	-	**7**	0	0	0	0.6	-
8	0	0	0	1.5	-	**8**	0	0.8	1	2.5	-
9	0	0.5	1	3.1	-	**9**	0	0	0	4.5	-
10	0	0.4	1	6.1	0	**10**	0	0.1	1	4.3	0
11	0	0.2	1	2.8	-	**11**	0	0	0	3	-
12	0	0	0	2.2	-	**12**	0	0	0	4.1	-
13	0	0	0	1.2	-	**13**	0	0.7	1	2.5	-
14	0	0.1	1	2.5	-	**14**	0	0	0	2.1	-
15	0	0	0	1.1	-	**15**	0	0	0	1.2	-
16	0	0.2	1	3.2	-	**16**	0	0.2	1	1.1	-
17	0	0	0	0.8	-	**17**	0	1	1	2.5	-
18	0	0	0	3.2	-	**18**	0	0.5	1	2	-
19	0	0	0	5	-	**19**	0	0	0	1	-
20	0	0	0	1	0.5	**20**	0	0.4	1	2.1	0
21	0	0.6	1	5	-	**21**	0	0.5	1	1.5	-
22	0	0.9	1	4	-	**22**	0	0	0	1.1	-
23	0	0	0	0.5	-	**23**	0	0.6	1	2.5	-
24	0	0	0	3	-	**24**	0	0.8	1	1.1	-
25	0	0.1	1	3.4	-	**25**	0	0.5	1	3	-
26	0	0.3	1	1.5	-	**26**	0	0.8	1	3	-
27	0	0	0	4	-	**27**	0	1	1	4.1	-
28	0	0	0	2.8	-	**28**	0	0	0	2	-
29	0	0	0	3.1	-	**29**	0	0	0	1.7	-
30	0	1	1	3.1	0.25	**30**	0	0.5	1	6.5	0
31	0	0	0	4	-	**31**	0	0	0	2	-
32	0	0	0	0.9	-	**32**	0	1	1	1.5	-
33	0	0	0	1.6	-	**33**	0	0	0	1.5	-
34	0	0	0	2	-	**34**	0	0.1	1	2	-
35	0	0.1	1	2.7	-	**35**	0	0.4	1	4.1	-
36	0	0	0	4.1	-	**36**	0	0	0	1	-
37	0	0	0	1.5	-	**37**	0	0	0	1.3	-
38	0	0	0	1.4	-	**38**	0	0.5	1	2.5	-
39	0	0	0	1.4	-	**39**	0	0	0	5	-
40	0	0	0	2.5	0	**40**	0	0	0	1.5	0
41	0	0	0	1.7	-	**41**	0	0	0	3.8	-
42	0	0	0	3.5	-	**42**	0	0.5	1	4.5	-
43	0	0	0	2.5	-	**43**	0	0.2	1	2.7	-
44	0	0	0	1	-	**44**	0	0	0	0.6	-
45	0	0	0	1.6	-	**45**	0	0	0	2.5	-
46	0	0	0	2.9	-	**46**	0	0	0	0.9	-
47	0	0	0	2.3	-	**47**	0	0.4	1	3.1	-
48	0	0.1	1	1.1	-	**48**	0	0.5	1	3	-
49	0	0	0	0.4	-	**49**	0	0.3	1	1.8	-
50	0	0.1	1	2	0	**50**	0	0	0	1.5	0
51	0	0.5	1	1.5	-	**51**	0	0.5	1	3.5	-
52	0	0.7	1	3	-	**52**	0	0	0	2	-
53	0	0.3	1	1.1	-	**53**	0	0.8	1	2.2	-
54	0	0.5	1	2.1	-	**54**	0	0	0	0.6	-
55	0	0	0	1.5	-	**55**	0	-	-	0.2	-
56	0	1	1	8.5	-	**56**	0	0	0	4.1	-
57	0	0	0	2	-	**57**	0	0.6	1	3.9	-
58	0	1	1	6	-	**58**	0	0.8	1	3.8	-
59	0	0.5	1	3.7	-	**59**	0	0	0	2.9	-
60	0	0.1	1	5.1	0	**60**	0	0	0	2	0
61	0	0.4	1	3.1	-	**61**	0	0.9	1	2.9	-
62	0	0	0	6	-	**62**	0	0.6	1	2.7	-
63	0	0.1	1	2.4	-	**63**	0	1	1	2	-
64	0	0.2	1	3.5	-	**64**	0	0.7	1	3.1	-
65	0	0	0	5.5	-	**65**	0	0	0	0.5	-
66	0	0.4	1	4.4	-	**66**	0	0	0	1.9	-
67	0	0.2	1	3.1	-	**67**	0	0	0	2	-
68	0	0.1	1	3.1	-	**68**	0	0	0	0.4	-
69	0	0.8	1	2.6	-	**69**	0	0.2	1	2.3	-
70	0	0	0	2.4	0	**70**	0	0.5	1	2.2	0.5
71	0	1	1	4	-	**71**	0	0.6	1	4.6	-
72	0	0.7	1	4.6	-	**72**	0	0	0	0.7	-
73	0	0.5	1	4.4	-	**73**	0	0.4	1	2.8	-
74	0	0	0	0.9	-	**74**	0	0.2	1	1.5	-
75	0	0	0	1.1	-	**75**	0	0.4	1	1.6	-
76	0	0.5	1	3.2	-	**76**	0	0.1	1	1.5	-
77	0	0.6	1	4.3	-	**77**	0	0.1	1	1.5	-
78	0	0.8	1	3.5	-	**78**	0	0	0	0.8	-
79	0	0	0	1.3	-	**79**	0	0.1	1	1.2	-
80	0	1	1	6.5	0	**80**	0	0.2	1	1.7	0
81	0	0.4	1	4.6	-	**81**	0	1	1	5.5	-
82	0	0.5	1	1.7	-	**82**	0	0.6	1	2	-
83	0	0.3	1	2.5	-	**83**	0	1	1	3.9	-
84	0	0.1	1	1.9	-	**84**	0	0.7	1	2.6	-
85	0	0	0	1.7	-	**85**	0	0.1	1	1.1	-
86	0	0	0	6	-	**86**	0	0.3	1	3.1	-
87	0	0	0	3.3	-	**87**	0	0.1	1	1.6	-
88	0	0	0	5.4	-	**88**	0	0	0	4.1	-
89	0	0.8	1	5.4	-	**89**	0	0.2	1	4.7	-
90	0	0	0	2.2	0.25	**90**	0	0.9	1	5.1	0.5
91	0	0.1	1	3	-	**91**	0	0.5	1	2.5	-
92	0	0.7	1	3.5	-	**92**	0	0	0	1.7	-
93	0	1	1	3.3	-	**93**	0	0.4	1	1.5	-
94	0	0	0	1.3	-	**94**	0	0.3	1	4.1	-
95	0	0	0	1.5	-	**95**	0	0.5	1	1.2	-
96	0	0	0	1.7	-	**96**	0	0	0	1.2	-
97	0	1	1	3.5	-	**97**	0	1	1	3.7	-
98	0	0.5	1	2.2	-	**98**	0	-	-	0.2	-
99	0	0.2	1	2.5	-	**99**	0	0.4	1	3.1	-
100	0	0.6	1	3.4	0	**100**	0	0.1	1	1.7	0
Average Cic, Cip and Embed. =	**0.00**	**0.24**	**0.52**	**2.921**	**0.10**	**Average Cic, Cip and Embed. =**	**0.00**	**0.31**	**0.60**	**2.399**	**0.10**
Old Calcite Index (CI)		**0.52**				**Old Calcite Index (CI)**		**0.60**			
New Calcite Index (CI')		**0.24**				**New Calcite Index (CI')**		**0.31**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO22-3						RG_FO22-4					
2021-09-12						2021-09-12					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	1.5	-	**1**	0	0	0	1	-
2	0	0	0	2.3	-	**2**	0	0	0	1	-
3	0	0.5	1	3.5	-	**3**	0	0	0	5	-
4	0	1	1	10	-	**4**	0	0	0	0.6	-
5	0	0.1	1	2.5	-	**5**	0	0	0	0.5	-
6	0	0.2	1	3	-	**6**	0	0.1	1	3	-
7	0	0.4	1	3.8	-	**7**	0	0	0	0.9	-
8	0	0.3	1	3.6	-	**8**	-	0	0	0.8	-
9	0	0.5	1	4.8	-	**9**	0	0	0	1	-
10	0	0	0	2	0	**10**	0	0.2	1	4.3	0
11	0	0.9	1	5.2	-	**11**	0	0.2	1	2.5	-
12	0	0.8	1	5.2	-	**12**	0	0.8	1	3.1	-
13	0	0.7	1	5	-	**13**	0	0.2	1	3.1	-
14	0	0.5	1	4	-	**14**	0	0.6	1	3	-
15	0	1	1	4.3	-	**15**	0	0.6	1	3	-
16	0	0.8	1	3	-	**16**	0	1	1	2.7	-
17	0	0.8	1	5	-	**17**	0	0.4	1	2.3	-
18	0	0.4	1	2.2	-	**18**	0	0.6	1	2.9	-
19	0	1	1	3.3	-	**19**	0	0.4	1	3.6	-
20	0	0.8	1	4	0.5	**20**	0	0	0	1.7	0
21	0	0.9	1	2.5	-	**21**	0	0.1	1	2	-
22	0	0.6	1	3.9	-	**22**	0	0	0	2.1	-
23	0	0.8	1	5	-	**23**	0	0.2	1	2.2	-
24	0	0.8	1	2.3	-	**24**	0	0.4	1	2.5	-
25	0	0.6	1	2.5	-	**25**	0	1	1	1.5	-
26	0	0.8	1	4.5	-	**26**	0	0	0	1.3	-
27	0	0.6	1	5	-	**27**	0	0.1	1	0.9	-
28	0	0.5	1	2.4	-	**28**	0	1	1	1	-
29	0	0.9	1	3	-	**29**	0	0.4	1	4	-
30	0	0.9	1	2.6	0	**30**	0	0	0	0.6	0
31	0	0.1	1	4.2	-	**31**	0	0.5	1	5.5	-
32	0	0.3	1	3.3	-	**32**	0	0.1	1	1.1	-
33	0	0.2	1	2.5	-	**33**	0	0	0	1.3	-
34	0	0.3	1	2.2	-	**34**	0	0.4	1	3.5	-
35	0	0	0	5.2	-	**35**	0	0	0	1.1	-
36	0	1	1	3.2	-	**36**	0	0	0	1.3	-
37	0	0.8	1	2.7	-	**37**	0	0	0	3.5	-
38	0	0.5	1	4.5	-	**38**	0	0	0	0.6	-
39	-	-	-	0.2	-	**39**	0	0	0	3.5	-
40	0	0	0	2	0	**40**	0	0	0	3.1	0
41	0	0	0	1.2	-	**41**	0	0.3	1	3.6	-
42	0	0	0	1.8	-	**42**	0	0	0	2	-
43	0	0	0	1	-	**43**	0	0.3	1	2.6	-
44	0	-	-	0.2	-	**44**	0	0.1	1	1.5	-
45	0	0	0	2.2	-	**45**	0	0	0	3.1	-
46	0	0	0	1.3	-	**46**	0	1	1	3.2	-
47	0	0	0	6.4	-	**47**	0	0	0	2.5	-
48	0	0	0	2.5	-	**48**	0	0	0	1.3	-
49	0	0	0	2.5	-	**49**	0	0	0	5	-
50	0	0	0	3	0	**50**	0	0	0	1.1	0
51	0	0	0	3.1	-	**51**	0	0.2	1	2.3	-
52	0	0	0	3.4	-	**52**	0	0	0	2.1	-
53	0	0	0	2.8	-	**53**	0	0	0	4.5	-
54	0	0	0	4.2	-	**54**	0	0	0	1.5	-
55	0	0	0	3.1	-	**55**	0	0	0	3	-
56	0	0	0	4.1	-	**56**	0	0	0	1.5	-
57	0	0	0	2.3	-	**57**	0	0	0	1.2	-
58	0	0	0	3.1	-	**58**	0	0	0	1.9	-
59	0	0	0	2.4	-	**59**	0	0	0	4	-
60	0	0	0	3.2	0	**60**	0	0.5	1	4.5	0
61	0	0	0	5	-	**61**	0	0.1	1	2.1	-
62	0	0	0	1.5	-	**62**	0	0.5	1	2.5	-
63	0	0	0	0.8	-	**63**	0	0.5	1	3	-
64	0	0	0	3.4	-	**64**	0	0.2	1	2.1	-
65	0	0	0	2.5	-	**65**	0	0.8	1	5	-
66	0	0	0	3.6	-	**66**	0	0.7	1	4	-
67	0	0	0	3.2	-	**67**	0	1	1	4.2	-
68	0	0.7	1	2.2	-	**68**	0	0.1	1	2.1	-
69	0	0	0	2	-	**69**	0	0.2	1	2.5	-
70	0	0	0	3.8	0	**70**	0	0.5	1	4.5	0.25
71	0	-	-	0.2	-	**71**	0	0.6	1	2.5	-
72	0	0.5	1	3.5	-	**72**	0	1	1	3	-
73	0	0	0	3.1	-	**73**	0	0.2	1	1.5	-
74	0	0	0	2.6	-	**74**	0	0	0	2.6	-
75	0	0	0	3.7	-	**75**	0	0	0	1.8	-
76	0	0.5	1	5.3	-	**76**	0	0.4	1	3	-
77	0	0.9	1	2.5	-	**77**	0	0	0	0.6	-
78	0	0.5	1	5	-	**78**	0	0.4	1	2.1	-
79	0	0	0	1.5	-	**79**	0	0.5	1	3	-
80	0	0.8	1	3.2	0.25	**80**	0	0	0	1.5	0
81	0	0.5	1	3.2	-	**81**	0	0.6	1	3	-
82	0	0.8	1	3.3	-	**82**	0	0	0	1	-
83	0	0	0	4.2	-	**83**	0	0.8	1	2	-
84	0	0	0	4.3	-	**84**	0	0	0	1.1	-
85	0	0	0	4	-	**85**	0	0	0	2.9	-
86	0	0	0	2.5	-	**86**	0	-	-	0.2	-
87	0	0	0	2.7	-	**87**	0	0.2	1	3	-
88	0	0	0	2.5	-	**88**	0	0	0	3.5	-
89	0	0.5	1	1.4	-	**89**	0	0	0	2	-
90	0	0.1	1	3.2	0	**90**	0	0	0	2.1	0
91	0	0	0	3	-	**91**	0	0	0	1.3	-
92	0	0	0	4	-	**92**	0	0	0	2	-
93	0	0.3	1	2.2	-	**93**	0	0	0	1.1	-
94	0	0	0	2.3	-	**94**	0	0.2	1	3.2	-
95	0	0	0	3	-	**95**	0	0.2	1	2.5	-
96	0	0.1	1	0.6	-	**96**	0	0	0	1.1	-
97	0	0	0	3.7	-	**97**	0	0	0	2	-
98	0	0	0	1.6	-	**98**	0	0	0	1.6	-
99	0	0.8	1	1.7	-	**99**	0	0	0	1.1	-
100	0	0.4	1	3.3	0	**100**	0	0	0	3	0
Average Cic, Cip and Embed. =	**0.00**	**0.30**	**0.49**	**3.11**	**0.08**	**Average Cic, Cip and Embed. =**	**0.00**	**0.22**	**0.48**	**2.343**	**0.03**
Old Calcite Index (CI)		**0.49**				**Old Calcite Index (CI)**		**0.48**			
New Calcite Index (CI')		**0.30**				**New Calcite Index (CI')**		**0.22**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO22-5						RG_FOUEW-1					
2021-09-12						2021-09-11					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	3.2	-	**1**	0	0.4	1	5.5	-
2	0	0	0	2.1	-	**2**	0	0.4	1	5	-
3	0	0.1	1	3.6	-	**3**	0	0.4	1	9	-
4	0	0	0	2.1	-	**4**	0	0.1	1	4	-
5	0	0.5	1	2.2	-	**5**	0	1	1	5	-
6	0	0	0	3.6	-	**6**	0	0.5	1	6.5	-
7	0	0	0	1.9	-	**7**	0	0.5	1	4.7	-
8	0	0.1	1	1	-	**8**	0	0.3	1	12.1	-
9	0	0	0	1.2	-	**9**	0	0.4	1	5	-
10	0	0.5	1	1.4	0.5	**10**	0	0.5	1	9.7	0
11	0	0.2	1	2.5	-	**11**	0	0.3	1	5.6	-
12	0	0.3	1	1.2	-	**12**	0	0.5	1	11.3	-
13	0	0.7	1	1.6	-	**13**	0	0.2	1	6.5	-
14	0	0.7	1	1.7	-	**14**	0	0.2	1	5	-
15	0	0.3	1	2.9	-	**15**	0	0.5	1	4	-
16	0	0.2	1	1.8	-	**16**	0	0.2	1	3.5	-
17	0	0.4	1	3.7	-	**17**	0	0.4	1	3.5	-
18	0	0.1	1	2.1	-	**18**	0	0.5	1	6.1	-
19	0	0.6	1	3.1	-	**19**	0	0.1	1	5.1	-
20	0	0.8	1	3.5	0.5	**20**	0	0.1	1	3	0
21	0	0.7	1	4.5	-	**21**	0	0.4	1	6	-
22	0	0.4	1	3.6	-	**22**	0	0.2	1	7.1	-
23	0	0.2	1	4	-	**23**	0	0.1	1	5.1	-
24	0	0.8	1	3.1	-	**24**	0	0.9	1	10.1	-
25	0	0.8	1	2.6	-	**25**	0	0.4	1	6.1	-
26	0	0.3	1	2.9	-	**26**	0	0.4	1	8.1	-
27	0	0	0	1.6	-	**27**	0	0.3	1	10.5	-
28	0	0.9	1	2.6	-	**28**	0	0.2	1	7.1	-
29	0	0	0	0.9	-	**29**	0	0	0	7.1	-
30	0	0.2	1	1.3	0.25	**30**	0	0	0	1.1	0
31	0	0	0	2.5	-	**31**	0	0	0	1.4	-
32	0	0	0	1.2	-	**32**	0	0.8	1	5.4	-
33	0	0.4	1	3.6	-	**33**	0	0.4	1	6.1	-
34	0	0.4	1	1.3	-	**34**	0	0.8	1	6.1	-
35	0	0.9	1	4.2	-	**35**	0	0.2	1	5.1	-
36	0	0.5	1	3.4	-	**36**	0	0.6	1	5.5	-
37	0	0.2	1	2.9	-	**37**	0	0	0	7.1	-
38	0	0.1	1	2.2	-	**38**	0	0.4	1	6.5	-
39	0	0.1	1	1.1	-	**39**	0	0.6	1	5.1	-
40	0	0	0	3.2	0.5	**40**	0	0.9	1	8.5	0
41	0	0	0	1.5	-	**41**	0	0.6	1	7.5	-
42	0	0.1	1	3.1	-	**42**	0	0.5	1	8.6	-
43	0	0.2	1	3.9	-	**43**	0	0.4	1	6.1	-
44	0	0	0	3	-	**44**	0	0.6	1	9.5	-
45	0	0.3	1	3.1	-	**45**	0	1	1	9.1	-
46	0	0.5	1	3	-	**46**	0	0.2	1	8	-
47	0	0	0	1.5	-	**47**	0	0.1	1	4.1	-
48	0	0	0	0.8	-	**48**	0	0.4	1	6.6	-
49	0	0.4	1	5	-	**49**	0	0.1	1	4.5	-
50	0	0	0	5.1	0	**50**	0	0.3	1	7	0
51	0	0	0	1.1	-	**51**	0	0.2	1	7.5	-
52	0	0.3	1	3	-	**52**	0	0	0	1	-
53	0	0.3	1	4.5	-	**53**	0	0.1	1	3.5	-
54	0	0	0	2.5	-	**54**	0	0.1	1	8.1	-
55	0	0.2	1	2	-	**55**	0	0.2	1	8.2	-
56	0	0	0	0.5	-	**56**	0	0	0	7.6	-
57	0	0.4	1	3.1	-	**57**	0	0.2	1	6.1	-
58	0	0.1	1	2.7	-	**58**	0	0.1	1	3.5	-
59	0	0	0	2.5	-	**59**	0	0.4	1	6.1	-
60	0	0.1	1	1.8	0	**60**	0	0.2	1	6.1	0.25
61	0	0.1	1	5	-	**61**	0	0	0	1.6	-
62	0	0	0	4	-	**62**	0	0.5	1	11.5	-
63	0	0.2	1	1.5	-	**63**	0	0.5	1	9.1	-
64	0	0.4	1	0.1	-	**64**	0	0.2	1	8.6	-
65	0	0.3	1	3.5	-	**65**	0	0.2	1	4.1	-
66	0	0	0	3	-	**66**	0	0.7	1	8.1	-
67	0	0.5	1	5	-	**67**	0	0.1	1	10	-
68	0	0.4	1	4.5	-	**68**	0	0	0	8.1	-
69	0	0.2	1	3.1	-	**69**	0	0.1	1	7.1	-
70	0	0.4	1	1.5	0	**70**	0	0.8	1	15.5	0
71	0	0	0	4	-	**71**	0	0.6	1	7	-
72	0	0.5	1	3	-	**72**	0	0.6	1	9	-
73	0	0.1	1	1.5	-	**73**	0	0.4	1	10	-
74	0	0.8	1	3.4	-	**74**	0	0.4	1	3.5	-
75	0	0.1	1	2	-	**75**	0	0.2	1	4.5	-
76	0	0	0	3.5	-	**76**	0	0	0	5	-
77	0	0.2	1	2.1	-	**77**	0	0.4	1	2.5	-
78	0	0.2	1	4.2	-	**78**	0	0.2	1	5.1	-
79	0	0.3	1	2.7	-	**79**	0	0.4	1	5.5	-
80	0	0.1	1	3.2	0	**80**	0	0	0	0.5	0
81	0	0.2	1	4	-	**81**	0	0.4	1	8.4	-
82	0	0.6	1	3.5	-	**82**	0	0	0	3.1	-
83	0	0	0	6.2	-	**83**	0	0.2	1	3	-
84	0	0.1	1	1	-	**84**	0	0	0	8	-
85	0	0.1	1	2	-	**85**	0	0.2	1	9.3	-
86	0	0	0	4.3	-	**86**	0	0.2	1	5.1	-
87	0	0	0	1.5	-	**87**	0	0	0	1.5	-
88	0	0.1	1	1.5	-	**88**	0	0	0	3	-
89	0	0	0	5.5	-	**89**	0	0.2	1	7.1	-
90	0	0.1	1	1.4	0	**90**	0	0.4	1	10.5	0
91	0	0.4	1	5.2	-	**91**	0	0.2	1	8	-
92	0	0.5	1	4.2	-	**92**	0	0.5	1	14.5	-
93	0	0.8	1	3	-	**93**	0	0.2	1	8.5	-
94	0	0.5	1	4.4	-	**94**	0	0	0	5	-
95	0	0.5	1	3.5	-	**95**	0	0.3	1	10	-
96	0	0.5	1	4	-	**96**	0	0	0	4	-
97	0	0.6	1	7.1	-	**97**	0	0.2	1	5	-
98	0	0	0	1.1	-	**98**	0	0.2	1	3.1	-
99	0	0.4	1	3.7	-	**99**	0	0	0	7.5	-
100	0	0	0	2	0	**100**	0	0.1	1	5	0
Average Cic, Cip and Embed. =	**0.00**	**0.26**	**0.70**	**2.827**	**0.18**	**Average Cic, Cip and Embed. =**	**0.00**	**0.30**	**0.83**	**6.398**	**0.03**
Old Calcite Index (CI)		**0.70**				**Old Calcite Index (CI)**		**0.83**			
New Calcite Index (CI')		**0.26**				**New Calcite Index (CI')**		**0.30**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.9: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUEW-2						RG_FOUEW-3					
2021-09-11						2021-09-11					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	0	0	0	11.4	-	**1**	0	0.5	1	14	-
2	0	0.9	1	7.9	-	**2**	0	0.4	1	12.5	-
3	0	0.4	1	5.9	-	**3**	0	0.5	1	11.7	-
4	0	0.3	1	9.6	-	**4**	0	0.4	1	11	-
5	0	0.5	1	8.6	-	**5**	0	0.5	1	12	-
6	0	0.6	1	8.7	-	**6**	0	0.4	1	9	-
7	0	0	0	1	-	**7**	0	0.3	1	12	-
8	0	0.9	1	7	-	**8**	0	0.2	1	8.8	-
9	0	0.8	1	7	-	**9**	0	0	0	9	-
10	0	0	0	9	0	**10**	0	0	0	7.5	0.25
11	0	0.3	1	7.9	-	**11**	0	0.1	1	9	-
12	0	0.2	1	11.1	-	**12**	0	0.2	1	8.5	-
13	0	0.2	1	11.3	-	**13**	0	0.1	1	8.3	-
14	0	0	0	3.1	-	**14**	0	0	0	2.5	-
15	0	0.1	1	5	-	**15**	0	0.2	1	5	-
16	0	0.6	1	7.3	-	**16**	0	0	0	2.8	-
17	0	0.5	1	6.1	-	**17**	0	0	0	6.5	-
18	0	0.2	1	4.1	-	**18**	0	0	0	3	-
19	0	0.1	1	4.1	-	**19**	0	0.4	1	21	-
20	0	0	0	7.5	0	**20**	0	0.3	1	14.3	0.25
21	0	0.3	1	7.1	-	**21**	0	0.5	1	10.5	-
22	0	0.1	1	8	-	**22**	0	0	0	12.3	-
23	0	0.4	1	7.3	-	**23**	0	0.5	1	15.5	-
24	0	0.1	1	6.5	-	**24**	0	0.5	1	7	-
25	0	0.2	1	7.1	-	**25**	0	0.8	1	7.5	-
26	0	0.2	1	6.6	-	**26**	0	0	0	8.5	-
27	0	0.3	1	9.1	-	**27**	0	0	0	4.5	-
28	0	0.1	1	3.2	-	**28**	0	0	0	4	-
29	0	0.9	1	12	-	**29**	0	0.8	1	9.5	-
30	0	0.6	1	9.1	0.25	**30**	0	0.7	1	9.5	0
31	0	0.1	1	6.1	-	**31**	0	0.4	1	5.3	-
32	0	0.6	1	6.1	-	**32**	0	0.2	1	7.8	-
33	0	0.5	1	6.4	-	**33**	0	0	0	5	-
34	0	0.4	1	5	-	**34**	0	0	0	3.4	-
35	0	0.8	1	6.3	-	**35**	0	0	0	7.7	-
36	0	0.6	1	7.3	-	**36**	0	0	0	6	-
37	0	0.2	1	5.5	-	**37**	0	0.8	1	10.5	-
38	0	0.4	1	11.3	-	**38**	0	0	0	6.5	-
39	0	0.6	1	6	-	**39**	0	0.7	1	9	-
40	0	0.5	1	5	0	**40**	0	0.7	1	10.5	0.25
41	0	0.2	1	5.5	-	**41**	0	0.7	1	9	-
42	0	0.3	1	6.5	-	**42**	0	0.1	1	8.5	-
43	0	0.3	1	7.1	-	**43**	0	0.4	1	7.5	-
44	0	0.1	1	7.1	-	**44**	0	0.6	1	10	-
45	0	0.2	1	9	-	**45**	0	0	0	5	-
46	0	0	0	4	-	**46**	0	0.5	1	8	-
47	0	0.3	1	6.4	-	**47**	0	0	0	4.5	-
48	0	0.2	1	8.1	-	**48**	0	0.4	1	20	-
49	0	0.1	1	4.1	-	**49**	0	0.3	1	8	-
50	0	0	0	10.3	0	**50**	0	0	0	8.1	0
51	0	0.1	1	7.5	-	**51**	0	0	0	12	-
52	0	0	0	7.6	-	**52**	0	0.5	1	9	-
53	0	0	0	9.1	-	**53**	0	0.5	1	7	-
54	0	0	0	6	-	**54**	0	0.4	1	9	-
55	0	0	0	8.4	-	**55**	0	0.8	1	8.5	-
56	0	0	0	9.3	-	**56**	0	0.5	1	8	-
57	0	0	0	9.4	-	**57**	0	0	0	8	-
58	0	0	0	6.1	-	**58**	0	0.6	1	11	-
59	0	0	0	5.1	-	**59**	0	0.6	1	10.5	-
60	0	0	0	4.9	0	**60**	0	0.4	1	8	0.25
61	0	0	0	5	-	**61**	0	0.8	1	13	-
62	0	0	0	1.1	-	**62**	0	0	0	11.5	-
63	0	0	0	9.4	-	**63**	0	0	0	6.5	-
64	0	0	0	4.2	-	**64**	0	0.2	1	13	-
65	0	0	0	7.3	-	**65**	0	0.1	1	11	-
66	0	0	0	6.1	-	**66**	0	0	0	7	-
67	0	0	0	6.2	-	**67**	0	0	0	5.3	-
68	0	0	0	9.3	-	**68**	0	0	0	6.2	-
69	0	0	0	4.1	-	**69**	0	0	0	6	-
70	0	0	0	2.1	0.25	**70**	0	0.5	1	13	0
71	0	0	0	4.3	-	**71**	0	0.5	1	15	-
72	0	0.1	1	3.1	-	**72**	0	0.8	1	10.4	-
73	0	0.1	1	4.9	-	**73**	0	0	0	14	-
74	0	0.2	1	4.9	-	**74**	0	0	0	5	-
75	0	0.1	1	3.5	-	**75**	0	0	0	8	-
76	0	0.5	1	9.2	-	**76**	0	0	0	6	-
77	0	0.8	1	8.3	-	**77**	0	0.1	1	7	-
78	0	0.8	1	11	-	**78**	0	0.1	1	11	-
79	0	0.5	1	8.4	-	**79**	0	0	0	7.5	-
80	0	0.5	1	8.5	0	**80**	0	0	0	8	0
81	0	0.5	1	9	-	**81**	0	0	0	6	-
82	0	0.4	1	5.5	-	**82**	0	0	0	10	-
83	0	0.1	1	3.1	-	**83**	0	0.4	1	9.2	-
84	0	0	0	4.5	-	**84**	0	0.1	1	9	-
85	0	0.1	1	7.1	-	**85**	0	0	0	12	-
86	0	0.2	1	11.1	-	**86**	0	0	0	7.2	-
87	0	0.2	1	7.5	-	**87**	0	0	0	7	-
88	0	0.3	1	9	-	**88**	0	0	0	5.3	-
89	0	0.5	1	7.1	-	**89**	0	0	0	3	-
90	0	0	0	5	0	**90**	0	0	0	7.8	0
91	0	0	0	4.4	-	**91**	0	0	0	4	-
92	0	0.5	1	8.1	-	**92**	0	0.1	1	11.5	-
93	0	0	0	14.4	-	**93**	0	0	0	7.3	-
94	0	0	0	6.5	-	**94**	0	0	0	6.5	-
95	0	0	0	6.2	-	**95**	0	0	0	6.4	-
96	0	0	0	7	-	**96**	0	0	0	6	-
97	0	0	0	5.5	-	**97**	0	0	0	5.6	-
98	0	0	0	6.2	-	**98**	0	0	0	6.5	-
99	0	0	0	3.4	-	**99**	0	0	0	4.8	-
100	0	0	0	8.2	0	**100**	0	0	0	10	0
Average Cic, Cip and Embed. =	**0.00**	**0.23**	**0.62**	**6.858**	**0.05**	**Average Cic, Cip and Embed. =**	**0.00**	**0.22**	**0.51**	**8.58**	**0.10**
Old Calcite Index (CI)		**0.62**				**Old Calcite Index (CI)**		**0.51**			
New Calcite Index (CI')		**0.23**				**New Calcite Index (CI')**		**0.22**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.10: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, September 2021

Station Parameters		Reference		Mine-Exposed						
		RG_HENUP	RG_FO26	RG_FODHE	RG_FOUCL	RG_FOUNGD	RG_FODNGD	RG_MP1	RG_FOUSH	RG_FOUKI
Station 1	Easting	655826	653039	651432	650770	650869	650967	651130	650869	651801
	Northing	5567698	5569641	5565524	5564395	5563476	5563155	5562407	5560954	5559918
	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21
	Number of Jars	1	2	1	1	1	1	1	1	1
	Total Kick Distance (m)	15	12	12	-	10	17	10	15	16
	Number of Transects	4	1.5	2	-	5	4	2	1.5	2
Station 2	Easting	655762	653044	651384	650776	650858	650883	651205	650851	651874
	Northing	5567705	5569594	5565491	5564356	5563530	5563176	5562470	5561081	5559771
	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21
	Number of Jars	1	1	1	1	1	1	1	1	1
	Total Kick Distance (m)	15	12	12	10	15	15	15	15	16
	Number of Transects	4	1.5	2.5	3	9	5	3	1.5	1
Station 3	Easting	655717	653033	651313	650764	650873	650873	651277	650849	651883
	Northing	5567672	5569547	5565423	5564326	5563575	5563263	5562510	5561117	5559717
	Date	16-Sep-21	16-Sep-21	13-Sep-21	13-Sep-21	17-Sep-21	17-Sep-21	15-Sep-21	16-Sep-21	20-Sep-21
	Number of Jars	1	1	1	1	1	2	1	1	1
	Total Kick Distance (m)	15	12	14	12	16	15	10	17	-
	Number of Transects	2.5	1.5	3.5	3	5	3	1	1.5	-

Note: "-" indicates no data available.

Table G.10: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, September 2021

Station Parameters		Mine-Exposed								
		RG_FOBKS	RG_SCOUTDS	RG_FOBSC	RG_FOBCP	RG_FRCP1SW	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Station 1	Easting	652048	652267	652315	652858	653310	653892	653905	654779	656268
	Northing	5558743	5558531	5558237	5557143	5556284	5555944	5555077	5553682	5551878
	Date	9-Sep-21	14-Sep-21	10-Sep-21	14-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Number of Jars	1	1	1	1	1	2	2	2	2
	Total Kick Distance (m)	20	18	15	15	12	15	20	15	20
	Number of Transects	3	2.5	1.5	1.75	4	1.5	6	1	5
Station 2	Easting	652042	652309	652362	652888	653382	653895	653864	654763	656321
	Northing	5558711	5558499	5558167	5557138	5556199	5555882	5555061	5553637	5551864
	Date	9-Sep-21	14-Sep-21	10-Sep-21	14-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Number of Jars	1	2	1	2	1	1	2	1	1
	Total Kick Distance (m)	20	10	18	18	12	15	18	18	18
	Number of Transects	2	3	5	2.5	3	1.5	6	0.75	4
Station 3	Easting	652070	652282	652409	652920	653444	653865	653844	654809	656362
	Northing	5558657	5558419	5558101	5557082	5556183	5555859	5555047	5553607	5551878
	Date	9-Sep-21	14-Sep-21	10-Sep-21	13-Sep-21	15-Sep-21	19-Sep-21	11-Sep-21	12-Sep-21	11-Sep-21
	Number of Jars	1	1	2	1	1	1	1	2	1
	Total Kick Distance (m)	25	15	30	18	12	12	20	10	20
	Number of Transects	7	3	2	3	3	3	4	1	3

Note: "-" indicates no data available.

Table G.11: Visual Periphyton Coverage Scores, FRO LAEMP, September 2021

Area Type	Biological Area Code	Station					Mean	Standard Deviation
		1	2	3	4	5		
Reference	RG_HENUP	3	3	3	3	3	3.0	0.00
	RG_FO26	3	4	4	3	4	3.6	0.55
	RG_UFR1	2	2	2	2	2	2.0	0.00
Mine-Exposed	RG_FRSCH2	2	2	2	2	2	2.0	0.00
	RG_FRGHSC	-	-	-	-	-	-	-
	RG_FODHE	1	2	2	2	2	1.8	0.45
	RG_FOUCL	2	3	3	3	2	2.6	0.55
	RG_FOUNGD	2	2	2	2	2	2.0	0.00
	RG_FODNGD	3	3	3	3	3	3.0	0.00
	RG_MP1	2	2	2	2	2	2.0	0.00
	RG_FOUSH	2	2	3	2	3	2.4	0.55
	RG_FOUKI	3	3	3	3	3	3.0	0.00
	RG_FOBKS	1	1	3	1	1	1.4	0.89
	RG_SCOUTDS	2	3	3	3	2	2.6	0.55
	RG_FOBSC	2	3	2	3	1	2.2	0.84
	RG_FOBCP	3	3	3	3	3	3.0	0.00
	RG_FRCP1SW	1	2	3	2	2	2.0	0.71
	RG_FRUPO	2	2	3	2	3	2.4	0.55
	RG_FODPO	1	1	2	1	2	1.4	0.55
	RG_FO22	1	1	1	1	1	1.0	0.00
	RG_FOUEW	1	2	1	2	2	1.6	0.55

Note: "-" indicates no data.

Table G.12: **Hess Sample Collection from Fording River, FRO LAEMP, 2021**

Area	Replicate	Date	Associated K&S Sample	Easting	Northing	Depth (cm)	Flow (m/s)
RG_HENUP	1	16-Sep-21	3	655706	5567668	21.5	0.402
RG_HENUP	2	16-Sep-21	3	655723	5567677	19.5	0.428
RG_HENUP	3	16-Sep-21	2	655754	5567703	19	0.391
RG_HENUP	4	16-Sep-21	2	655782	5567705	19.5	0.694
RG_HENUP	5	16-Sep-21	2	655762	5567709	16	0.638
RG_HENUP	6	16-Sep-21	1	655836	5567699	24	0.653
RG_HENUP	7	16-Sep-21	1	655818	5567700	16.5	0.571
RG_HENUP	8	16-Sep-21	1	655833	5567690	25	0.59
RG_HENUP	9	16-Sep-21	1	655845	5567693	30	0.539
RG_HENUP	10	16-Sep-21	1	655854	5567695	29	0.387
RG_FO26	1	16-Sep-21	1	653048	5569614	24.5	0.28
RG_FO26	2	16-Sep-21	1	653048	5569614	21	0.297
RG_FO26	3	16-Sep-21	1	653046	5569606	19	0.303
RG_FO26	4	16-Sep-21	2	653045	5569606	23.5	0.267
RG_FO26	5	16-Sep-21	2	653044	5569577	20.5	0.266
RG_FO26	6	16-Sep-21	2	653044	5569577	20	0.263
RG_FO26	7	16-Sep-21	2	653044	5569577	18.5	0.257
RG_FO26	8	16-Sep-21	3	653037	5569569	20	0.395
RG_FO26	9	16-Sep-21	3	653031	5569533	20.5	0.348
RG_FO26	10	16-Sep-21	3	653033	5569533	21	0.409
RG_FOUCL	1	14-Sep-21	1	650813	5564572	21	0.426
RG_FOUCL	2	14-Sep-21	1	650815	5564549	24.5	0.439
RG_FOUCL	3	14-Sep-21	1	650815	5564549	24	0.37
RG_FOUCL	4	14-Sep-21	2	650831	5564483	17	0.413
RG_FOUCL	5	14-Sep-21	2	650816	5564467	24.5	0.279
RG_FOUCL	6	14-Sep-21	2	650816	5564467	25	0.319
RG_FOUCL	7	14-Sep-21	3	650787	5564382	16.5	0.599
RG_FOUCL	8	14-Sep-21	3	650779	5564392	15	0.358
RG_FOUCL	9	14-Sep-21	3	650786	5564375	17.5	0.557
RG_FOUCL	10	14-Sep-21	3	650785	5564369	24.5	0.22
RG_FOUNGD	1	17-Sep-21	3	650872	5563571	24	0.12
RG_FOUNGD	2	17-Sep-21	2	650858	5563520	18.5	0.301
RG_FOUNGD	3	17-Sep-21	3	650862	5563550	24	0.562
RG_FOUNGD	4	17-Sep-21	2	650862	5563499	11	0.456
RG_FOUNGD	5	17-Sep-21	2	650867	5563496	10	0.342
RG_FOUNGD	6	17-Sep-21	1	650875	5563471	25	0.303
RG_FOUNGD	7	17-Sep-21	1	650878	5563468	17.5	0.117
RG_FOUNGD	8	17-Sep-21	1	650880	5563469	31	0.116
RG_FOUNGD	9	17-Sep-21	2	650865	5563508	14	0.324
RG_FOUNGD	10	17-Sep-21	2	650862	5563523	13	0.229
RG_FOUKI	1	20-Sep-21	1	651802	5559973	23	0.453
RG_FOUKI	2	20-Sep-21	1	651808	5559970	26	0.378
RG_FOUKI	3	20-Sep-21	2	651864	5559774	23.5	0.507
RG_FOUKI	4	20-Sep-21	2	651870	5559763	24.5	0.328
RG_FOUKI	5	20-Sep-21	2	651870	5559769	25	0.578

Table G.12: **Hess Sample Collection from Fording River, FRO LAEMP, 2021**

Area	Replicate	Date	Associated K&S Sample	Easting	Northing	Depth (cm)	Flow (m/s)
RG_FOUKI	6	20-Sep-21	2	651876	5559760	25	0.365
RG_FOUKI	7	20-Sep-21	3	651884	5559744	20	0.56
RG_FOUKI	8	20-Sep-21	3	651885	5559738	21	0.598
RG_FOUKI	9	20-Sep-21	3	651884	5559734	18.5	0.28
RG_FOUKI	10	20-Sep-21	3	651885	5559728	19.5	0.377
RG_FOBKS	1	8-Sep-21	2	652043	5558719	19.1	0.33
RG_FOBKS	2	10-Sep-21	2	652045	5558714	22	0.424
RG_FOBKS	3	10-Sep-21	1	652030	5558766	25	0.305
RG_FOBKS	4	10-Sep-21	1	652040	5558757	24	0.24
RG_FOBKS	5	10-Sep-21	2	652047	5558707	18.1	0.462
RG_FOBKS	6	10-Sep-21	2	652049	5558698	22.1	0.525
RG_FOBKS	7	10-Sep-21	2	652055	5558692	23.5	0.69
RG_FOBKS	8	10-Sep-21	2	652048	5558686	24	0.303
RG_FOBKS	9	10-Sep-21	3	652064	5558664	24.2	0.462
RG_FOBKS	10	10-Sep-21	3	652059	5558669	26.8	0.563
RG_SCOUTDS	1	14-Sep-21	1	652275	5558536	19.9	0.666
RG_SCOUTDS	2	14-Sep-21	1	652223	5558535	27.2	0.286
RG_SCOUTDS	3	14-Sep-21	1	652265	5558527	32.8	0.311
RG_SCOUTDS	4	14-Sep-21	1	652315	5558488	20.3	0.301
RG_SCOUTDS	5	14-Sep-21	2	652316	5558473	20.6	0.727
RG_SCOUTDS	6	14-Sep-21	2	652312	5558445	23.5	0.666
RG_SCOUTDS	7	14-Sep-21	3	652301	5558429	27.8	0.353
RG_SCOUTDS	8	14-Sep-21	3	652296	5558427	23.5	0.769
RG_SCOUTDS	9	14-Sep-21	3	652288	5558419	20.9	0.169
RG_SCOUTDS	10	14-Sep-21	3	652303	5558405	22.5	0.2
RG_FOBSC	1	10-Sep-21	3	652415	5558099	22.5	0.496
RG_FOBSC	2	10-Sep-21	2	652371	5558160	30.5	0.452
RG_FOBSC	3	13-Sep-21	2	652369	5558163	30.5	0.423
RG_FOBSC	4	13-Sep-21	3	652419	5558095	27	0.466
RG_FOBSC	5	13-Sep-21	2	652325	5558193	22.5	0.323
RG_FOBSC	6	13-Sep-21	2	652332	5558190	23.5	0.414
RG_FOBSC	7	13-Sep-21	1	652308	5558238	30.5	0.705
RG_FOBSC	8	13-Sep-21	1	652306	5558247	28	0.407
RG_FOBSC	9	13-Sep-21	1	652308	5558250	31	0.287
RG_FOBSC	10	13-Sep-21	1	652310	5558226	23	0.349
RG_FOBCP	1	13-Sep-21	5	652928	5556979	20.5	0.39
RG_FOBCP	2	13-Sep-21	5	652923	5556990	23	0.342
RG_FOBCP	3	13-Sep-21	4	652921	5556998	23	0.328
RG_FOBCP	4	13-Sep-21	4	652923	5557042	32.5	0.364
RG_FOBCP	5	13-Sep-21	3	652917	5557081	21	0.645
RG_FOBCP	6	13-Sep-21	3	652915	5557091	21.5	0.492
RG_FOBCP	7	13-Sep-21	3	652916	5557089	23	0.405
RG_FOBCP	8	14-Sep-21	2	652883	5557143	28	0.568
RG_FOBCP	9	14-Sep-21	2	652877	5557143	27.5	0.462
RG_FOBCP	10	14-Sep-21	1	652867	5557144	30.5	0.487

Table G.12: **Hess Sample Collection from Fording River, FRO LAEMP, 2021**

Area	Replicate	Date	Associated K&S Sample	Easting	Northing	Depth (cm)	Flow (m/s)
RG_FRCP1SW	1	15-Sep-21	1	653305	5556258	18	0.359
RG_FRCP1SW	2	15-Sep-21	1	653304	5556258	15	0.265
RG_FRCP1SW	3	15-Sep-21	1	653298	5556212	17.5	0.299
RG_FRCP1SW	4	15-Sep-21	2	653298	5556207	26.5	0.594
RG_FRCP1SW	5	15-Sep-21	2	653382	5556199	10	0.452
RG_FRCP1SW	6	15-Sep-21	2	353382	5556199	16.5	0.629
RG_FRCP1SW	7	15-Sep-21	3	653444	5556176	17.5	0.416
RG_FRCP1SW	8	15-Sep-21	3	653444	5556171	12.5	0.602
RG_FRCP1SW	9	15-Sep-21	3	653444	5556171	13.5	0.514
RG_FRCP1SW	10	15-Sep-21	3	653444	5556171	17.5	0.782
RG_FRUPO	1	19-Sep-21	1	653890	5555954	25	0.567
RG_FRUPO	2	19-Sep-21	1	653890	5555954	22	0.546
RG_FRUPO	3	19-Sep-21	1	653892	5555949	20	0.614
RG_FRUPO	4	19-Sep-21	1	653892	5555949	15	0.434
RG_FRUPO	5	19-Sep-21	2	653900	5555845	21.5	0.327
RG_FRUPO	6	19-Sep-21	2	653900	5555845	27.5	0.447
RG_FRUPO	7	19-Sep-21	3	653860	5555851	29	0.87
RG_FRUPO	8	19-Sep-21	3	653860	5555851	18.5	0.309
RG_FRUPO	9	19-Sep-21	3	653865	5555853	15.5	0.581
RG_FRUPO	10	19-Sep-21	3	653865	5555853	22.5	0.224
RG_FO22	1	12-Sep-21	1	654792	5553677	20	0.459
RG_FO22	2	12-Sep-21	1	654782	5553685	29	0.617
RG_FO22	3	12-Sep-21	2	654762	5553633	20.5	0.438
RG_FO22	4	12-Sep-21	2	654768	5553649	29	0.244
RG_FO22	5	12-Sep-21	3	654814	5553607	29	0.16
RG_FO22	6	12-Sep-21	3	654815	5553606	25.5	0.577
RG_FO22	7	12-Sep-21	4	654821	5553608	34	0.353
RG_FO22	8	12-Sep-21	4	654830	5553599	32	0.415
RG_FO22	9	12-Sep-21	5	654833	5553546	28.5	0.363
RG_FO22	10	12-Sep-21	5	654835	5553547	28	0.35

Table G.13: Habitat Information Associated with Mine-exposed and Reference Areas Sampled during the Benthic Invertebrate Survey FRO LAEMP, 2021

Station ID		Reference	Mine-Exposed	Mine-Exposed	Mine-Exposed	Mine-Exposed	Mine-Exposed	Mine-Exposed	Mine-Exposed
		RG_UFR1	**RG_FOUKI**	**RG_SCOUTDS**	**RG_FOBSC**	**RG_FRUPO**	**RG_FODPO**	**RG_FO22**	**RG_FOUEW**
Waterbody		Fording River	Fording River	Fording River	Fording River	Fording River	Fording River	Fording River	Fording River
Date Sampled		16-Dec-21	14-Dec-21	21-Nov-21	21-Nov-21	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
Weather		-	-	Sunny	Overcast	Variable Clouds	Cloudy	Cloudy	Cloudy
Air Temperature (°C)		-	-	-13	-13	-4	-5	-12	-6
Habitat Characteristics									
Surrounding Land Use		Forest	Mining	Mining	Mining	Forest	Mining	Forest	Forest
Length of Reach Assessed (m)		50	50	50	100	50	100	50	50
Substrate	% Bedrock	0	0	0	0	0	0	0	0
	% Boulder	0	0	0	0	0	0	0	0
	% Cobble	0	0	0	0	0	0	0	0
	% Gravel	0	0	0	0	0	0	0	0
	% Sand	0	0	0	0	0	0	0	0
	% Fines	0	0	0	0	0	0	0	0
Water Clarity		-	-	-	-	-	-	-	-
Water Colour		-	-	-	-	-	-	-	-
Vegetation									
Canopy Coverage (%)		-	-	-	-	-	-	-	-
Streamside Vegetation		-	-	-	-	-	-	-	-
Dominant Vegetation		-	-	-	-	-	-	-	-
Macrophyte Coverage (%)		-	-	-	-	-	-	-	-
Dominant Macrophyte		-	-	-	-	-	-	-	-
Periphyton Cover (1-5)									
Comments		-	-	-	-	-	-	-	-

Note: "-" indicates no data available.

Table G.14: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Reference	Mine-Exposed				
		RG_UFR1	RG_FRSCH2	RG_FRGHSC	RG_FODHE	RG_FOUCL	RG_FOUNGD
Station 1	Date	16-Dec-21	14-Dec-21	13-Dec-21	15-Dec-21	15-Dec-21	15-Dec-21
	Temperature (°C)	0	4.6	6.3	0	1.4	1.1
	Dissolved Oxygen (mg/L)	11.59	8.17	9.5	12.07	11.27	11.82
	Dissolved Oxygen (%)	79.3	63.5	77.2	82.7	80.2	83.7
	Conductivity (µS/cm)	167.5	741	845	418.7	420.9	561
	Specific Conductivity (µS/cm)	320.4	1215	1316	801	767	1031
	pH	8.77	7.51	7.67	8.25	7.9	8.01
Station 2	Date	16-Dec-21	-	-	-	-	-
	Temperature (°C)	0	-	-	-	-	-
	Dissolved Oxygen (mg/L)	11.54	-	-	-	-	-
	Dissolved Oxygen (%)	79	-	-	-	-	-
	Conductivity (µS/cm)	167.5	-	-	-	-	-
	Specific Conductivity (µS/cm)	320.7	-	-	-	-	-
	pH	8.18	-	-	-	-	-
Station 3	Date	16-Dec-21	-	-	-	-	-
	Temperature (°C)	0	-	-	-	-	-
	Dissolved Oxygen (mg/L)	11.43	-	-	-	-	-
	Dissolved Oxygen (%)	78.2	-	-	-	-	-
	Conductivity (µS/cm)	164.6	-	-	-	-	-
	Specific Conductivity (µS/cm)	314.5	-	-	-	-	-
	pH	8.17	-	-	-	-	-

Note: "-" indicates no data available.

Table G.14: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Mine-Exposed					
		RG_FODNGD	RG_MP1	RG_FOUSH	RG_FOUKI	RG_FOBKS	RG_SCOUTDS
Station 1	Date	15-Dec-21	15-Dec-21	15-Dec-21	14-Dec-21	14-Dec-21	9-Dec-21
	Temperature (°C)	1.3	1	0.5	1.6	1.5	0
	Dissolved Oxygen (mg/L)	11.98	12.04	12.45	11.68	11.86	11.92
	Dissolved Oxygen (%)	85.3	85	88.7	83.8	84.9	82
	Conductivity (µS/cm)	608	661	592	603	662	932
	Specific Conductivity (µS/cm)	1110	1221	1112	1090	1203	1785
	pH	8.15	8.2	8.28	8.37	8.44	7.42
Station 2	Date	-	-	-	14-Dec-21	-	9-Dec-21
	Temperature (°C)	-	-	-	1.7	-	0
	Dissolved Oxygen (mg/L)	-	-	-	11.71	-	11.88
	Dissolved Oxygen (%)	-	-	-	84.2	-	81.8
	Conductivity (µS/cm)	-	-	-	604	-	929
	Specific Conductivity (µS/cm)	-	-	-	1090	-	1776
	pH	-	-	-	8.38	-	7.53
Station 3	Date	-	-	-	14-Dec-21	-	9-Dec-21
	Temperature (°C)	-	-	-	1.7	-	0
	Dissolved Oxygen (mg/L)	-	-	-	11.77	-	11.93
	Dissolved Oxygen (%)	-	-	-	84.7	-	82.2
	Conductivity (µS/cm)	-	-	-	604	-	922
	Specific Conductivity (µS/cm)	-	-	-	1089	-	1761
	pH	-	-	-	8.39	-	7.53

Note: "-" indicates no data available.

Table G.14: In Situ Water Quality Taken at Biological Monitoring Areas, FRO LAEMP, 2021

Field Parameters		Mine-Exposed					
		RG_FOBSC	RG_FOBCP	RG_FRUPO	RG_FODPO	RG_FO22	RG_FOUEW
Station 1	Date	9-Dec-21	14-Dec-21	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Temperature (°C)	0	0	5.1	4.3	2.8	1.8
	Dissolved Oxygen (mg/L)	11.8	11.73	9.98	9.76	10.61	11.63
	Dissolved Oxygen (%)	81.2	80.5	78.8	75.4	78.8	84
	Conductivity (µS/cm)	909	685	811	810	779	650
	Specific Conductivity (µS/cm)	1739	1312	1307	1340	1352	1166
	pH	7.45	8.28	7.78	7.69	7.98	8.21
Station 2	Date	9-Dec-21	-	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Temperature (°C)	0	-	5	4.2	2.7	1.9
	Dissolved Oxygen (mg/L)	11.96	-	10.09	9.71	10.55	11.49
	Dissolved Oxygen (%)	82.2	-	79.3	74.7	78.1	83.2
	Conductivity (µS/cm)	857	-	807	807	777	638
	Specific Conductivity (µS/cm)	1644	-	1307	1341	1353	1142
	pH	7.55	-	7.75	7.71	7.97	8.21
Station 3	Date	9-Dec-21	-	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Temperature (°C)	0	-	4.9	4.1	2.6	1.9
	Dissolved Oxygen (mg/L)	12.03	-	9.73	9.6	10.42	11.62
	Dissolved Oxygen (%)	82.7	-	76.4	74.3	76.9	84.1
	Conductivity (µS/cm)	913	-	805	805	774	642
	Specific Conductivity (µS/cm)	1751	-	1307	1341	1353	1150
	pH	7.61	-	7.7	7.71	7.87	8.21

Note: "-" indicates no data available.

Table G.15: **Channel Measurements, FRO LAEMP, December 2021**

	Replicate		1	2	3	4	5	Mean
Reference	RG_UFR1							
	1	Depth (cm)	33	26	24	25	23	26.2
		Velocity (m/s)	0.247	0.225	0.485	0.311	0.363	0.3262
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	25	18	22	22	28	23
		Velocity (m/s)	0.365	0.308	0.373	0.635	0.564	0.449
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	23	20	24	17	19	20.6
		Velocity (m/s)	0.715	1.02	0.738	0.534	0.236	0.6486
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOUKI							
	1	Depth (cm)	18.5	25	21.5	29	28	24.4
		Velocity (m/s)	0.486	1.148	0.823	0.999	0.746	0.8404
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	18.5	20	21	22	24.5	21.2
		Velocity (m/s)	0.425	0.464	0.495	0.813	0.575	0.5544
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	16	13.5	19.5	13.5	19.5	16.4
		Velocity (m/s)	0.653	0.265	0.648	0.292	0.616	0.4948
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_SCOUTDS							
	1	Depth (cm)	30	36	32	22	23	28.6
		Velocity (m/s)	0.887	0.988	0.881	0.67	0.515	0.7882
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	35	28	35	30	26	30.8
		Velocity (m/s)	0.743	0.493	0.493	0.682	0.723	0.6268
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	29	47	45	30	18	33.8
		Velocity (m/s)	0.627	0.969	0.945	0.783	0.882	0.8412
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOBSC							
	1	Depth (cm)	27	37	27	30	30	30.2
		Velocity (m/s)	0.118	0.417	0.5	0.823	0.481	0.4678
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	47	42	33	33	30	37
		Velocity (m/s)	0.175	0.12	0.182	0.148	0.137	0.1524
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	21	37	30.5	20.5	20	25.8
		Velocity (m/s)	0.316	0.336	0.751	1.06	0.777	0.648
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.15: Channel Measurements, FRO LAEMP, December 2021

Replicate			1	2	3	4	5	Mean
Mine-Exposed	RG_FRUPO							
	1	Depth (cm)	13.5	23	18	22.5	9	17.2
		Velocity (m/s)	0.476	0.929	1.022	0.848	0.827	0.8204
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	16	29	26	32.5	24.5	25.6
		Velocity (m/s)	0.525	0.722	0.877	0.639	0.827	0.718
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	15	21.5	19.5	22	22.5	20.1
		Velocity (m/s)	0.84	0.848	1.02	0.866	0.754	0.8656
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FODPO							
	1	Depth (cm)	26	30	29.5	31	16.5	26.6
		Velocity (m/s)	0.167	0.286	0.574	0.556	0.614	0.4394
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	13	21	30	15.5	13	18.5
		Velocity (m/s)	0.603	0.826	0.689	0.439	0.383	0.588
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	13.5	25	28	23	14	20.7
		Velocity (m/s)	0.254	0.788	0.704	0.437	0.394	0.5154
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FO22							
	1	Depth (cm)	13	25.5	23	14	9	16.9
		Velocity (m/s)	0.394	0.553	0.683	0.568	0.279	0.4954
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	13.5	25.5	30	23.5	11.5	20.8
		Velocity (m/s)	0.291	0.441	0.654	0.351	0.316	0.4106
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	13.5	20.5	24	22	15.5	19.1
		Velocity (m/s)	0.335	0.428	0.498	0.407	0.445	0.4226
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
Mine-Exposed	RG_FOUEW							
	1	Depth (cm)	9.5	24.5	24.5	36.5	18.5	22.7
		Velocity (m/s)	0.299	0.869	0.381	0.731	0.567	0.5694
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	2	Depth (cm)	18.5	20.5	21	24.5	29	22.7
		Velocity (m/s)	0.443	0.426	0.173	0.598	0.48	0.424
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-
	3	Depth (cm)	18.5	33	38.5	33	26.5	29.9
		Velocity (m/s)	0.406	0.584	0.65	0.681	0.318	0.5278
		Bankfull Width (m)			-			-
		Wetted Width (m)			-			-
		Bankfull-Wetted Depth (cm)			-			-

Note: "-" indicates no data available.

Table G.16: **Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021**

RG_UFR1-1						RG_UFR1-2					
16-Dec-21						16-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	6	-	1	-	-	-	5	-
2	-	-	-	7	-	2	-	-	-	7	-
3	-	-	-	10	-	3	-	-	-	6	-
4	-	-	-	13.5	-	4	-	-	-	5	-
5	-	-	-	3.5	-	5	-	-	-	5	-
6	-	-	-	3	-	6	-	-	-	7	-
7	-	-	-	17	-	7	-	-	-	3.5	-
8	-	-	-	9.5	-	8	-	-	-	5	-
9	-	-	-	3.5	-	9	-	-	-	4.5	-
10	-	-	-	8.5	0.25	10	-	-	-	3.5	0.25
11	-	-	-	6	-	11	-	-	-	3.5	-
12	-	-	-	13	-	12	-	-	-	8	-
13	-	-	-	14	-	13	-	-	-	27	-
14	-	-	-	4.5	-	14	-	-	-	4	-
15	-	-	-	2	-	15	-	-	-	16	-
16	-	-	-	9	-	16	-	-	-	6	-
17	-	-	-	3	-	17	-	-	-	9	-
18	-	-	-	3	-	18	-	-	-	8	-
19	-	-	-	4	-	19	-	-	-	6	-
20	-	-	-	8.5	0.25	20	-	-	-	4	0.25
21	-	-	-	2.5	-	21	-	-	-	5.5	-
22	-	-	-	3	-	22	-	-	-	4.5	-
23	-	-	-	2.5	-	23	-	-	-	6.5	-
24	-	-	-	4	-	24	-	-	-	7	-
25	-	-	-	4.5	-	25	-	-	-	6	-
26	-	-	-	6	-	26	-	-	-	7.5	-
27	-	-	-	8	-	27	-	-	-	5.5	-
28	-	-	-	9.5	-	28	-	-	-	8.5	-
29	-	-	-	12.5	-	29	-	-	-	2	-
30	-	-	-	3.5	0.5	30	-	-	-	5	0
31	-	-	-	12.5	-	31	-	-	-	7	-
32	-	-	-	5	-	32	-	-	-	4	-
33	-	-	-	9	-	33	-	-	-	5	-
34	-	-	-	5	-	34	-	-	-	12	-
35	-	-	-	3	-	35	-	-	-	9	-
36	-	-	-	9.5	-	36	-	-	-	10.5	-
37	-	-	-	7	-	37	-	-	-	2.5	-
38	-	-	-	11	-	38	-	-	-	9	-
39	-	-	-	9	-	39	-	-	-	9	-
40	-	-	-	18	0.25	40	-	-	-	5	0
41	-	-	-	4	-	41	-	-	-	4	-
42	-	-	-	9	-	42	-	-	-	4.5	-
43	-	-	-	12	-	43	-	-	-	2	-
44	-	-	-	6.5	-	44	-	-	-	16	-
45	-	-	-	1.5	-	45	-	-	-	6.5	-
46	-	-	-	1.5	-	46	-	-	-	12.5	-
47	-	-	-	3	-	47	-	-	-	8	-
48	-	-	-	1	-	48	-	-	-	14	-
49	-	-	-	2	-	49	-	-	-	17.5	-
50	-	-	-	15	0.25	50	-	-	-	3	0.25
51	-	-	-	5	-	51	-	-	-	16.5	-
52	-	-	-	4	-	52	-	-	-	2.5	-
53	-	-	-	2.5	-	53	-	-	-	6	-
54	-	-	-	3	-	54	-	-	-	3	-
55	-	-	-	11.5	-	55	-	-	-	25	-
56	-	-	-	2	-	56	-	-	-	8	-
57	-	-	-	4	-	57	-	-	-	11.5	-
58	-	-	-	5.5	-	58	-	-	-	11	-
59	-	-	-	7	-	59	-	-	-	11	-
60	-	-	-	2.5	0	60	-	-	-	5	0.5
61	-	-	-	4.5	-	61	-	-	-	5	-
62	-	-	-	7	-	62	-	-	-	8	-
63	-	-	-	2.5	-	63	-	-	-	6	-
64	-	-	-	2.5	-	64	-	-	-	7.5	-
65	-	-	-	4	-	65	-	-	-	4	-
66	-	-	-	5	-	66	-	-	-	4	-
67	-	-	-	9.5	-	67	-	-	-	5.5	-
68	-	-	-	4.5	-	68	-	-	-	3	-
69	-	-	-	5	-	69	-	-	-	4	-
70	-	-	-	12	0.5	70	-	-	-	7	0.25
71	-	-	-	9.5	-	71	-	-	-	7	-
72	-	-	-	7	-	72	-	-	-	8.5	-
73	-	-	-	5	-	73	-	-	-	4	-
74	-	-	-	2.5	-	74	-	-	-	4	-
75	-	-	-	4	-	75	-	-	-	3	-
76	-	-	-	9	-	76	-	-	-	9	-
77	-	-	-	3	-	77	-	-	-	9	-
78	-	-	-	4.5	-	78	-	-	-	21.5	-
79	-	-	-	6.5	-	79	-	-	-	11	-
80	-	-	-	2.5	0	80	-	-	-	8	0.25
81	-	-	-	14	-	81	-	-	-	3.5	-
82	-	-	-	3	-	82	-	-	-	5	-
83	-	-	-	7	-	83	-	-	-	1	-
84	-	-	-	4.5	-	84	-	-	-	4.5	-
85	-	-	-	2.5	-	85	-	-	-	8	-
86	-	-	-	15	-	86	-	-	-	9	-
87	-	-	-	5	-	87	-	-	-	10.5	-
88	-	-	-	7	-	88	-	-	-	6.5	-
89	-	-	-	6.5	-	89	-	-	-	2.5	-
90	-	-	-	6	0	90	-	-	-	5	0.5
91	-	-	-	4	-	91	-	-	-	10.5	-
92	-	-	-	7.5	-	92	-	-	-	9	-
93	-	-	-	5.5	-	93	-	-	-	3	-
94	-	-	-	3.5	-	94	-	-	-	1.5	-
95	-	-	-	2.5	-	95	-	-	-	15	-
96	-	-	-	1	-	96	-	-	-	10	-
97	-	-	-	2	-	97	-	-	-	3.5	-
98	-	-	-	5	-	98	-	-	-	5	-
99	-	-	-	4	-	99	-	-	-	13	-
100	-	-	-	8	0.25	100	-	-	-	4.5	0.5
Average Cic, Cip and Embed. =	-	-	-	6.195	0.23	Average Cic, Cip and Embed. =	-	-	-	7.31	0.28
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_UFR1-3						RG_FOUKI-1					
16-Dec-21						14-Dec-21					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	-	-	-	6	-	**1**	-	-	-	6.5	-
2	-	-	-	4.5	-	**2**	-	-	-	7	-
3	-	-	-	12.5	-	**3**	-	-	-	13	-
4	-	-	-	8	-	**4**	-	-	-	8.5	-
5	-	-	-	9.5	-	**5**	-	-	-	6	-
6	-	-	-	14.5	-	**6**	-	-	-	12	-
7	-	-	-	3.5	-	**7**	-	-	-	7.5	-
8	-	-	-	3	-	**8**	-	-	-	8.5	-
9	-	-	-	6	-	**9**	-	-	-	5	-
10	-	-	-	7.5	0.25	**10**	-	-	-	14	0.25
11	-	-	-	3	-	**11**	-	-	-	9	-
12	-	-	-	5	-	**12**	-	-	-	5.5	-
13	-	-	-	8	-	**13**	-	-	-	10	-
14	-	-	-	5.5	-	**14**	-	-	-	11	-
15	-	-	-	4	-	**15**	-	-	-	5.5	-
16	-	-	-	6.5	-	**16**	-	-	-	9	-
17	-	-	-	7	-	**17**	-	-	-	4.5	-
18	-	-	-	2.5	-	**18**	-	-	-	5	-
19	-	-	-	9	-	**19**	-	-	-	3	-
20	-	-	-	4	0.5	**20**	-	-	-	6.5	0.25
21	-	-	-	13	-	**21**	-	-	-	3.5	-
22	-	-	-	7	-	**22**	-	-	-	4	-
23	-	-	-	7.5	-	**23**	-	-	-	6	-
24	-	-	-	4.5	-	**24**	-	-	-	6	-
25	-	-	-	9	-	**25**	-	-	-	8	-
26	-	-	-	5	-	**26**	-	-	-	4	-
27	-	-	-	10	-	**27**	-	-	-	5	-
28	-	-	-	8.5	-	**28**	-	-	-	8.5	-
29	-	-	-	2.5	-	**29**	-	-	-	11	-
30	-	-	-	5.5	0.75	**30**	-	-	-	16	0.25
31	-	-	-	22.5	-	**31**	-	-	-	6.5	-
32	-	-	-	2	-	**32**	-	-	-	6.5	-
33	-	-	-	5	-	**33**	-	-	-	6	-
34	-	-	-	8	-	**34**	-	-	-	1.5	-
35	-	-	-	4	-	**35**	-	-	-	15	-
36	-	-	-	9.5	-	**36**	-	-	-	6.5	-
37	-	-	-	2	-	**37**	-	-	-	15.5	-
38	-	-	-	14	-	**38**	-	-	-	1.5	-
39	-	-	-	8.5	-	**39**	-	-	-	12	-
40	-	-	-	10.5	0.25	**40**	-	-	-	9	0.5
41	-	-	-	3	-	**41**	-	-	-	11	-
42	-	-	-	4	-	**42**	-	-	-	9	-
43	-	-	-	6	-	**43**	-	-	-	10	-
44	-	-	-	9	-	**44**	-	-	-	4	-
45	-	-	-	6	-	**45**	-	-	-	13.5	-
46	-	-	-	4.5	-	**46**	-	-	-	6.5	-
47	-	-	-	5.5	-	**47**	-	-	-	10.5	-
48	-	-	-	7	-	**48**	-	-	-	3	-
49	-	-	-	15.5	-	**49**	-	-	-	1	-
50	-	-	-	8.5	0.25	**50**	-	-	-	11	0.5
51	-	-	-	6.5	-	**51**	-	-	-	0.5	-
52	-	-	-	4.5	-	**52**	-	-	-	4.5	-
53	-	-	-	5	-	**53**	-	-	-	10	-
54	-	-	-	10	-	**54**	-	-	-	10	-
55	-	-	-	5	-	**55**	-	-	-	8	-
56	-	-	-	4.5	-	**56**	-	-	-	6	-
57	-	-	-	4	-	**57**	-	-	-	11.5	-
58	-	-	-	9	-	**58**	-	-	-	5.5	-
59	-	-	-	7.5	-	**59**	-	-	-	3	-
60	-	-	-	4	0.25	**60**	-	-	-	10	0.25
61	-	-	-	5	-	**61**	-	-	-	3.5	-
62	-	-	-	9	-	**62**	-	-	-	3.5	-
63	-	-	-	6	-	**63**	-	-	-	14	-
64	-	-	-	1.5	-	**64**	-	-	-	6	-
65	-	-	-	4.5	-	**65**	-	-	-	5.5	-
66	-	-	-	2	-	**66**	-	-	-	8	-
67	-	-	-	1	-	**67**	-	-	-	7.5	-
68	-	-	-	1.5	-	**68**	-	-	-	6.5	-
69	-	-	-	3	-	**69**	-	-	-	9	-
70	-	-	-	3.5	0.25	**70**	-	-	-	16	0.5
71	-	-	-	9	-	**71**	-	-	-	12	-
72	-	-	-	14	-	**72**	-	-	-	11	-
73	-	-	-	10	-	**73**	-	-	-	7	-
74	-	-	-	6.5	-	**74**	-	-	-	10	-
75	-	-	-	10.5	-	**75**	-	-	-	7	-
76	-	-	-	5	-	**76**	-	-	-	5	-
77	-	-	-	3	-	**77**	-	-	-	12.5	-
78	-	-	-	5	-	**78**	-	-	-	5	-
79	-	-	-	7	-	**79**	-	-	-	1.5	-
80	-	-	-	14	0.75	**80**	-	-	-	2.5	0
81	-	-	-	5	-	**81**	-	-	-	2	-
82	-	-	-	12	-	**82**	-	-	-	23.5	-
83	-	-	-	4.5	-	**83**	-	-	-	1.5	-
84	-	-	-	8.5	-	**84**	-	-	-	21	-
85	-	-	-	5	-	**85**	-	-	-	6.5	-
86	-	-	-	6.5	-	**86**	-	-	-	4.5	-
87	-	-	-	6	-	**87**	-	-	-	11	-
88	-	-	-	5	-	**88**	-	-	-	5.5	-
89	-	-	-	3.5	-	**89**	-	-	-	1	-
90	-	-	-	5	0.25	**90**	-	-	-	7	0.5
91	-	-	-	5	-	**91**	-	-	-	4.5	-
92	-	-	-	3	-	**92**	-	-	-	2.5	-
93	-	-	-	15	-	**93**	-	-	-	5	-
94	-	-	-	3.5	-	**94**	-	-	-	4	-
95	-	-	-	14.5	-	**95**	-	-	-	14	-
96	-	-	-	3	-	**96**	-	-	-	9	-
97	-	-	-	5	-	**97**	-	-	-	9.5	-
98	-	-	-	33	-	**98**	-	-	-	9.5	-
99	-	-	-	5	-	**99**	-	-	-	4	-
100	-	-	-	8	0.5	**100**	-	-	-	8.5	0.75
Average Cic, Cip and Embed. =	**-**	**-**	**-**	**6.94**	**0.40**	**Average Cic, Cip and Embed. =**	**-**	**-**	**-**	**7.645**	**0.38**
Old Calcite Index (CI)		**-**				**Old Calcite Index (CI)**		**-**			
New Calcite Index (CI')		**-**				**New Calcite Index (CI')**		**-**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUKI-2						RG_FOUKI-3					
14-Dec-21						14-Dec-21					
Pebble	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**	**Pebble**	**Concreted Status**	**Calcite Proportion**	**Calcite Presence**	**Intermediate Axis (cm)**	**Embedded-ness (%)**
1	-	-	-	9	-	**1**	-	-	-	9	-
2	-	-	-	5.5	-	**2**	-	-	-	9	-
3	-	-	-	8.5	-	**3**	-	-	-	7	-
4	-	-	-	10	-	**4**	-	-	-	9.5	-
5	-	-	-	13.5	-	**5**	-	-	-	4	-
6	-	-	-	9.5	-	**6**	-	-	-	1.5	-
7	-	-	-	14	-	**7**	-	-	-	3.5	-
8	-	-	-	9	-	**8**	-	-	-	9.5	-
9	-	-	-	5	-	**9**	-	-	-	6	-
10	-	-	-	9.5	0.25	**10**	-	-	-	5	0.25
11	-	-	-	4	-	**11**	-	-	-	9	-
12	-	-	-	7.5	-	**12**	-	-	-	3.5	-
13	-	-	-	6.5	-	**13**	-	-	-	8.5	-
14	-	-	-	8.5	-	**14**	-	-	-	8	-
15	-	-	-	14	-	**15**	-	-	-	3	-
16	-	-	-	15	-	**16**	-	-	-	5.5	-
17	-	-	-	2.5	-	**17**	-	-	-	7	-
18	-	-	-	4.5	-	**18**	-	-	-	8	-
19	-	-	-	8	-	**19**	-	-	-	9	-
20	-	-	-	7	0.25	**20**	-	-	-	5.5	0.25
21	-	-	-	11	-	**21**	-	-	-	8	-
22	-	-	-	1.5	-	**22**	-	-	-	11	-
23	-	-	-	15	-	**23**	-	-	-	2.5	-
24	-	-	-	14.5	-	**24**	-	-	-	8.5	-
25	-	-	-	12	-	**25**	-	-	-	3	-
26	-	-	-	13.5	-	**26**	-	-	-	3.5	-
27	-	-	-	9	-	**27**	-	-	-	6	-
28	-	-	-	8.5	-	**28**	-	-	-	6	-
29	-	-	-	4.5	-	**29**	-	-	-	6	-
30	-	-	-	9.5	0.5	**30**	-	-	-	7	0.75
31	-	-	-	1.5	-	**31**	-	-	-	8.5	-
32	-	-	-	12	-	**32**	-	-	-	12	-
33	-	-	-	6.5	-	**33**	-	-	-	11	-
34	-	-	-	4	-	**34**	-	-	-	3.5	-
35	-	-	-	3.5	-	**35**	-	-	-	11.5	-
36	-	-	-	2	-	**36**	-	-	-	8	-
37	-	-	-	8	-	**37**	-	-	-	9	-
38	-	-	-	5	-	**38**	-	-	-	5	-
39	-	-	-	4	-	**39**	-	-	-	7	-
40	-	-	-	2	0	**40**	-	-	-	6	0.25
41	-	-	-	2.5	-	**41**	-	-	-	7.5	-
42	-	-	-	14	-	**42**	-	-	-	8.5	-
43	-	-	-	7	-	**43**	-	-	-	6	-
44	-	-	-	5	-	**44**	-	-	-	8	-
45	-	-	-	12	-	**45**	-	-	-	9	-
46	-	-	-	9	-	**46**	-	-	-	9.5	-
47	-	-	-	15	-	**47**	-	-	-	6.5	-
48	-	-	-	20.5	-	**48**	-	-	-	6.5	-
49	-	-	-	3.5	-	**49**	-	-	-	4.5	-
50	-	-	-	15	0.25	**50**	-	-	-	6	0.25
51	-	-	-	8.5	-	**51**	-	-	-	9	-
52	-	-	-	12.5	-	**52**	-	-	-	4.5	-
53	-	-	-	4.5	-	**53**	-	-	-	9	-
54	-	-	-	9	-	**54**	-	-	-	9	-
55	-	-	-	7.5	-	**55**	-	-	-	4	-
56	-	-	-	3	-	**56**	-	-	-	3	-
57	-	-	-	6	-	**57**	-	-	-	5	-
58	-	-	-	7.5	-	**58**	-	-	-	5.5	-
59	-	-	-	9.5	-	**59**	-	-	-	12	-
60	-	-	-	5	0.25	**60**	-	-	-	3.5	0
61	-	-	-	10.5	-	**61**	-	-	-	4	-
62	-	-	-	8	-	**62**	-	-	-	13	-
63	-	-	-	10	-	**63**	-	-	-	7	-
64	-	-	-	5.5	-	**64**	-	-	-	6.5	-
65	-	-	-	6	-	**65**	-	-	-	8	-
66	-	-	-	3	-	**66**	-	-	-	7	-
67	-	-	-	6	-	**67**	-	-	-	7	-
68	-	-	-	14	-	**68**	-	-	-	6.5	-
69	-	-	-	3.5	-	**69**	-	-	-	8.5	-
70	-	-	-	5	0.25	**70**	-	-	-	5	0.25
71	-	-	-	7	-	**71**	-	-	-	9	-
72	-	-	-	7	-	**72**	-	-	-	11	-
73	-	-	-	7	-	**73**	-	-	-	8	-
74	-	-	-	8.5	-	**74**	-	-	-	11.5	-
75	-	-	-	18	-	**75**	-	-	-	5	-
76	-	-	-	8	-	**76**	-	-	-	3	-
77	-	-	-	13	-	**77**	-	-	-	9	-
78	-	-	-	7.5	-	**78**	-	-	-	6	-
79	-	-	-	9.5	-	**79**	-	-	-	9	-
80	-	-	-	12	0.5	**80**	-	-	-	10	0.25
81	-	-	-	9	-	**81**	-	-	-	10	-
82	-	-	-	14.5	-	**82**	-	-	-	4	-
83	-	-	-	11.5	-	**83**	-	-	-	9.5	-
84	-	-	-	8	-	**84**	-	-	-	8	-
85	-	-	-	9.5	-	**85**	-	-	-	2	-
86	-	-	-	3.5	-	**86**	-	-	-	8	-
87	-	-	-	4.5	-	**87**	-	-	-	17.5	-
88	-	-	-	1.5	-	**88**	-	-	-	5	-
89	-	-	-	7	-	**89**	-	-	-	10.5	-
90	-	-	-	12.5	0.25	**90**	-	-	-	5	0.5
91	-	-	-	5	-	**91**	-	-	-	6	-
92	-	-	-	8	-	**92**	-	-	-	7.5	-
93	-	-	-	4.5	-	**93**	-	-	-	5	-
94	-	-	-	6	-	**94**	-	-	-	10	-
95	-	-	-	7.5	-	**95**	-	-	-	11.5	-
96	-	-	-	5.5	-	**96**	-	-	-	9.5	-
97	-	-	-	2	-	**97**	-	-	-	6	-
98	-	-	-	15.5	-	**98**	-	-	-	8.5	-
99	-	-	-	5.5	-	**99**	-	-	-	6	-
100	-	-	-	10.5	0.5	**100**	-	-	-	6	0.25
Average Cic, Cip and Embed. =	**-**	**-**	**-**	**8.155**	**0.30**	**Average Cic, Cip and Embed. =**	**-**	**-**	**-**	**7.2**	**0.30**
Old Calcite Index (CI)		**-**				**Old Calcite Index (CI)**		**-**			
New Calcite Index (CI')		**-**				**New Calcite Index (CI')**		**-**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_SCOUTDS-1						RG_SCOUTDS-2					
9-Dec-21						9-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	8.5	-	1	-	-	-	6.5	-
2	-	-	-	10	-	2	-	-	-	7	-
3	-	-	-	9	-	3	-	-	-	5.5	-
4	-	-	-	9	-	4	-	-	-	17.5	-
5	-	-	-	5	-	5	-	-	-	12	-
6	-	-	-	4.5	-	6	-	-	-	7	-
7	-	-	-	11.5	-	7	-	-	-	8	-
8	-	-	-	12	-	8	-	-	-	12.5	-
9	-	-	-	9.5	-	9	-	-	-	10.5	-
10	-	-	-	8	0	10	-	-	-	8.5	0.25
11	-	-	-	7.5	-	11	-	-	-	5	-
12	-	-	-	8	-	12	-	-	-	8	-
13	-	-	-	8	-	13	-	-	-	7.5	-
14	-	-	-	6.5	-	14	-	-	-	11.5	-
15	-	-	-	5.5	-	15	-	-	-	8.5	-
16	-	-	-	6	-	16	-	-	-	6	-
17	-	-	-	1	-	17	-	-	-	4.5	-
18	-	-	-	7.5	-	18	-	-	-	10	-
19	-	-	-	7	-	19	-	-	-	12.5	-
20	-	-	-	6.5	0	20	-	-	-	8	0.5
21	-	-	-	15	-	21	-	-	-	7.5	-
22	-	-	-	5	-	22	-	-	-	7	-
23	-	-	-	5	-	23	-	-	-	6.5	-
24	-	-	-	7	-	24	-	-	-	4	-
25	-	-	-	8	-	25	-	-	-	8.5	-
26	-	-	-	9	-	26	-	-	-	7	-
27	-	-	-	4.5	-	27	-	-	-	10.5	-
28	-	-	-	9	-	28	-	-	-	6.5	-
29	-	-	-	15.5	-	29	-	-	-	5	-
30	-	-	-	11.5	0.25	30	-	-	-	6	0
31	-	-	-	6.5	-	31	-	-	-	10.5	-
32	-	-	-	8	-	32	-	-	-	6.5	-
33	-	-	-	4	-	33	-	-	-	9	-
34	-	-	-	9	-	34	-	-	-	5	-
35	-	-	-	7	-	35	-	-	-	3.5	-
36	-	-	-	2	-	36	-	-	-	4.5	-
37	-	-	-	4.5	-	37	-	-	-	3	-
38	-	-	-	3	-	38	-	-	-	17	-
39	-	-	-	4	-	39	-	-	-	7.5	-
40	-	-	-	9	0.5	40	-	-	-	7	0
41	-	-	-	5.5	-	41	-	-	-	7.5	-
42	-	-	-	13	-	42	-	-	-	4.5	-
43	-	-	-	8	-	43	-	-	-	7	-
44	-	-	-	1.5	-	44	-	-	-	2	-
45	-	-	-	4.5	-	45	-	-	-	5	-
46	-	-	-	5	-	46	-	-	-	5.5	-
47	-	-	-	5.5	-	47	-	-	-	6	-
48	-	-	-	8	-	48	-	-	-	3	-
49	-	-	-	7	-	49	-	-	-	4.5	-
50	-	-	-	8.5	0.25	50	-	-	-	2.5	0
51	-	-	-	6	-	51	-	-	-	7.5	-
52	-	-	-	1.5	-	52	-	-	-	1.5	-
53	-	-	-	2	-	53	-	-	-	9	-
54	-	-	-	5	-	54	-	-	-	4	-
55	-	-	-	3	-	55	-	-	-	10	-
56	-	-	-	6.5	-	56	-	-	-	3.5	-
57	-	-	-	6.5	-	57	-	-	-	7	-
58	-	-	-	13	-	58	-	-	-	4.5	-
59	-	-	-	7	-	59	-	-	-	11.5	-
60	-	-	-	9	0	60	-	-	-	6.5	0
61	-	-	-	1	-	61	-	-	-	3.5	-
62	-	-	-	3	-	62	-	-	-	4	-
63	-	-	-	3.5	-	63	-	-	-	5	-
64	-	-	-	6	-	64	-	-	-	11	-
65	-	-	-	5	-	65	-	-	-	4.5	-
66	-	-	-	2.5	-	66	-	-	-	9.5	-
67	-	-	-	5.5	-	67	-	-	-	6.5	-
68	-	-	-	2.5	-	68	-	-	-	6.5	-
69	-	-	-	3	-	69	-	-	-	9	-
70	-	-	-	13	0.25	70	-	-	-	5	0.5
71	-	-	-	9	-	71	-	-	-	14	-
72	-	-	-	13.5	-	72	-	-	-	2	-
73	-	-	-	4.5	-	73	-	-	-	11	-
74	-	-	-	5	-	74	-	-	-	9.5	-
75	-	-	-	8	-	75	-	-	-	7.5	-
76	-	-	-	8.5	-	76	-	-	-	8	-
77	-	-	-	0.5	-	77	-	-	-	14	-
78	-	-	-	13	-	78	-	-	-	9	-
79	-	-	-	2	-	79	-	-	-	4	-
80	-	-	-	5	0.25	80	-	-	-	9.5	0.25
81	-	-	-	6.5	-	81	-	-	-	10	-
82	-	-	-	10	-	82	-	-	-	9	-
83	-	-	-	7	-	83	-	-	-	9.5	-
84	-	-	-	9	-	84	-	-	-	15	-
85	-	-	-	6	-	85	-	-	-	10	-
86	-	-	-	8.5	-	86	-	-	-	9.5	-
87	-	-	-	8.5	-	87	-	-	-	7.5	-
88	-	-	-	7	-	88	-	-	-	9	-
89	-	-	-	2.5	-	89	-	-	-	6	-
90	-	-	-	3	0	90	-	-	-	7	0.5
91	-	-	-	4	-	91	-	-	-	7	-
92	-	-	-	2	-	92	-	-	-	7	-
93	-	-	-	3.5	-	93	-	-	-	8	-
94	-	-	-	10	-	94	-	-	-	7	-
95	-	-	-	13.5	-	95	-	-	-	10	-
96	-	-	-	6.5	-	96	-	-	-	5.5	-
97	-	-	-	6	-	97	-	-	-	11.5	-
98	-	-	-	6.5	-	98	-	-	-	18.5	-
99	-	-	-	4	-	99	-	-	-	14.5	-
100	-	-	-	4	0	100	-	-	-	9	0
Average Cic, Cip and Embed. =	**-**	**-**	**-**	**6.65**	**0.15**	**Average Cic, Cip and Embed. =**	**-**	**-**	**-**	**7.745**	**0.20**
Old Calcite Index (CI)		**-**				**Old Calcite Index (CI)**		**-**			
New Calcite Index (CI')		**-**				**New Calcite Index (CI')**		**-**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_SCOUTDS-3						RG_FOBSC-1					
9-Dec-21						9-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	6.5	-	1	-	-	-	16	-
2	-	-	-	10.5	-	2	-	-	-	7	-
3	-	-	-	7	-	3	-	-	-	4.5	-
4	-	-	-	5	-	4	-	-	-	5.5	-
5	-	-	-	7	-	5	-	-	-	9.5	-
6	-	-	-	9.5	-	6	-	-	-	11	-
7	-	-	-	7	-	7	-	-	-	4	-
8	-	-	-	4.5	-	8	-	-	-	11	-
9	-	-	-	8	-	9	-	-	-	9.5	-
10	-	-	-	7	0	10	-	-	-	9	0.25
11	-	-	-	5	-	11	-	-	-	16.5	-
12	-	-	-	6	-	12	-	-	-	2.5	-
13	-	-	-	8	-	13	-	-	-	11	-
14	-	-	-	4	-	14	-	-	-	12	-
15	-	-	-	4	-	15	-	-	-	4.5	-
16	-	-	-	7.5	-	16	-	-	-	2	-
17	-	-	-	6	-	17	-	-	-	1	-
18	-	-	-	7.5	-	18	-	-	-	2	-
19	-	-	-	10	-	19	-	-	-	10	-
20	-	-	-	4	0.25	20	-	-	-	7	0.5
21	-	-	-	10	-	21	-	-	-	6.5	-
22	-	-	-	5.5	-	22	-	-	-	14	-
23	-	-	-	7	-	23	-	-	-	5.5	-
24	-	-	-	5	-	24	-	-	-	8	-
25	-	-	-	1.5	-	25	-	-	-	20	-
26	-	-	-	4	-	26	-	-	-	5.5	-
27	-	-	-	8	-	27	-	-	-	17	-
28	-	-	-	6	-	28	-	-	-	3.5	-
29	-	-	-	4.5	-	29	-	-	-	8.5	-
30	-	-	-	6	0.25	30	-	-	-	20.5	0.5
31	-	-	-	5	-	31	-	-	-	3	-
32	-	-	-	5	-	32	-	-	-	14.5	-
33	-	-	-	8	-	33	-	-	-	7.5	-
34	-	-	-	10.5	-	34	-	-	-	19	-
35	-	-	-	8	-	35	-	-	-	12.5	-
36	-	-	-	5	-	36	-	-	-	7.5	-
37	-	-	-	13	-	37	-	-	-	6	-
38	-	-	-	7	-	38	-	-	-	2.5	-
39	-	-	-	4	-	39	-	-	-	5.5	-
40	-	-	-	4.5	0	40	-	-	-	10.5	0.25
41	-	-	-	7	-	41	-	-	-	9.5	-
42	-	-	-	8	-	42	-	-	-	7	-
43	-	-	-	17	-	43	-	-	-	16	-
44	-	-	-	6	-	44	-	-	-	8	-
45	-	-	-	7	-	45	-	-	-	6	-
46	-	-	-	4.5	-	46	-	-	-	15.5	-
47	-	-	-	11	-	47	-	-	-	5	-
48	-	-	-	9.5	-	48	-	-	-	5	-
49	-	-	-	11.5	-	49	-	-	-	8	-
50	-	-	-	9	0.25	50	-	-	-	9.5	0
51	-	-	-	8	-	51	-	-	-	12	-
52	-	-	-	9	-	52	-	-	-	6.5	-
53	-	-	-	9	-	53	-	-	-	11	-
54	-	-	-	5	-	54	-	-	-	7	-
55	-	-	-	5	-	55	-	-	-	12	-
56	-	-	-	9.5	-	56	-	-	-	9	-
57	-	-	-	6.5	-	57	-	-	-	5	-
58	-	-	-	12	-	58	-	-	-	9.5	-
59	-	-	-	5	-	59	-	-	-	7.5	-
60	-	-	-	1	0	60	-	-	-	8.5	0.25
61	-	-	-	8	-	61	-	-	-	9.5	-
62	-	-	-	8.5	-	62	-	-	-	7	-
63	-	-	-	7	-	63	-	-	-	7.5	-
64	-	-	-	13	-	64	-	-	-	6.5	-
65	-	-	-	5.5	-	65	-	-	-	16	-
66	-	-	-	10	-	66	-	-	-	20.5	-
67	-	-	-	7	-	67	-	-	-	5.5	-
68	-	-	-	5	-	68	-	-	-	8.5	-
69	-	-	-	5.5	-	69	-	-	-	13	-
70	-	-	-	3.5	0	70	-	-	-	5	0
71	-	-	-	5	-	71	-	-	-	14	-
72	-	-	-	10	-	72	-	-	-	6	-
73	-	-	-	15	-	73	-	-	-	6.5	-
74	-	-	-	7	-	74	-	-	-	4.5	-
75	-	-	-	8	-	75	-	-	-	9	-
76	-	-	-	5	-	76	-	-	-	3.5	-
77	-	-	-	7	-	77	-	-	-	1.5	-
78	-	-	-	7	-	78	-	-	-	10.5	-
79	-	-	-	7	-	79	-	-	-	5	-
80	-	-	-	7.5	0.5	80	-	-	-	6	0.25
81	-	-	-	5	-	81	-	-	-	14.5	-
82	-	-	-	7.5	-	82	-	-	-	7	-
83	-	-	-	6	-	83	-	-	-	4.5	-
84	-	-	-	6.5	-	84	-	-	-	11	-
85	-	-	-	5.5	-	85	-	-	-	1.5	-
86	-	-	-	5	-	86	-	-	-	4	-
87	-	-	-	5	-	87	-	-	-	3	-
88	-	-	-	5.5	-	88	-	-	-	6.5	-
89	-	-	-	10	-	89	-	-	-	1	-
90	-	-	-	5.5	0	90	-	-	-	7	0.25
91	-	-	-	5.5	-	91	-	-	-	10	-
92	-	-	-	6	-	92	-	-	-	4	-
93	-	-	-	7	-	93	-	-	-	15	-
94	-	-	-	5.5	-	94	-	-	-	3.5	-
95	-	-	-	6	-	95	-	-	-	1.5	-
96	-	-	-	3	-	96	-	-	-	1.5	-
97	-	-	-	5	-	97	-	-	-	10	-
98	-	-	-	10.5	-	98	-	-	-	1	-
99	-	-	-	4	-	99	-	-	-	2	-
100	-	-	-	6	0.5	100	-	-	-	8	0
Average Cic, Cip and Embed. =	**-**	**-**	**-**	**6.935**	**0.18**	**Average Cic, Cip and Embed. =**	**-**	**-**	**-**	**8.125**	**0.23**
Old Calcite Index (CI)		**-**				**Old Calcite Index (CI)**		**-**			
New Calcite Index (CI')		**-**				**New Calcite Index (CI')**		**-**			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOBSC-2						RG_FOBSC-3					
9-Dec-21						9-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	10	-	1	-	-	-	17	-
2	-	-	-	4	-	2	-	-	-	7	-
3	-	-	-	7.5	-	3	-	-	-	9	-
4	-	-	-	7	-	4	-	-	-	6	-
5	-	-	-	8	-	5	-	-	-	4.5	-
6	-	-	-	6.5	-	6	-	-	-	7.5	-
7	-	-	-	5	-	7	-	-	-	3.5	-
8	-	-	-	8.5	-	8	-	-	-	4	-
9	-	-	-	5	-	9	-	-	-	13.5	-
10	-	-	-	5.5	0	10	-	-	-	19	0.5
11	-	-	-	7	-	11	-	-	-	12	-
12	-	-	-	37	-	12	-	-	-	10	-
13	-	-	-	15	-	13	-	-	-	10	-
14	-	-	-	4	-	14	-	-	-	3.5	-
15	-	-	-	8	-	15	-	-	-	8	-
16	-	-	-	6.5	-	16	-	-	-	6	-
17	-	-	-	3	-	17	-	-	-	10.5	-
18	-	-	-	5.5	-	18	-	-	-	7	-
19	-	-	-	6	-	19	-	-	-	13	-
20	-	-	-	10	0.5	20	-	-	-	12.5	0
21	-	-	-	5.5	-	21	-	-	-	11.5	-
22	-	-	-	5	-	22	-	-	-	10.5	-
23	-	-	-	3.5	-	23	-	-	-	5	-
24	-	-	-	7	-	24	-	-	-	11	-
25	-	-	-	4	-	25	-	-	-	3	-
26	-	-	-	8.5	-	26	-	-	-	11.5	-
27	-	-	-	9	-	27	-	-	-	4.5	-
28	-	-	-	3	-	28	-	-	-	6	-
29	-	-	-	5	-	29	-	-	-	6.5	-
30	-	-	-	7	0.25	30	-	-	-	7	0
31	-	-	-	13	-	31	-	-	-	0.5	-
32	-	-	-	6.5	-	32	-	-	-	7	-
33	-	-	-	9	-	33	-	-	-	2.5	-
34	-	-	-	7.5	-	34	-	-	-	6.5	-
35	-	-	-	4	-	35	-	-	-	2	-
36	-	-	-	6	-	36	-	-	-	9.5	-
37	-	-	-	11	-	37	-	-	-	5.5	-
38	-	-	-	5	-	38	-	-	-	1.5	-
39	-	-	-	6.5	-	39	-	-	-	5.5	-
40	-	-	-	4	0.25	40	-	-	-	6	0.25
41	-	-	-	3.5	-	41	-	-	-	22	-
42	-	-	-	1	-	42	-	-	-	2	-
43	-	-	-	11.5	-	43	-	-	-	6	-
44	-	-	-	11	-	44	-	-	-	2	-
45	-	-	-	4.5	-	45	-	-	-	4	-
46	-	-	-	12	-	46	-	-	-	17.5	-
47	-	-	-	4	-	47	-	-	-	14	-
48	-	-	-	7	-	48	-	-	-	20	-
49	-	-	-	6	-	49	-	-	-	17	-
50	-	-	-	3	0	50	-	-	-	11	0.5
51	-	-	-	2	-	51	-	-	-	5.5	-
52	-	-	-	3.5	-	52	-	-	-	9	-
53	-	-	-	1.5	-	53	-	-	-	9	-
54	-	-	-	1	-	54	-	-	-	3.5	-
55	-	-	-	4	-	55	-	-	-	6	-
56	-	-	-	7	-	56	-	-	-	2	-
57	-	-	-	6	-	57	-	-	-	2.5	-
58	-	-	-	7	-	58	-	-	-	8.5	-
59	-	-	-	11	-	59	-	-	-	18	-
60	-	-	-	4	0.5	60	-	-	-	7	0
61	-	-	-	6.5	-	61	-	-	-	9	-
62	-	-	-	9	-	62	-	-	-	2.5	-
63	-	-	-	5	-	63	-	-	-	4.5	-
64	-	-	-	7.5	-	64	-	-	-	5	-
65	-	-	-	7	-	65	-	-	-	4.5	-
66	-	-	-	8	-	66	-	-	-	4	-
67	-	-	-	7.5	-	67	-	-	-	5	-
68	-	-	-	4	-	68	-	-	-	13	-
69	-	-	-	8	-	69	-	-	-	8	-
70	-	-	-	6.5	0.25	70	-	-	-	13	0
71	-	-	-	9	-	71	-	-	-	9.5	-
72	-	-	-	9.5	-	72	-	-	-	4.5	-
73	-	-	-	4	-	73	-	-	-	8.5	-
74	-	-	-	6	-	74	-	-	-	9.5	-
75	-	-	-	3	-	75	-	-	-	4	-
76	-	-	-	9	-	76	-	-	-	20.5	-
77	-	-	-	6.5	-	77	-	-	-	15	-
78	-	-	-	7	-	78	-	-	-	14	-
79	-	-	-	4	-	79	-	-	-	7.5	-
80	-	-	-	7	0	80	-	-	-	4.5	0
81	-	-	-	5	-	81	-	-	-	8	-
82	-	-	-	11.5	-	82	-	-	-	4	-
83	-	-	-	12	-	83	-	-	-	12	-
84	-	-	-	6	-	84	-	-	-	2	-
85	-	-	-	9	-	85	-	-	-	2.5	-
86	-	-	-	7	-	86	-	-	-	1	-
87	-	-	-	5	-	87	-	-	-	4	-
88	-	-	-	7.5	-	88	-	-	-	3	-
89	-	-	-	4.5	-	89	-	-	-	13	-
90	-	-	-	6	0	90	-	-	-	3.5	0.25
91	-	-	-	7.5	-	91	-	-	-	7	-
92	-	-	-	6	-	92	-	-	-	13.5	-
93	-	-	-	6	-	93	-	-	-	6	-
94	-	-	-	6.5	-	94	-	-	-	9	-
95	-	-	-	4	-	95	-	-	-	1.5	-
96	-	-	-	3.5	-	96	-	-	-	2	-
97	-	-	-	4.5	-	97	-	-	-	8.5	-
98	-	-	-	5	-	98	-	-	-	15.5	-
99	-	-	-	5	-	99	-	-	-	7.5	-
100	-	-	-	0.5	0	100	-	-	-	17	0
Average Cic, Cip and Embed. =	-	-	-	6.655	0.18	Average Cic, Cip and Embed. =	-	-	-	7.995	0.15
Old Calcite Index (CI)	-					Old Calcite Index (CI)	-				
New Calcite Index (CI')	-					New Calcite Index (CI')	-				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FRUPO-1						RG_FRUPO-2					
13-Dec-21						13-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	6	-	1	-	-	-	12	-
2	-	-	-	4	-	2	-	-	-	3	-
3	-	-	-	6	-	3	-	-	-	7	-
4	-	-	-	1.5	-	4	-	-	-	4	-
5	-	-	-	6	-	5	-	-	-	3	-
6	-	-	-	7	-	6	-	-	-	4.5	-
7	-	-	-	8	-	7	-	-	-	17	-
8	-	-	-	13.5	-	8	-	-	-	10	-
9	-	-	-	6.5	-	9	-	-	-	12.5	-
10	-	-	-	6.5	0.25	10	-	-	-	13	0
11	-	-	-	9	-	11	-	-	-	11.5	-
12	-	-	-	7.5	-	12	-	-	-	13.5	-
13	-	-	-	5	-	13	-	-	-	10	-
14	-	-	-	6.5	-	14	-	-	-	4	-
15	-	-	-	15	-	15	-	-	-	5	-
16	-	-	-	6	-	16	-	-	-	11	-
17	-	-	-	9	-	17	-	-	-	10.5	-
18	-	-	-	4.5	-	18	-	-	-	12.5	-
19	-	-	-	7	-	19	-	-	-	12	-
20	-	-	-	5.5	0.5	20	-	-	-	17	0.25
21	-	-	-	7	-	21	-	-	-	10.5	-
22	-	-	-	6.5	-	22	-	-	-	12.5	-
23	-	-	-	9.5	-	23	-	-	-	9.5	-
24	-	-	-	4	-	24	-	-	-	10	-
25	-	-	-	8	-	25	-	-	-	7	-
26	-	-	-	6.5	-	26	-	-	-	13	-
27	-	-	-	6	-	27	-	-	-	5	-
28	-	-	-	4.5	-	28	-	-	-	7	-
29	-	-	-	5.5	-	29	-	-	-	2.5	-
30	-	-	-	7	0.25	30	-	-	-	3	0.25
31	-	-	-	7	-	31	-	-	-	8	-
32	-	-	-	6.5	-	32	-	-	-	4.5	-
33	-	-	-	11	-	33	-	-	-	7.5	-
34	-	-	-	4.5	-	34	-	-	-	12.5	-
35	-	-	-	5.5	-	35	-	-	-	5.5	-
36	-	-	-	6.5	-	36	-	-	-	9.5	-
37	-	-	-	4	-	37	-	-	-	5	-
38	-	-	-	9.5	-	38	-	-	-	15	-
39	-	-	-	9	-	39	-	-	-	13.5	-
40	-	-	-	4.5	0	40	-	-	-	9	0.75
41	-	-	-	7.5	-	41	-	-	-	9	-
42	-	-	-	2	-	42	-	-	-	5.5	-
43	-	-	-	5	-	43	-	-	-	5	-
44	-	-	-	7.5	-	44	-	-	-	6	-
45	-	-	-	0.5	-	45	-	-	-	7	-
46	-	-	-	11.5	-	46	-	-	-	8	-
47	-	-	-	9.5	-	47	-	-	-	6.5	-
48	-	-	-	7.5	-	48	-	-	-	5	-
49	-	-	-	9	-	49	-	-	-	7.5	-
50	-	-	-	6	0.25	50	-	-	-	6	0.5
51	-	-	-	6	-	51	-	-	-	6.5	-
52	-	-	-	4.5	-	52	-	-	-	10	-
53	-	-	-	6	-	53	-	-	-	9	-
54	-	-	-	6	-	54	-	-	-	7	-
55	-	-	-	8.5	-	55	-	-	-	5.5	-
56	-	-	-	4	-	56	-	-	-	5	-
57	-	-	-	7	-	57	-	-	-	9	-
58	-	-	-	3	-	58	-	-	-	1.5	-
59	-	-	-	7.5	-	59	-	-	-	5	-
60	-	-	-	5.5	0.25	60	-	-	-	8.5	0.25
61	-	-	-	6	-	61	-	-	-	12.5	-
62	-	-	-	5	-	62	-	-	-	3	-
63	-	-	-	5	-	63	-	-	-	4	-
64	-	-	-	7	-	64	-	-	-	3	-
65	-	-	-	3	-	65	-	-	-	5.5	-
66	-	-	-	5.5	-	66	-	-	-	7.5	-
67	-	-	-	7	-	67	-	-	-	6	-
68	-	-	-	5	-	68	-	-	-	12.5	-
69	-	-	-	4	-	69	-	-	-	5.5	-
70	-	-	-	3	0.25	70	-	-	-	6.5	0.5
71	-	-	-	8	-	71	-	-	-	5	-
72	-	-	-	7.5	-	72	-	-	-	5.5	-
73	-	-	-	1	-	73	-	-	-	5	-
74	-	-	-	6.5	-	74	-	-	-	6.5	-
75	-	-	-	6	-	75	-	-	-	7.5	-
76	-	-	-	5	-	76	-	-	-	15	-
77	-	-	-	8.5	-	77	-	-	-	3	-
78	-	-	-	9.5	-	78	-	-	-	10	-
79	-	-	-	11	-	79	-	-	-	14.5	-
80	-	-	-	7	0.5	80	-	-	-	5	0
81	-	-	-	5.5	-	81	-	-	-	6.5	-
82	-	-	-	3.5	-	82	-	-	-	4	-
83	-	-	-	5	-	83	-	-	-	8.5	-
84	-	-	-	5	-	84	-	-	-	6	-
85	-	-	-	9	-	85	-	-	-	9.5	-
86	-	-	-	7	-	86	-	-	-	11.5	-
87	-	-	-	5.5	-	87	-	-	-	3	-
88	-	-	-	6	-	88	-	-	-	6	-
89	-	-	-	4.5	-	89	-	-	-	13	-
90	-	-	-	5	0.25	90	-	-	-	15	0.75
91	-	-	-	6	-	91	-	-	-	6	-
92	-	-	-	4	-	92	-	-	-	10	-
93	-	-	-	7	-	93	-	-	-	6	-
94	-	-	-	10	-	94	-	-	-	4.5	-
95	-	-	-	7	-	95	-	-	-	8	-
96	-	-	-	6.5	-	96	-	-	-	5	-
97	-	-	-	6	-	97	-	-	-	14	-
98	-	-	-	8	-	98	-	-	-	8	-
99	-	-	-	4	-	99	-	-	-	7	-
100	-	-	-	5	0	100	-	-	-	8.5	0.25
Average Cic, Cip and Embed. =	-	-	-	6.365	0.25	Average Cic, Cip and Embed. =	-	-	-	7.985	0.35
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FRUPO-3						RG_FODPO-1					
13-Dec-21						14-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	5	-	1	-	-	-	3.5	-
2	-	-	-	1	-	2	-	-	-	5	-
3	-	-	-	6	-	3	-	-	-	4	-
4	-	-	-	5	-	4	-	-	-	2.5	-
5	-	-	-	6	-	5	-	-	-	5	-
6	-	-	-	4.5	-	6	-	-	-	3.5	-
7	-	-	-	5	-	7	-	-	-	2	-
8	-	-	-	4.5	-	8	-	-	-	1.5	-
9	-	-	-	7	-	9	-	-	-	1	-
10	-	-	-	6	0	10	-	-	-	3	0
11	-	-	-	6	-	11	-	-	-	6.5	-
12	-	-	-	5	-	12	-	-	-	8	-
13	-	-	-	2.5	-	13	-	-	-	6.5	-
14	-	-	-	5.5	-	14	-	-	-	4	-
15	-	-	-	3	-	15	-	-	-	5.5	-
16	-	-	-	4.5	-	16	-	-	-	3.5	-
17	-	-	-	1.5	-	17	-	-	-	1.5	-
18	-	-	-	5.5	-	18	-	-	-	2.5	-
19	-	-	-	1.5	-	19	-	-	-	5	-
20	-	-	-	2.5	0.25	20	-	-	-	6.5	0.5
21	-	-	-	2	-	21	-	-	-	4	-
22	-	-	-	2.5	-	22	-	-	-	6	-
23	-	-	-	5.5	-	23	-	-	-	4.5	-
24	-	-	-	5	-	24	-	-	-	3	-
25	-	-	-	4	-	25	-	-	-	5.5	-
26	-	-	-	2	-	26	-	-	-	9	-
27	-	-	-	4	-	27	-	-	-	6	-
28	-	-	-	3	-	28	-	-	-	4.5	-
29	-	-	-	2	-	29	-	-	-	3.5	-
30	-	-	-	2	0.25	30	-	-	-	3.5	0
31	-	-	-	2.5	-	31	-	-	-	0.5	-
32	-	-	-	6	-	32	-	-	-	2	-
33	-	-	-	3	-	33	-	-	-	4.5	-
34	-	-	-	3.5	-	34	-	-	-	1.5	-
35	-	-	-	3	-	35	-	-	-	7	-
36	-	-	-	5	-	36	-	-	-	4	-
37	-	-	-	2.5	-	37	-	-	-	3.5	-
38	-	-	-	6	-	38	-	-	-	5	-
39	-	-	-	6	-	39	-	-	-	3.5	-
40	-	-	-	3.5	0.75	40	-	-	-	6.5	0.5
41	-	-	-	2.5	-	41	-	-	-	5	-
42	-	-	-	2.5	-	42	-	-	-	3	-
43	-	-	-	5.5	-	43	-	-	-	5.5	-
44	-	-	-	5	-	44	-	-	-	3	-
45	-	-	-	3.5	-	45	-	-	-	7.5	-
46	-	-	-	3	-	46	-	-	-	4.5	-
47	-	-	-	4.5	-	47	-	-	-	3	-
48	-	-	-	5.5	-	48	-	-	-	10	-
49	-	-	-	5	-	49	-	-	-	7.5	-
50	-	-	-	3	0.25	50	-	-	-	8	0.5
51	-	-	-	3	-	51	-	-	-	6.5	-
52	-	-	-	4	-	52	-	-	-	5	-
53	-	-	-	5	-	53	-	-	-	5.5	-
54	-	-	-	5.5	-	54	-	-	-	7	-
55	-	-	-	5.5	-	55	-	-	-	6.5	-
56	-	-	-	3	-	56	-	-	-	4	-
57	-	-	-	3	-	57	-	-	-	4.5	-
58	-	-	-	5.5	-	58	-	-	-	5.5	-
59	-	-	-	5.5	-	59	-	-	-	6.5	-
60	-	-	-	4.5	0.25	60	-	-	-	6	0.5
61	-	-	-	9	-	61	-	-	-	7.5	-
62	-	-	-	7	-	62	-	-	-	2.5	-
63	-	-	-	2.5	-	63	-	-	-	5	-
64	-	-	-	8	-	64	-	-	-	5.5	-
65	-	-	-	5	-	65	-	-	-	6	-
66	-	-	-	7	-	66	-	-	-	1.5	-
67	-	-	-	5	-	67	-	-	-	3	-
68	-	-	-	2.5	-	68	-	-	-	2.5	-
69	-	-	-	6	-	69	-	-	-	1.5	-
70	-	-	-	6.5	0.25	70	-	-	-	3	0
71	-	-	-	5	-	71	-	-	-	4.5	-
72	-	-	-	5	-	72	-	-	-	4	-
73	-	-	-	3.5	-	73	-	-	-	1.5	-
74	-	-	-	5	-	74	-	-	-	5	-
75	-	-	-	3.5	-	75	-	-	-	4.5	-
76	-	-	-	0.5	-	76	-	-	-	4.5	-
77	-	-	-	4	-	77	-	-	-	3	-
78	-	-	-	2.5	-	78	-	-	-	4.5	-
79	-	-	-	5.5	-	79	-	-	-	5.5	-
80	-	-	-	3	0	80	-	-	-	3	0.25
81	-	-	-	4	-	81	-	-	-	4.5	-
82	-	-	-	6.5	-	82	-	-	-	7	-
83	-	-	-	5	-	83	-	-	-	4.5	-
84	-	-	-	5	-	84	-	-	-	6	-
85	-	-	-	7	-	85	-	-	-	2.5	-
86	-	-	-	3.5	-	86	-	-	-	3	-
87	-	-	-	1	-	87	-	-	-	1.5	-
88	-	-	-	3.5	-	88	-	-	-	2	-
89	-	-	-	2.5	-	89	-	-	-	7.5	-
90	-	-	-	2.5	0.25	90	-	-	-	7	0.75
91	-	-	-	3.5	-	91	-	-	-	6	-
92	-	-	-	2	-	92	-	-	-	3.5	-
93	-	-	-	6	-	93	-	-	-	4	-
94	-	-	-	5	-	94	-	-	-	5	-
95	-	-	-	2	-	95	-	-	-	5.5	-
96	-	-	-	5	-	96	-	-	-	6	-
97	-	-	-	6	-	97	-	-	-	2.5	-
98	-	-	-	6	-	98	-	-	-	3.5	-
99	-	-	-	5	-	99	-	-	-	7.5	-
100	-	-	-	5.5	0.5	100	-	-	-	6	0.25
Average Cic, Cip and Embed. =	-	-	-	4.275	0.28	Average Cic, Cip and Embed. =	-	-	-	4.55	0.33
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FODPO-2						RG_FODPO-3					
14-Dec-21						14-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	4.5	-	1	-	-	-	3	-
2	-	-	-	7	-	2	-	-	-	6.5	-
3	-	-	-	2.5	-	3	-	-	-	3.5	-
4	-	-	-	3.5	-	4	-	-	-	4	-
5	-	-	-	4	-	5	-	-	-	1.5	-
6	-	-	-	4	-	6	-	-	-	2	-
7	-	-	-	5.5	-	7	-	-	-	2.5	-
8	-	-	-	3.5	-	8	-	-	-	3	-
9	-	-	-	1	-	9	-	-	-	2.5	-
10	-	-	-	5	0.5	10	-	-	-	4.5	0
11	-	-	-	3.5	-	11	-	-	-	6	-
12	-	-	-	2.5	-	12	-	-	-	2	-
13	-	-	-	4	-	13	-	-	-	1	-
14	-	-	-	4.5	-	14	-	-	-	3.5	-
15	-	-	-	5.5	-	15	-	-	-	5	-
16	-	-	-	6	-	16	-	-	-	3	-
17	-	-	-	4.5	-	17	-	-	-	1	-
18	-	-	-	2.5	-	18	-	-	-	0.5	-
19	-	-	-	2	-	19	-	-	-	3	-
20	-	-	-	3	0.25	20	-	-	-	2.5	0
21	-	-	-	7	-	21	-	-	-	3.5	-
22	-	-	-	8.5	-	22	-	-	-	8	-
23	-	-	-	4	-	23	-	-	-	5	-
24	-	-	-	1	-	24	-	-	-	4.5	-
25	-	-	-	1.5	-	25	-	-	-	2.5	-
26	-	-	-	2.5	-	26	-	-	-	2	-
27	-	-	-	4.5	-	27	-	-	-	1	-
28	-	-	-	4	-	28	-	-	-	3	-
29	-	-	-	3.5	-	29	-	-	-	8	-
30	-	-	-	5.5	0.25	30	-	-	-	6.5	0.5
31	-	-	-	6	-	31	-	-	-	4	-
32	-	-	-	7.5	-	32	-	-	-	5.5	-
33	-	-	-	3	-	33	-	-	-	7	-
34	-	-	-	4	-	34	-	-	-	8.5	-
35	-	-	-	2.5	-	35	-	-	-	6	-
36	-	-	-	3.5	-	36	-	-	-	3.5	-
37	-	-	-	6	-	37	-	-	-	6	-
38	-	-	-	5.5	-	38	-	-	-	9	-
39	-	-	-	9	-	39	-	-	-	4.5	-
40	-	-	-	4.5	0.25	40	-	-	-	3	0.25
41	-	-	-	2.5	-	41	-	-	-	2.5	-
42	-	-	-	3	-	42	-	-	-	2	-
43	-	-	-	1	-	43	-	-	-	1	-
44	-	-	-	2.5	-	44	-	-	-	2.5	-
45	-	-	-	1	-	45	-	-	-	5	-
46	-	-	-	3.5	-	46	-	-	-	6.5	-
47	-	-	-	2	-	47	-	-	-	5.5	-
48	-	-	-	3	-	48	-	-	-	7	-
49	-	-	-	1.5	-	49	-	-	-	1.5	-
50	-	-	-	4	0.25	50	-	-	-	5	0.5
51	-	-	-	3.5	-	51	-	-	-	5.5	-
52	-	-	-	2.5	-	52	-	-	-	6	-
53	-	-	-	4	-	53	-	-	-	3.5	-
54	-	-	-	4.5	-	54	-	-	-	5	-
55	-	-	-	6	-	55	-	-	-	4.5	-
56	-	-	-	5.5	-	56	-	-	-	3	-
57	-	-	-	3.5	-	57	-	-	-	8.5	-
58	-	-	-	2.5	-	58	-	-	-	4	-
59	-	-	-	3.5	-	59	-	-	-	1.5	-
60	-	-	-	4.5	0	60	-	-	-	1	0
61	-	-	-	5	-	61	-	-	-	4	-
62	-	-	-	7	-	62	-	-	-	3	-
63	-	-	-	5.5	-	63	-	-	-	2.5	-
64	-	-	-	2.5	-	64	-	-	-	6	-
65	-	-	-	4	-	65	-	-	-	3	-
66	-	-	-	2.5	-	66	-	-	-	2	-
67	-	-	-	3	-	67	-	-	-	4.5	-
68	-	-	-	3	-	68	-	-	-	5.5	-
69	-	-	-	4.5	-	69	-	-	-	2	-
70	-	-	-	4.5	0.5	70	-	-	-	3	0.25
71	-	-	-	3.5	-	71	-	-	-	2.5	-
72	-	-	-	3.5	-	72	-	-	-	4	-
73	-	-	-	6	-	73	-	-	-	3	-
74	-	-	-	4.5	-	74	-	-	-	4.5	-
75	-	-	-	3	-	75	-	-	-	4	-
76	-	-	-	2.5	-	76	-	-	-	3	-
77	-	-	-	3	-	77	-	-	-	4	-
78	-	-	-	5	-	78	-	-	-	5.5	-
79	-	-	-	4.5	-	79	-	-	-	8	-
80	-	-	-	3.5	0	80	-	-	-	4	0.5
81	-	-	-	4	-	81	-	-	-	3.5	-
82	-	-	-	5.5	-	82	-	-	-	5.5	-
83	-	-	-	3	-	83	-	-	-	4	-
84	-	-	-	5	-	84	-	-	-	2.5	-
85	-	-	-	2.5	-	85	-	-	-	3	-
86	-	-	-	1	-	86	-	-	-	2.5	-
87	-	-	-	2.5	-	87	-	-	-	1.5	-
88	-	-	-	3	-	88	-	-	-	3	-
89	-	-	-	3.5	-	89	-	-	-	2	-
90	-	-	-	5.5	0.5	90	-	-	-	3.5	0.25
91	-	-	-	3.5	-	91	-	-	-	3	-
92	-	-	-	2	-	92	-	-	-	4.5	-
93	-	-	-	2.5	-	93	-	-	-	2.5	-
94	-	-	-	3	-	94	-	-	-	1	-
95	-	-	-	6.5	-	95	-	-	-	1.5	-
96	-	-	-	1.5	-	96	-	-	-	5	-
97	-	-	-	1	-	97	-	-	-	5.5	-
98	-	-	-	5.5	-	98	-	-	-	2	-
99	-	-	-	4	-	99	-	-	-	4.5	-
100	-	-	-	4	0.5	100	-	-	-	4.5	0.5
Average Cic, Cip and Embed. =	-	-	-	3.855	0.30	Average Cic, Cip and Embed. =	-	-	-	3.855	0.28
Old Calcite Index (CI)	-					Old Calcite Index (CI)	-				
New Calcite Index (CI')	-					New Calcite Index (CI')	-				

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO22-1						RG_FO22-2					
13-Dec-21						13-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	3.5	-	1	-	-	-	3.5	-
2	-	-	-	4.5	-	2	-	-	-	5.5	-
3	-	-	-	1.5	-	3	-	-	-	3	-
4	-	-	-	2.5	-	4	-	-	-	1	-
5	-	-	-	2.5	-	5	-	-	-	1.5	-
6	-	-	-	3	-	6	-	-	-	2	-
7	-	-	-	2	-	7	-	-	-	3	-
8	-	-	-	6.5	-	8	-	-	-	4.5	-
9	-	-	-	4	-	9	-	-	-	3	-
10	-	-	-	3	0.25	10	-	-	-	6	0.5
11	-	-	-	2.5	-	11	-	-	-	4	-
12	-	-	-	1.5	-	12	-	-	-	7.5	-
13	-	-	-	1.5	-	13	-	-	-	3.5	-
14	-	-	-	6	-	14	-	-	-	2.5	-
15	-	-	-	3	-	15	-	-	-	2	-
16	-	-	-	3.5	-	16	-	-	-	3	-
17	-	-	-	2	-	17	-	-	-	6	-
18	-	-	-	4.5	-	18	-	-	-	7.5	-
19	-	-	-	7	-	19	-	-	-	4	-
20	-	-	-	5	0.5	20	-	-	-	4	0.25
21	-	-	-	3.5	-	21	-	-	-	2.5	-
22	-	-	-	2.5	-	22	-	-	-	2	-
23	-	-	-	4	-	23	-	-	-	2	-
24	-	-	-	7	-	24	-	-	-	2.5	-
25	-	-	-	9	-	25	-	-	-	2.5	-
26	-	-	-	2.5	-	26	-	-	-	3	-
27	-	-	-	6	-	27	-	-	-	1.5	-
28	-	-	-	3	-	28	-	-	-	1.5	-
29	-	-	-	2	-	29	-	-	-	4.5	-
30	-	-	-	2.5	0	30	-	-	-	3	0.25
31	-	-	-	3.5	-	31	-	-	-	3.5	-
32	-	-	-	2	-	32	-	-	-	4	-
33	-	-	-	4	-	33	-	-	-	6	-
34	-	-	-	2	-	34	-	-	-	5	-
35	-	-	-	1.5	-	35	-	-	-	0.5	-
36	-	-	-	2	-	36	-	-	-	1.5	-
37	-	-	-	3.5	-	37	-	-	-	3.5	-
38	-	-	-	1	-	38	-	-	-	4	-
39	-	-	-	2	-	39	-	-	-	2.5	-
40	-	-	-	4.5	-	40	-	-	-	4	0
41	-	-	-	3.5	0.75	41	-	-	-	3	-
42	-	-	-	3	-	42	-	-	-	1	-
43	-	-	-	5	-	43	-	-	-	1	-
44	-	-	-	2.5	-	44	-	-	-	5	-
45	-	-	-	7	-	45	-	-	-	7	-
46	-	-	-	4	-	46	-	-	-	2.5	-
47	-	-	-	6	-	47	-	-	-	2	-
48	-	-	-	2.5	-	48	-	-	-	3	-
49	-	-	-	4.5	-	49	-	-	-	3.5	-
50	-	-	-	3.5	-	50	-	-	-	4.5	0.25
51	-	-	-	5.5	0.25	51	-	-	-	2	-
52	-	-	-	2.5	-	52	-	-	-	2	-
53	-	-	-	4	-	53	-	-	-	6	-
54	-	-	-	2	-	54	-	-	-	7.5	-
55	-	-	-	3.5	-	55	-	-	-	8.5	-
56	-	-	-	3	-	56	-	-	-	2.5	-
57	-	-	-	2.5	-	57	-	-	-	4	-
58	-	-	-	4.5	-	58	-	-	-	3	-
59	-	-	-	3	-	59	-	-	-	1.5	-
60	-	-	-	4	-	60	-	-	-	2.5	0
61	-	-	-	3.5	-	61	-	-	-	5.5	-
62	-	-	-	3	0	62	-	-	-	9	-
63	-	-	-	3.5	-	63	-	-	-	3.5	-
64	-	-	-	5.5	-	64	-	-	-	6.5	-
65	-	-	-	1.5	-	65	-	-	-	4	-
66	-	-	-	1	-	66	-	-	-	3.5	-
67	-	-	-	1	-	67	-	-	-	3	-
68	-	-	-	2.5	-	68	-	-	-	1	-
69	-	-	-	4	-	69	-	-	-	3.5	-
70	-	-	-	2	-	70	-	-	-	3.5	0
71	-	-	-	3	-	71	-	-	-	2.5	-
72	-	-	-	3.5	0.25	72	-	-	-	4.5	-
73	-	-	-	4	-	73	-	-	-	2	-
74	-	-	-	2	-	74	-	-	-	5.5	-
75	-	-	-	4	-	75	-	-	-	4.5	-
76	-	-	-	8.5	-	76	-	-	-	1.5	-
77	-	-	-	3	-	77	-	-	-	3	-
78	-	-	-	3	-	78	-	-	-	4.5	-
79	-	-	-	2.5	-	79	-	-	-	1	-
80	-	-	-	4.5	-	80	-	-	-	2	0
81	-	-	-	4.5	-	81	-	-	-	1.5	-
82	-	-	-	3.5	-	82	-	-	-	5.5	-
83	-	-	-	5.5	0	83	-	-	-	7	-
84	-	-	-	4	-	84	-	-	-	2	-
85	-	-	-	3.5	-	85	-	-	-	6	-
86	-	-	-	2	-	86	-	-	-	6.5	-
87	-	-	-	2.5	-	87	-	-	-	2.5	-
88	-	-	-	5	-	88	-	-	-	7	-
89	-	-	-	6	-	89	-	-	-	2	-
90	-	-	-	8	-	90	-	-	-	5.5	0.5
91	-	-	-	4.5	-	91	-	-	-	3.5	-
92	-	-	-	5	-	92	-	-	-	3	-
93	-	-	-	4.5	0.25	93	-	-	-	4	-
94	-	-	-	3.5	-	94	-	-	-	2.5	-
95	-	-	-	5	-	95	-	-	-	2	-
96	-	-	-	1	-	96	-	-	-	4.5	-
97	-	-	-	4	-	97	-	-	-	6	-
98	-	-	-	3.5	-	98	-	-	-	3.5	-
99	-	-	-	3	-	99	-	-	-	3	-
100	-	-	-	1.5	0	100	-	-	-	3.5	0.25
Average Cic, Cip and Embed. =	-	-	-	3.59	0.23	Average Cic, Cip and Embed. =	-	-	-	3.635	0.20
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FO22-3						RG_FOUEW-1					
13-Dec-21						13-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	4.5	-	1	-	-	-	3	-
2	-	-	-	5	-	2	-	-	-	3	-
3	-	-	-	4	-	3	-	-	-	10	-
4	-	-	-	2.5	-	4	-	-	-	9.5	-
5	-	-	-	4	-	5	-	-	-	5.5	-
6	-	-	-	1.5	-	6	-	-	-	2.5	-
7	-	-	-	2	-	7	-	-	-	5	-
8	-	-	-	3.5	-	8	-	-	-	3	-
9	-	-	-	4	-	9	-	-	-	6.5	-
10	-	-	-	2	0	10	-	-	-	1.5	0
11	-	-	-	5	-	11	-	-	-	5.5	-
12	-	-	-	6	-	12	-	-	-	3	-
13	-	-	-	2	-	13	-	-	-	2	-
14	-	-	-	3.5	-	14	-	-	-	10.5	-
15	-	-	-	3	-	15	-	-	-	7	-
16	-	-	-	5	-	16	-	-	-	7	-
17	-	-	-	3	-	17	-	-	-	9	-
18	-	-	-	7	-	18	-	-	-	4.5	-
19	-	-	-	4.5	-	19	-	-	-	4	-
20	-	-	-	3	0	20	-	-	-	9	0.5
21	-	-	-	2.5	-	21	-	-	-	4	-
22	-	-	-	3	-	22	-	-	-	5.5	-
23	-	-	-	5	-	23	-	-	-	8	-
24	-	-	-	2	-	24	-	-	-	5	-
25	-	-	-	2	-	25	-	-	-	13.5	-
26	-	-	-	3	-	26	-	-	-	9.5	-
27	-	-	-	1.5	-	27	-	-	-	6	-
28	-	-	-	6	-	28	-	-	-	6.5	-
29	-	-	-	3.5	-	29	-	-	-	3	-
30	-	-	-	4.5	0.25	30	-	-	-	6	0.25
31	-	-	-	4	-	31	-	-	-	5	-
32	-	-	-	5	-	32	-	-	-	4	-
33	-	-	-	1	-	33	-	-	-	8.5	-
34	-	-	-	1	-	34	-	-	-	5	-
35	-	-	-	2	-	35	-	-	-	15.5	-
36	-	-	-	2.5	-	36	-	-	-	5.5	-
37	-	-	-	3.5	-	37	-	-	-	10	-
38	-	-	-	3	-	38	-	-	-	5.5	-
39	-	-	-	2	-	39	-	-	-	9.5	-
40	-	-	-	2	0	40	-	-	-	3.5	0.25
41	-	-	-	3.5	-	41	-	-	-	8.5	-
42	-	-	-	3.5	-	42	-	-	-	4	-
43	-	-	-	7	-	43	-	-	-	6.5	-
44	-	-	-	1.5	-	44	-	-	-	9.5	-
45	-	-	-	6.5	-	45	-	-	-	6.5	-
46	-	-	-	3.5	-	46	-	-	-	4.5	-
47	-	-	-	5	-	47	-	-	-	8	-
48	-	-	-	2.5	-	48	-	-	-	4.5	-
49	-	-	-	3.5	-	49	-	-	-	10.5	-
50	-	-	-	7	0.5	50	-	-	-	8	0.25
51	-	-	-	3	-	51	-	-	-	5	-
52	-	-	-	4.5	-	52	-	-	-	2	-
53	-	-	-	2	-	53	-	-	-	7	-
54	-	-	-	5	-	54	-	-	-	6.5	-
55	-	-	-	6.5	-	55	-	-	-	15	-
56	-	-	-	2.5	-	56	-	-	-	5.5	-
57	-	-	-	2	-	57	-	-	-	7	-
58	-	-	-	5.5	-	58	-	-	-	10	-
59	-	-	-	3.5	-	59	-	-	-	4.5	-
60	-	-	-	5	0.25	60	-	-	-	7	0
61	-	-	-	2	-	61	-	-	-	6	-
62	-	-	-	5.5	-	62	-	-	-	6.5	-
63	-	-	-	4	-	63	-	-	-	14.5	-
64	-	-	-	4.5	-	64	-	-	-	3.5	-
65	-	-	-	3.5	-	65	-	-	-	8.5	-
66	-	-	-	3	-	66	-	-	-	6.5	-
67	-	-	-	4.5	-	67	-	-	-	5	-
68	-	-	-	5	-	68	-	-	-	2	-
69	-	-	-	2	-	69	-	-	-	2.5	-
70	-	-	-	4	0.25	70	-	-	-	5	0.75
71	-	-	-	3	-	71	-	-	-	6	-
72	-	-	-	5.5	-	72	-	-	-	7.5	-
73	-	-	-	3	-	73	-	-	-	2	-
74	-	-	-	4	-	74	-	-	-	5	-
75	-	-	-	2.5	-	75	-	-	-	2	-
76	-	-	-	4	-	76	-	-	-	6.5	-
77	-	-	-	1.5	-	77	-	-	-	11.5	-
78	-	-	-	2	-	78	-	-	-	11	-
79	-	-	-	4.5	-	79	-	-	-	9	-
80	-	-	-	7.5	0.75	80	-	-	-	10	0.5
81	-	-	-	2.5	-	81	-	-	-	11	-
82	-	-	-	5	-	82	-	-	-	7	-
83	-	-	-	3.5	-	83	-	-	-	5	-
84	-	-	-	3	-	84	-	-	-	8	-
85	-	-	-	4	-	85	-	-	-	7	-
86	-	-	-	2	-	86	-	-	-	5.5	-
87	-	-	-	2.5	-	87	-	-	-	4.5	-
88	-	-	-	1	-	88	-	-	-	6.5	-
89	-	-	-	2	-	89	-	-	-	6	-
90	-	-	-	3	0.5	90	-	-	-	15.5	0
91	-	-	-	3.5	-	91	-	-	-	8	-
92	-	-	-	4	-	92	-	-	-	3.5	-
93	-	-	-	3.5	-	93	-	-	-	10	-
94	-	-	-	7	-	94	-	-	-	6	-
95	-	-	-	3	-	95	-	-	-	3	-
96	-	-	-	4.5	-	96	-	-	-	5	-
97	-	-	-	7.5	-	97	-	-	-	11	-
98	-	-	-	2	-	98	-	-	-	12.5	-
99	-	-	-	4	-	99	-	-	-	8.5	-
100	-	-	-	2.5	0	100	-	-	-	8.5	0.25
Average Cic, Cip and Embed. =	-	-	-	3.625	0.25	Average Cic, Cip and Embed. =	-	-	-	6.725	0.28
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.16: Pebble Counts and Calcite Measurements at Benthic Invertebrate Sampling Locations, FRO LAEMP, 2021

RG_FOUEW-2						RG_FOUEW-3					
13-Dec-21						13-Dec-21					
Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)	Pebble	Concreted Status	Calcite Proportion	Calcite Presence	Intermediate Axis (cm)	Embedded-ness (%)
1	-	-	-	6	-	1	-	-	-	4.5	-
2	-	-	-	7.5	-	2	-	-	-	7	-
3	-	-	-	4.5	-	3	-	-	-	2.5	-
4	-	-	-	7.5	-	4	-	-	-	6	-
5	-	-	-	4	-	5	-	-	-	6	-
6	-	-	-	4.5	-	6	-	-	-	2.5	-
7	-	-	-	9	-	7	-	-	-	7	-
8	-	-	-	10	-	8	-	-	-	5	-
9	-	-	-	8.5	-	9	-	-	-	9	-
10	-	-	-	3.5	0	10	-	-	-	4.5	0.25
11	-	-	-	5.5	-	11	-	-	-	5.5	-
12	-	-	-	4.5	-	12	-	-	-	5	-
13	-	-	-	5.5	-	13	-	-	-	5.5	-
14	-	-	-	4	-	14	-	-	-	12.5	-
15	-	-	-	3.5	-	15	-	-	-	4	-
16	-	-	-	7	-	16	-	-	-	8	-
17	-	-	-	12	-	17	-	-	-	3	-
18	-	-	-	3	-	18	-	-	-	3.5	-
19	-	-	-	5.5	-	19	-	-	-	13.5	-
20	-	-	-	6.5	0.25	20	-	-	-	4	0.5
21	-	-	-	3	-	21	-	-	-	10.5	-
22	-	-	-	6	-	22	-	-	-	3.5	-
23	-	-	-	8.5	-	23	-	-	-	10.5	-
24	-	-	-	5.5	-	24	-	-	-	7	-
25	-	-	-	8.5	-	25	-	-	-	6	-
26	-	-	-	10.5	-	26	-	-	-	5.5	-
27	-	-	-	8	-	27	-	-	-	10.5	-
28	-	-	-	9	-	28	-	-	-	6.5	-
29	-	-	-	9.5	-	29	-	-	-	4.5	-
30	-	-	-	5	0.5	30	-	-	-	3	0.75
31	-	-	-	3.5	-	31	-	-	-	10.5	-
32	-	-	-	6	-	32	-	-	-	9	-
33	-	-	-	5.5	-	33	-	-	-	10.5	-
34	-	-	-	6	-	34	-	-	-	10.5	-
35	-	-	-	5	-	35	-	-	-	15	-
36	-	-	-	4	-	36	-	-	-	8	-
37	-	-	-	8	-	37	-	-	-	14	-
38	-	-	-	8.5	-	38	-	-	-	9	-
39	-	-	-	6	-	39	-	-	-	8	-
40	-	-	-	2	0	40	-	-	-	9.5	0.25
41	-	-	-	2.5	-	41	-	-	-	14	-
42	-	-	-	4	-	42	-	-	-	9	-
43	-	-	-	1.5	-	43	-	-	-	8.5	-
44	-	-	-	13.5	-	44	-	-	-	4	-
45	-	-	-	9	-	45	-	-	-	13	-
46	-	-	-	8.5	-	46	-	-	-	7	-
47	-	-	-	2.5	-	47	-	-	-	9.5	-
48	-	-	-	5.5	-	48	-	-	-	3	-
49	-	-	-	4.5	-	49	-	-	-	6.5	-
50	-	-	-	8	0.25	50	-	-	-	4	0.25
51	-	-	-	5.5	-	51	-	-	-	7	-
52	-	-	-	3	-	52	-	-	-	8	-
53	-	-	-	10	-	53	-	-	-	12	-
54	-	-	-	8	-	54	-	-	-	10.5	-
55	-	-	-	8.5	-	55	-	-	-	8	-
56	-	-	-	3.5	-	56	-	-	-	8.5	-
57	-	-	-	8	-	57	-	-	-	7	-
58	-	-	-	9	-	58	-	-	-	4	-
59	-	-	-	9.5	-	59	-	-	-	3.5	-
60	-	-	-	10.5	0.25	60	-	-	-	9.5	0.25
61	-	-	-	6.5	-	61	-	-	-	5	-
62	-	-	-	12.5	-	62	-	-	-	8.5	-
63	-	-	-	13	-	63	-	-	-	4	-
64	-	-	-	0.2	-	64	-	-	-	9	-
65	-	-	-	7	-	65	-	-	-	10	-
66	-	-	-	7	-	66	-	-	-	7.5	-
67	-	-	-	4.5	-	67	-	-	-	12.5	-
68	-	-	-	8.5	-	68	-	-	-	7.5	-
69	-	-	-	5.5	-	69	-	-	-	8	-
70	-	-	-	13	0.25	70	-	-	-	4.5	0.25
71	-	-	-	5	-	71	-	-	-	10	-
72	-	-	-	10	-	72	-	-	-	17	-
73	-	-	-	6.5	-	73	-	-	-	10	-
74	-	-	-	5.5	-	74	-	-	-	5	-
75	-	-	-	9.5	-	75	-	-	-	5.5	-
76	-	-	-	4	-	76	-	-	-	4.5	-
77	-	-	-	6	-	77	-	-	-	11.5	-
78	-	-	-	9	-	78	-	-	-	10	-
79	-	-	-	3.5	-	79	-	-	-	8	-
80	-	-	-	13.5	0.25	80	-	-	-	8.5	0.25
81	-	-	-	2	-	81	-	-	-	10	-
82	-	-	-	7	-	82	-	-	-	5.5	-
83	-	-	-	5.5	-	83	-	-	-	7.5	-
84	-	-	-	6.5	-	84	-	-	-	6.5	-
85	-	-	-	9.5	-	85	-	-	-	3.5	-
86	-	-	-	7	-	86	-	-	-	9	-
87	-	-	-	8.5	-	87	-	-	-	7	-
88	-	-	-	5	-	88	-	-	-	7	-
89	-	-	-	7	-	89	-	-	-	6	-
90	-	-	-	5	0	90	-	-	-	2	0
91	-	-	-	6	-	91	-	-	-	4.5	-
92	-	-	-	8.5	-	92	-	-	-	6	-
93	-	-	-	18	-	93	-	-	-	7	-
94	-	-	-	4.5	-	94	-	-	-	4.5	-
95	-	-	-	7	-	95	-	-	-	6	-
96	-	-	-	4.5	-	96	-	-	-	8.5	-
97	-	-	-	5.5	-	97	-	-	-	7.5	-
98	-	-	-	7	-	98	-	-	-	5	-
99	-	-	-	5	-	99	-	-	-	15	-
100	-	-	-	11	0.5	100	-	-	-	3	0.25
Average Cic, Cip and Embed. =	-	-	-	6.752	0.23	Average Cic, Cip and Embed. =	-	-	-	7.44	0.30
Old Calcite Index (CI)		-				Old Calcite Index (CI)		-			
New Calcite Index (CI')		-				New Calcite Index (CI')		-			

Notes: nm = not measurable, "-" indicates no data. Intermediate axis is the measurement across the intermediate access of the pebble and presented in cm. Cic = Calcite Index Concretion. Cip = Calcite Index Presence.

Table G.17: Kick and Sweep at Reference and Mine-exposed Areas, FRO LAEMP, 2021

Station Parameters		Reference RG_UFR1	Mine-Exposed RG_FOUKI	Mine-Exposed RG_SCOUTDS	Mine-Exposed RG_FOBSC	Mine-Exposed RG_FRUPO	Mine-Exposed RG_FODPO	Mine-Exposed RG_FO22	Mine-Exposed RG_FOUEW
Station 1	Easting	651347	651767	652298	652315	653890	653934	654777	656269
	Northing	5566839	5559998	5558427	5558231	5555945	5555086	5553693	5551879
	Date	16-Dec-21	14-Dec-21	9-Dec-21	9-Dec-21	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Number of Jars	1	1	1	-	2	1	2	1
	Total Kick Distance (m)	12	16	10	15	15	20	17	18
	Full Transect (Yes / No)	No	Yes	No	No	Yes	Yes	Yes	No
	Number of Transects	5	3.5	0.5	0.75	3.5	4.5	2	5
Station 2	Easting	651345	651810	652326	652369	653896	653886	654758	656328
	Northing	5566806	5559965	5558444	5558159	5555883	5555076	5552638	5551863
	Date	16-Dec-21	14-Dec-21	9-Dec-21	9-Dec-21	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Number of Jars	1	1	1	-	1	1	1	1
	Total Kick Distance (m)	13	8	8	12	16	20	22	20
	Full Transect (Yes / No)	No	Yes	No	No	No	Yes	Yes	Yes
	Number of Transects	8	1	3	2	4	4	2	2
Station 3	Easting	651377	651883	652320	652441	653867	653861	654809	656370
	Northing	5566758	5559742	5558499	5558507	5555848	5555057	5553613	5551885
	Date	16-Dec-21	14-Dec-21	9-Dec-21	9-Dec-21	13-Dec-21	14-Dec-21	13-Dec-21	13-Dec-21
	Number of Jars	1	1	1	6	-	1	1	1
	Total Kick Distance (m)	12	12	10	7	12	20	18	13
	Full Transect (Yes / No)	No	No	Yes	No	No	Yes	Yes	Yes
	Number of Transects	6	3.5	3.5	4	4	4	2	1

Note: "-" indicates no data available.

APPENDIX H
BIOLOGICAL TRIGGERS

APPENDIX H BIOLOGICAL TRIGGERS

H1 INTRODUCTION 1
H1.1 Background 1
H2 METHODS 3
H2.1 Overview 3
H2.2 Percent EPT 3
H2.3 Benthic Invertebrate Tissue Selenium (BIT Se) 4
H3 RESULTS 6
H3.1 Percent EPT 6
H3.2 Benthic Invertebrate Tissue Selenium (BIT Se) 6
H4 SUMMARY 7
H5 REFERENCES 8

H1 INTRODUCTION

H1.1 Background

Biological triggers were developed and implemented to assist with identifying and communicating unexpected and potentially important changes in aquatic ecosystem conditions and are required as part of Teck's Adaptive Management Plan (AMP; Teck 2018). Biological triggers were developed in consultation with the EMC for a subset of the biological monitoring endpoints that are effective indicators of changes at the ecosystem level. The purpose of the biological triggers is to quickly identify biological monitoring areas where unexpected biological conditions may be occurring that may require management action. Additionally, information provided from the analysis of biological triggers may lead to responses under the AMP response framework.

Draft biological triggers were developed in the 2018 AMP (Teck 2018) under Management Question 5, with these initially reported on in 2021 in the 2020 LAEMP reports and RAEMP data package, and summarized in the 2020 Annual AMP Report (Teck 2021a). When the 2018 AMP was approved, there was an expectation that the 2018 AMP draft/interim biological triggers would be finalized, through engagement with the EMC, prior to December 15, 2021 AMP Update. The biological triggers were finalized in 2021 (Teck 2021b) and the methods applied in this report reflect the finalized biological triggers (Teck 2021b). It is important to note that the process and/or biological triggers may adjust over time as the purpose of the biological triggers is to be reflective of not only changes in the Elk Valley, but also the current state of knowledge in the area.

The finalized biological triggers (Teck 2021b) include three measurement endpoints:

- Percent EPT (% EPT; Ephemeroptera, Plecoptera, and Trichoptera) – based on travelling kick samples (CABIN protocol), generally three replicates per location per sampling event.
- Benthic invertebrate tissue selenium (BIT Se) – generally several replicates collected per location per sampling event, where each replicate is a composite sample of invertebrates (i.e., composite-taxa sample).

- Westslope cutthroat trout muscle tissue selenium (WCT Se) – generally 8 replicates collected per location per sampling event, where each replicate corresponds to a sample from a single fish[1].

Evaluation of these three biological trigger endpoints is complementary to the fulsome evaluation of biological endpoints that is integrated into the Local Aquatic Effects Monitoring Program (LAEMP) and the Regional Aquatic Effects Monitoring Program (RAEMP) data evaluations. The more fulsome evaluation of biological endpoints is used to support answering the specific LAEMP and RAEMP study questions through the consideration of not only the endpoints used in the biological trigger evaluation, but also a full suite of additional biological, chemical, and physical endpoints. Biological triggers do not provide information on cause and effect, report on trends, or feed directly into decision-making processes. Instead, the biological triggers act to flag areas for further evaluation, which would then take place under existing monitoring programs, through the development of supporting studies or through the response framework, as necessary.

Biological monitoring data are compared to triggers annually, and summaries of the LAEMP and RAEMP trigger evaluations and responses are summarized within annual AMP reports.

[1] Fish tissue monitoring was excluded from the 2021 FRO LAEMP monitoring program in an effort to help reduce the potential for sampling stress on westslope cutthroat trout populations in related to FRO LAEMP monitoring activities.

H2 METHODS

H2.1 Overview

As outlined in Section H1.1, analyses for biological triggers are meant to be complementary to other analyses conducted in the LAEMPs and RAEMP. For the 2021 FRO LAEMP, biological trigger analyses only included two of the three measurement endpoints (%EPT and BIT Se) since fish tissue sampling is not part of the FRO LAEMP and is covered under the RAEMP.

For the purpose of application of the biological triggers, expectations for the endpoints evaluated (both the %EPT and BIT Se for the 2021 FRO LAEMP) were based on projected water quality, not on measured water quality. Thus, the triggers should detect biological results that were unexpected, regardless of whether those results are due to unexpected water quality or due to unexpected relationships between water quality and biological endpoints. Biological triggers were therefore only applied at locations where water quality projections were available[2]. Specifically, six of the mine-exposed areas (RG_FODHE, RG_FOUKI, RG_FOBSC, RG_FOBCP, RG_FODPO, and RG_FO22) and one reference area (RG_FO26) included in the FRO LAEMP were evaluated for biological trigger events. Data for other areas studied under the FRO LAEMP (RG_HENUP, RG_UFR1, RG_FOUCL, RG_FOUNGD, RG_FODNGD, RG_MP1, RG_FOUSH, RG_FOBKS, RG_SCOUTDS, RG_FRCP1SW, RG_FRUPO, RG_FOUEW) were not available to be evaluated relative to biological triggers but were assessed elsewhere as part of the main FRO LAEMP report.

Methodological details are discussed for each of the biological trigger metrics below.

H2.2 Percent EPT

Data for percent EPT were compared to:

- Normal range: The lower limit of habitat-adjusted normal range (2.5th percentile). Up-to-date limits of normal ranges[3] are provided in the RAEMP and LAEMPs, where they are recalculated as needed as new data become available (Teck 2019). The derivation of habitat-adjusted normal ranges is described in Appendix J of the 2020

[2] Biological triggers have not been developed for lentic habitats, because water quality projections are not generally available for lentic locations. For two of the three endpoints (BIT Se and WCT Se; %EPT not relevant in lentic areas), if projections become available for lentic habitats then triggers could be developed in future, using the available lentic bioaccumulation model from water to invertebrates (updated in 2021), and the invertebrate to fish bioaccumulation model (which should be applicable to both lotic and lentic habitats).

[3] The normal range will be updated as part of the three year reporting cycle of the RAEMP (Minnow 2021b).

RAEMP, and was based on consideration of more than 30 habitat, substrate, GIS, and land cover variables (Minnow 2020).

- Expectations: The lower limit of the range of %EPT corresponds to the predicted aquatic data integration tool (ADIT) score. The predicted ADIT scores correspond to potential effects on benthic invertebrate community (BIC) endpoints, based on relationships between water quality projections (for nitrate, sulphate and cadmium)[4] and invertebrate toxicity endpoints originally developed for the EVWQP (Teck 2014; Golder 2020a). A predicted ADIT score of 3 corresponds to 50% or greater effects to reproduction of the water flea *Ceriodaphnia dubia*, 2 corresponds to 20 to 50% effects, 1 corresponds to 10 to 20% effects, and 0 corresponds to effect levels of 10% or less. Once %EPT is actually measured, the measured results are converted to a measured ADIT score in relation to the habitat adjusted normal range as follows: An ADIT score of 0 corresponds to expected %EPT ≥ the 10th percentile of the habitat-adjusted normal range; an ADIT score of 1 corresponds to expected %EPT between the 10th percentile and the 2.5th percentile of the habitat-adjusted normal range (and is therefore identical in application to the lower limit of normal range); an ADIT score of 2 corresponds to expected %EPT between the 2.5th percentile and half of the 2.5th percentile of the habitat-adjusted normal range; finally, an ADIT score of 3 corresponds to expected %EPT ≤ half of the 2.5th percentile and ≥ 0. Individual replicate habitat-adjusted normal ranges were used at each location for establishing the %EPT limits associated with each ADIT score. In summary, this component of the biological trigger for %EPT asks whether the measured ADIT score – calculated based on measured %EPT relative to normal ranges – is greater than the ADIT score that was predicted based on water quality projections.

Benthic invertebrate community data for %EPT collected in the fall (September) for the 2021 FRO LAEMP were included in the biological trigger analysis.

H2.3 Benthic Invertebrate Tissue Selenium (BIT Se)

Data for BIT Se were compared to:

- Normal range: The upper limit of regional normal range (97.5th percentile) for individual replicates. Up-to-date limits of normal ranges[5] are provided in the RAEMP and LAEMPs, where they are recalculated as needed as new data become available (Teck 2019).

[4] Selenium was not included because selenium effects on BIC endpoints are not expected. Projections were based on the highest maximum monthly mean across all flow scenarios (low, average, and high).

[5] The normal range will be updated as part of the three-year reporting cycle of the RAEMP (Minnow 2021b).

- Expectations: The upper limit of the 95% prediction interval based on the water to BIT bioaccumulation model for lotic environments. The model originally developed in the EVWQP (Golder 2014) was updated (Golder 2020b) and the updated data set was used to calculate prediction intervals for individual replicates. Methodology for estimating the upper limit of the 95% prediction for BIT Se (given any projected value of aqueous selenium) is discussed further in the Biological Trigger Development for the Elk Valley Adaptive Management Plan (Azimuth 2021 [In Preparation]).

Benthic invertebrate tissue selenium data from sampling events completed throughout 2021 for the FRO LAEMP (June, September, and December) were included in the biological trigger analysis although normal range information is based on fall (September) information.

Although effects benchmarks are not part of the trigger, they are relevant for interpreting potential significance and responses. Consequently, the level 1, 2 and 3 benchmarks for the most sensitive receptor (juvenile fish via dietary exposure) are included in plots (11, 18 and 26 mg/kg respectively).

H3 RESULTS

H3.1 Percent EPT

Individual replicates for %EPT for each of the six mine-exposed areas (RG_FODHE, RG_FOUKI, RG_FOBSC, RG_FOBCP, RG_FODPO, and RG_FO22) as well as one reference area (RG_FO26) were each assessed against their respective biological trigger for the September sampling period (Appendix Table H.1 and Appendix Figure H.1). Except for RG_FODHE (3 of 3 replicates) and RG_FODPO (2 of 3 replicates), RG_FOUKI [3 of 3 replicates], RG_FOBSC [3 of 3 replicates], RG_FOBCP [5 of 5 replicates], and RG_FO22 [5 of 5 replicates] had % EPT results that were lower than the biological trigger value (Appendix Table H.1 and Appendix Figure H.1). The biological monitoring area in the Fording River upstream of the Kilmarnock Creek confluence (RG_FOUKI) and RG_FOBSC had the greatest deviation from the habitat-adjusted normal range and 2.5th percentile prediction limit in 2021, whereas the Old (RG_FOBCP) and New (RG_FO22) Compliance points deviated similarly from the habitat-adjusted normal range and 2.5th percentile prediction limit (Appendix Table H.1; Appendix Figure H.1). The reference area RG_FO26 had %EPT that was within both the habitat-adjusted normal range and the 2.5th percentile prediction limit.

H3.2 Benthic Invertebrate Tissue Selenium (BIT Se)

Benthic invertebrate tissue selenium concentrations for each mine-exposed and reference area were assessed against their respective biological trigger for individual replicate samples from each of the three sampling events in 2021 (June, September, and December; Appendix Table H.2 and Appendix Figure H.2). Except for two of five replicates at RG_FOBSC in September, there were no replicates at any of the mine-exposed areas that exceeded biological trigger for tissue selenium concentrations (above the 97.5th percentile of normal range and above the 95% prediction interval; Appendix Table H.2 and Appendix Figure H.2). Thirteen of the fifteen benthic invertebrate tissue samples taken at RG_FOBSC were below biological triggers for tissue selenium concentrations in 2021 (Appendix Table H.2 and Appendix Figure H.2).

H4 SUMMARY

Except for RG_FODHE and two of three replicates at RG_FODPO, all mine-exposed areas had replicates that exceeded the %EPT biological trigger. Percent EPT for mine-exposed areas exceeding biological triggers in 2021 were similar to results from previous FRO LAEMP reports which evaluated multiple benthic invertebrate community metrics (Minnow and Lotic 2018; Minnow and Lotic 2019, 2020) and were classified as 'unexpected' compared to water quality projections in the RAEMP (Minnow 2020). The effect to %EPT was believed to be a combination of both water quality stressors and habitat variables, which have been shown to vary in a similar way to each other throughout the study area, thus making it difficult to ascertain their individual influence on BIC structure.

As discussed above, the biological trigger for benthic invertebrate tissue selenium concentrations was exceeded for two of fifteen replicates at RG_FOBSC in 2021; however, biological triggers were not exceeded at any other mine-exposed areas in June, September, or December. Elevated levels of benthic invertebrate tissue selenium concentrations at RG_FOBSC in September may have been a result of elevated concentrations of aqueous total and reduced selenium; however, several biological monitoring areas in the vicinity of RG_FOBSC had similarly concentrations of these selenium species in water but did not have tissue selenium concentrations above predictions. Commissioning of the FRO AWTF-S in December, 2021 should help to reduce selenium concentrations in these sections of the Fording River, thus reducing benthic invertebrate tissue selenium concentrations.

As discussed in the main report, biological triggers are consistent with the findings of the FRO LAEMP. Current biological triggers were sufficient to identify monitoring areas where biological responses are occurring, based on the integrated assessment conducted in the LAEMP, and no additional triggers are recommended at this time. Uncertainty, however, remains around the cause of the observed %EPT response at multiple FRO LAEMP monitoring areas, and of the cause of elevated benthic invertebrate tissue selenium concentrations in two replicates at RG_FOBSC, as noted above. In an effort to resolve uncertainty around the combined and individual effects of water quality, habitat, and other mine-related stressors on benthic invertebrate communities in lotic areas in the Elk River watershed, Minnow is developing a predictive model for benthic invertebrate community endpoints, as discussed with the EMC in February 2021. Uncertainties are expected to be reduced through this modelling effort, and additional monitoring or potential management responses will continue to be assessed through the adaptive management process.

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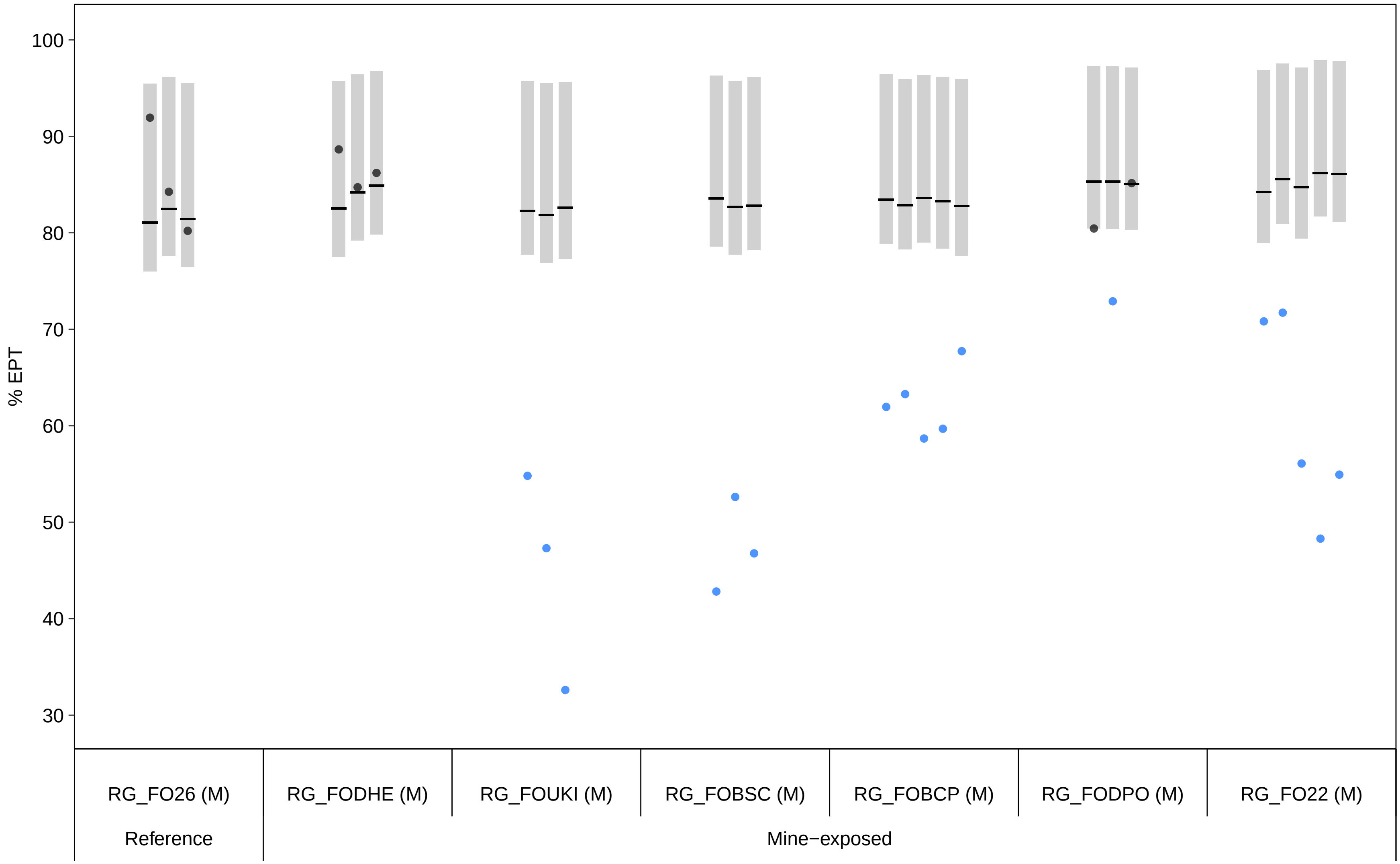

Figure H.1: % EPT Compared to Predicted Values, FRO LAEMP, 2021

Notes: Black bars indicate the lower limit of the predicted ADIT score for the location. Blue dots represent values exceeding the trigger (below 2.5th percentile of NR and below lower limit of predicted ADIT score). Gray shading represents the habitat−adjusted normal range for each replicate. T = Tributary, M = Mainstem.

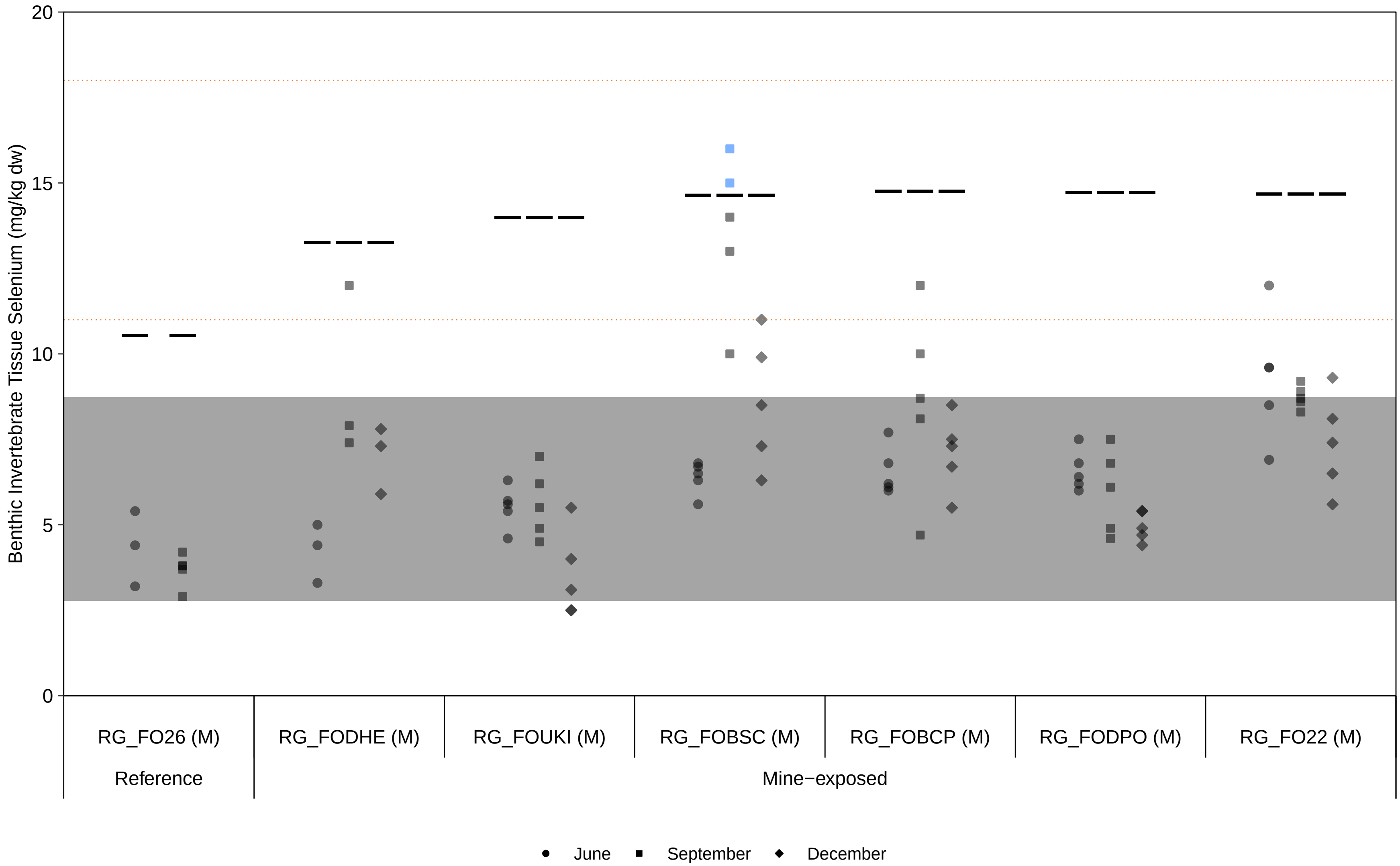

Figure H.2: Selenium Concentrations in Benthic Invertebrate Composite−Taxa Samples from Fording River Compared to Predicted Values, FRO LAEMP, 2021

Notes: Black bars indicate the upper 95th prediction interval of the bioaccumulation model. Blue dots represent values exceeding the trigger (above the 97.5th percentile of normal range and above upper 95% prediction interval). Dotted lines indicate EVWQP benchmarks (11, 18, and 26 mg/kg respectively) for juvenile fish (Level 3 are beyond the plot range and not shown). Gray shading represents the reference area normal range defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 1996 to 2019 data) reported in the RAEMP. T = Tributary, M = Mainstem.

Table H.1: Biological Trigger Analysis for %EPT in the Fording River, FRO LAEMP, September 2021

Waterbody		Area	Stream Type	Replicate	Reported Value	ADIT Value [a]	Lower 2.5th Percentile of the Habitat Adjusted Normal Range
Fording River	Reference	RG_FO26	M	1	91.9	80.8	76.0
		RG_FO26	M	2	84.2	82.2	77.6
		RG_FO26	M	3	80.2	81.2	76.5
	Mine-Exposed	RG_FODHE	M	1	88.6	82.3	77.5
		RG_FODHE	M	2	84.7	83.9	79.2
		RG_FODHE	M	3	86.2	84.6	79.8
		RG_FOUKI	M	1	54.8	82.0	77.7
		RG_FOUKI	M	2	47.3	81.6	76.9
		RG_FOUKI	M	3	32.6	82.3	77.3
		RG_FOBSC	M	1	42.8	83.3	78.6
		RG_FOBSC	M	2	52.6	82.4	77.7
		RG_FOBSC	M	3	46.8	82.5	78.2
		RG_FOBCP	M	1	62.0	83.2	78.9
		RG_FOBCP	M	2	63.3	82.6	78.3
		RG_FOBCP	M	3	58.7	83.4	79.0
		RG_FOBCP	M	4	59.7	83.0	78.4
		RG_FOBCP	M	5	67.7	82.5	77.6
		RG_FODPO	M	1	80.5	85.0	80.4
		RG_FODPO	M	2	72.9	85.0	80.4
		RG_FODPO	M	3	85.2	84.8	80.3
		RG_FO22	M	1	70.8	84.0	79.0
		RG_FO22	M	2	71.7	85.3	80.9
		RG_FO22	M	3	56.1	84.5	79.4
		RG_FO22	M	4	48.3	85.9	81.7
		RG_FO22	M	5	54.9	85.8	81.1

Shaded cells signify individual replicates that were associated with a biological trigger (i.e. lower than both the ADIT value [as based on predicted water quality] and the lower 2.5th percentile of habitat-adjusted normal range).

Notes: M= Mainstem and T = Tributary.

[a] All areas evaluated had an ADIT score of 0, which corresponds to the 80% lower limit of the expected %EPT (as based on water quality projections).

Table H.2: **Biological Trigger Analysis for Selenium Concentrations in Benthic Invertebrate Tissue in Fording River, FRO LAEMP, 2021**

Waterbody		Stream Type	Area	Date	Replicate	Predicted Selenium Water Concentration (mg/L)	Benthic Invertebrate Selenium Tissue		
							Upper 95% Prediction Limit (mg/kg dw)	Upper 97.5th Percentile of Normal Range (mg/kg dw)	Reported Concentration (mg/kg dw)
Fording River	Reference	M	RG_FO26	14-Jun-21	1	1.06	10.6	8.73	5.40
		M	RG_FO26	14-Jun-21	2	1.06	10.6	8.73	3.20
		M	RG_FO26	14-Jun-21	3	1.06	10.6	8.73	4.40
		M	RG_FO26	15-Sep-21	1	1.06	10.6	8.73	4.20
		M	RG_FO26	15-Sep-21	2	1.06	10.6	8.73	3.70
		M	RG_FO26	15-Sep-21	3	1.06	10.6	8.73	3.80
		M	RG_FO26	15-Sep-21	4	1.06	10.6	8.73	2.90
		M	RG_FO26	15-Sep-21	5	1.06	10.6	8.73	3.80
	Mine-Exposed	M	RG_FODHE	14-Jun-21	1	26.2	13.3	8.73	4.40
		M	RG_FODHE	14-Jun-21	2	26.2	13.3	8.73	3.30
		M	RG_FODHE	14-Jun-21	3	26.2	13.3	8.73	5.00
		M	RG_FODHE	13-Sep-21	1	26.2	13.3	8.73	7.40
		M	RG_FODHE	13-Sep-21	2	26.2	13.3	8.73	7.90
		M	RG_FODHE	13-Sep-21	3	26.2	13.3	8.73	12.0
		M	RG_FODHE	15-Dec-21	1	26.2	13.3	8.73	7.30
		M	RG_FODHE	15-Dec-21	2	26.2	13.3	8.73	7.80
		M	RG_FODHE	15-Dec-21	3	26.2	13.3	8.73	5.90
		M	RG_FOUKI	17-Jun-21	1	55.6	14.1	8.73	5.60
		M	RG_FOUKI	17-Jun-21	2	55.6	14.1	8.73	5.70
		M	RG_FOUKI	17-Jun-21	3	55.6	14.1	8.73	5.40
		M	RG_FOUKI	17-Jun-21	4	55.6	14.1	8.73	4.60
		M	RG_FOUKI	17-Jun-21	5	55.6	14.1	8.73	6.30
		M	RG_FOUKI	20-Sep-21	1	55.6	14.1	8.73	6.20
		M	RG_FOUKI	20-Sep-21	2	55.6	14.1	8.73	5.50
		M	RG_FOUKI	20-Sep-21	3	55.6	14.1	8.73	7.00
		M	RG_FOUKI	20-Sep-21	4	55.6	14.1	8.73	4.50
		M	RG_FOUKI	20-Sep-21	5	55.6	14.1	8.73	4.90
		M	RG_FOUKI	14-Dec-21	1	55.6	14.1	8.73	2.50
		M	RG_FOUKI	14-Dec-21	2	55.6	14.1	8.73	4.00
		M	RG_FOUKI	14-Dec-21	3	55.6	14.1	8.73	2.50
		M	RG_FOUKI	14-Dec-21	4	55.6	14.1	8.73	5.50
		M	RG_FOUKI	14-Dec-21	5	55.6	14.1	8.73	3.10
		M	RG_FOBSC	17-Jun-21	1	104	14.7	8.73	6.70
		M	RG_FOBSC	17-Jun-21	2	104	14.7	8.73	6.30
		M	RG_FOBSC	17-Jun-21	3	104	14.7	8.73	6.50
		M	RG_FOBSC	17-Jun-21	4	104	14.7	8.73	5.60
		M	RG_FOBSC	17-Jun-21	5	104	14.7	8.73	6.80
		M	RG_FOBSC	13-Sep-21	1	104	14.7	8.73	15.0
		M	RG_FOBSC	13-Sep-21	2	104	14.7	8.73	16.0
		M	RG_FOBSC	13-Sep-21	3	104	14.7	8.73	14.0
		M	RG_FOBSC	13-Sep-21	4	104	14.7	8.73	13.0
		M	RG_FOBSC	13-Sep-21	5	104	14.7	8.73	10.0
		M	RG_FOBSC	9-Dec-21	1	104	14.7	8.73	6.30
		M	RG_FOBSC	9-Dec-21	2	104	14.7	8.73	7.30
		M	RG_FOBSC	9-Dec-21	3	104	14.7	8.73	8.50
		M	RG_FOBSC	9-Dec-21	4	104	14.7	8.73	9.90
		M	RG_FOBSC	9-Dec-21	5	104	14.7	8.73	11.0
		M	RG_FOBCP	17-Jun-21	1	117	14.8	8.73	6.00
		M	RG_FOBCP	17-Jun-21	2	117	14.8	8.73	6.20
		M	RG_FOBCP	17-Jun-21	3	117	14.8	8.73	6.80
		M	RG_FOBCP	17-Jun-21	4	117	14.8	8.73	6.10
		M	RG_FOBCP	17-Jun-21	5	117	14.8	8.73	7.70
		M	RG_FOBCP	13-Sep-21	1	117	14.8	8.73	4.70
		M	RG_FOBCP	13-Sep-21	2	117	14.8	8.73	8.70
		M	RG_FOBCP	13-Sep-21	3	117	14.8	8.73	12.0
		M	RG_FOBCP	13-Sep-21	4	117	14.8	8.73	8.10
		M	RG_FOBCP	13-Sep-21	5	117	14.8	8.73	10.0
		M	RG_FOBCP	14-Dec-21	1	117	14.8	8.73	7.30
		M	RG_FOBCP	14-Dec-21	2	117	14.8	8.73	7.50
		M	RG_FOBCP	14-Dec-21	3	117	14.8	8.73	8.50
		M	RG_FOBCP	14-Dec-21	4	117	14.8	8.73	5.50
		M	RG_FOBCP	14-Dec-21	5	117	14.8	8.73	6.70
		M	RG_FODPO	17-Jun-21	1	113	14.8	8.73	6.00
		M	RG_FODPO	17-Jun-21	2	113	14.8	8.73	7.50
		M	RG_FODPO	17-Jun-21	3	113	14.8	8.73	6.40
		M	RG_FODPO	17-Jun-21	4	113	14.8	8.73	6.20
		M	RG_FODPO	17-Jun-21	5	113	14.8	8.73	6.80
		M	RG_FODPO	11-Sep-21	1	113	14.8	8.73	4.90
		M	RG_FODPO	11-Sep-21	2	113	14.8	8.73	4.60
		M	RG_FODPO	11-Sep-21	3	113	14.8	8.73	7.50
		M	RG_FODPO	11-Sep-21	4	113	14.8	8.73	6.80
		M	RG_FODPO	11-Sep-21	5	113	14.8	8.73	6.10
		M	RG_FODPO	14-Dec-21	1	113	14.8	8.73	4.70
		M	RG_FODPO	14-Dec-21	2	113	14.8	8.73	4.40
		M	RG_FODPO	14-Dec-21	3	113	14.8	8.73	4.90
		M	RG_FODPO	14-Dec-21	4	113	14.8	8.73	5.40
		M	RG_FODPO	14-Dec-21	5	113	14.8	8.73	5.40
		M	RG_FO22	18-Jun-21	1	108	14.8	8.73	9.60
		M	RG_FO22	18-Jun-21	2	108	14.8	8.73	9.60
		M	RG_FO22	18-Jun-21	3	108	14.8	8.73	8.50
		M	RG_FO22	18-Jun-21	4	108	14.8	8.73	6.90
		M	RG_FO22	18-Jun-21	5	108	14.8	8.73	12.0
		M	RG_FO22	12-Sep-21	1	108	14.8	8.73	8.70
		M	RG_FO22	12-Sep-21	2	108	14.8	8.73	9.20
		M	RG_FO22	12-Sep-21	3	108	14.8	8.73	8.60
		M	RG_FO22	12-Sep-21	4	108	14.8	8.73	8.90
		M	RG_FO22	12-Sep-21	5	108	14.8	8.73	8.30
		M	RG_FO22	13-Dec-21	1	108	14.8	8.73	7.40
		M	RG_FO22	13-Dec-21	2	108	14.8	8.73	9.30
		M	RG_FO22	13-Dec-21	3	108	14.8	8.73	8.10
		M	RG_FO22	13-Dec-21	4	108	14.8	8.73	5.60
		M	RG_FO22	13-Dec-21	5	108	14.8	8.73	6.50

Shaded cells signify those individual replicates that were associated with a biological trigger (i.e. higher than both the upper 95% prediction limit [as based on predicted water quality] and the upper 97.5th percentile of normal range).

Notes: M= Mainstem; T = Tributary; dw = dry weight.

APPENDIX I
WESTSLOPE CUTTHROAT TROUT HEALTH

Table I.1: Westslope Cutthroat Trout Meristics, Condition and Anomaly Observations, FRO LAEMP, 2021

Year	Station	Fish Sample ID	Date	Fork Length (cm)	Total Length (cm)	Body Weight (g)	Condition	Anomaly
2021	RG_MP1	RG_MP1_WCT-01_2021-09-09	9-Sep-21	-	-	42.7	-	-
		RG_MP1_WCT-02_2021-09-09	9-Sep-21	-	-	78	-	-
		RG_MP1_WCT-03_2021-09-09	9-Sep-21	-	-	-	-	-
		RG_MP1_WCT-04_2021-09-20	20-Sep-21	26.2	27.3	195	1.084	-
		RG_MP1_WCT-05_2021-09-20	20-Sep-21	22.7	23.7	113	0.966	-
		RG_MP1_WCT-06_2021-09-20	20-Sep-21	26.6	27.7	215	1.142	-
		RG_MP1_WCT-07_2021-09-20	20-Sep-21	29.4	30.6	305	1.200	-
		RG_MP1_WCT-08_2021-09-20	20-Sep-21	28.2	29.9	284	1.266	-
	RG_FODGH	RG_FODGH_WCT-01_2021-09-20	20-Sep-21	40.5	41.5	865	1.302	-
		RG_FODGH_WCT-02_2021-09-22	22-Sep-21	38.4	39.9	875	1.545	-
		RG_FODGH_WCT-03_2021-09-22	22-Sep-21	28.3	29.9	295	1.302	-
		RG_FODGH_WCT-04_2021-09-22	22-Sep-21	32.1	33.5	410	1.240	-
		RG_FODGH_WCT-05_2021-09-22	22-Sep-21	38.8	40.2	820	1.404	-
		RG_FODGH_WCT-06_2021-09-22	22-Sep-21	33.7	35.1	489	1.278	-
		RG_FODGH_WCT-07_2021-09-22	22-Sep-21	40.3	42	825	1.260	-
		RG_FODGH_WCT-08_2021-09-22	22-Sep-21	30.2	31.6	335	1.216	-
	RG_BULL	RG_BULL_WCT-01_2021-09-17	17-Sep-21	28.6	30.1	248	1.060	-
		RG_BULL_WCT-02_2021-09-17	17-Sep-21	31.4	32.9	355	1.147	-
		RG_BULL_WCT-03_2021-09-17	17-Sep-21	25.9	27	190	1.094	-
		RG_BULL_WCT-04_2021-09-17	17-Sep-21	22.3	23	111	1.001	-
		RG_BULL_WCT-05_2021-09-17	17-Sep-21	24.4	25.4	148	1.019	-
		RG_BULL_WCT-06_2021-09-17	17-Sep-21	30	31.7	295	1.093	-
		RG_BULL_WCT-07_2021-09-17	17-Sep-21	25.2	26.6	163	1.019	-
		RG_BULL_WCT-08_2021-09-17	17-Sep-21	26.5	27.9	194	1.042	-
	RG_FH	RG_FH_WCT-01_2021-09-23	23-Sep-21	26.5	28	220	1.182	-
		RG_FH_WCT-02_2021-09-23	23-Sep-21	33	34.6	485	1.350	-
		RG_FH_WCT-03_2021-09-23	23-Sep-21	25.2	26.5	171	1.069	-
		RG_FH_WCT-04_2021-09-23	23-Sep-21	23.5	25	148	1.140	-
		RG_FH_WCT-05_2021-09-23	23-Sep-21	23	24.4	139	1.142	-
		RG_FH_WCT-06_2021-09-24	24-Sep-21	19.8	21	68	0.876	-
		RG_FH_WCT-07_2021-09-24	24-Sep-21	24.4	25.2	149	1.026	-
		RG_FH_WCT-08_2021-09-24	24-Sep-21	26.7	28.1	213	1.119	-
2018	RG_MP1	RG_MP1_WCT-01	11-Sep-18	41.3	42.6	1,020	1.448	-
		RG_MP1_WCT-02	11-Sep-18	39.0	40.4	705	1.188	-
		RG_MP1_WCT-03	11-Sep-18	38.6	40.1	735	1.278	-
		RG_MP1_WCT-04	11-Sep-18	32.5	33.5	405	1.180	-
		RG_MP1_WCT-05	11-Sep-18	46.8	48.3	1,200	1.171	-
		RG_MP1_WCT-06	11-Sep-18	33.2	34.4	415	1.134	-
		RG_MP1_WCT-07	11-Sep-18	39.2	40.6	820	1.361	-
		RG_MP1_WCT-08	11-Sep-18	35.8	36.4	530	1.155	-
	RG_FODCH[a]	RG_FODCH_WCT-01	09-Sep-18	28.4	29.9	265	1.157	-
		RG_FODCH_WCT-02	09-Sep-18	29.8	31.4	350	1.323	shortened operculum
		RG_FODCH_WCT-03	09-Sep-18	30.9	32.2	355	1.203	-
		RG_FODCH_WCT-04	09-Sep-18	31.0	32.2	360	1.208	top of caudal torn
		RG_FODCH_WCT-05	09-Sep-18	33.9	35.6	550	1.412	-
		RG_FODCH_WCT-06	11-Sep-18	31.5	33.3	375	1.200	short snout
		RG_FODCH_WCT-07	11-Sep-18	28.6	30.1	295	1.261	-
		RG_FODCH_WCT-08	11-Sep-18	27.9	29.2	250	1.151	bottom of caudal lobe missing
	RG_MOYIE	RG_MOYIE_WCT-01	13-Sep-18	20.8	22.0	93	1.033	-
		RG_MOYIE_WCT-02	13-Sep-18	17.8	19.1	52	0.913	-
		RG_MOYIE_WCT-03	13-Sep-18	31.2	33.3	255	0.840	-
		RG_MOYIE_WCT-04	13-Sep-18	19.7	21.0	72	0.942	-
		RG_MOYIE_WCT-05	13-Sep-18	21.5	22.6	93	0.936	-
		RG_MOYIE_WCT-06	13-Sep-18	32.0	34.0	345	1.053	-
	RG_BULL	RG_BULL_WCT-01	08-Sep-18	33.4	34.8	475	1.275	
		RG_BULL_WCT-02	08-Sep-18	29.5	31.2	292	1.137	jaw deformed
		RG_BULL_WCT-03	08-Sep-18	31.1	32.5	340	1.130	jaw deformed
		RG_BULL_WCT-04	08-Sep-18	25.9	27.4	192	1.105	-
		RG_BULL_WCT-05	08-Sep-18	32.0	33.5	345	1.053	-
		RG_BULL_WCT-06	08-Sep-18	31.1	32.7	350	1.164	small abrasion near left pectoral fin
		RG_BULL_WCT-07	08-Sep-18	30.9	32.5	320	1.085	some jaw scarring
		RG_BULL_WCT-08	08-Sep-18	24.7	26.2	160	1.062	slightly shortened left operculum

Notes: '-' denotes no anomalies detected.

[a] RG_FODCH in the present table are the same fish labelled RG_FODGH in Figures 3.21 and 3.23 as the fish were caught in the same general area and these fish move throughout this portion of the watershed.

Table I.2: **Westslope Cutthroat Trout Meristics from Fish Mortalities in FRO LAEMP Study Area, FRO LAEMP, 2021**

Station	Sample ID	Date Collected	Species	Fork Length (mm)	Total Length (mm)	Weight (g)	Sex (m/f/u)	Sample Tissue Type	Condition
FR_FRDSHC1	FR_FRDSHC1_WCT-1_2021-06-30	2021-Jun-30	WCT	50	-	1.5	u	Whole body	-
FR_NGD1	FR_NGD1_WCT-4-M-2021-07-19	2021-Jul-19	WCT	110	-	7	u	Dorsal muscle	-
	FR_NGD1_WCT-5-M-2021-07-20	2021-Jul-19	WCT	150	-	25	m	Dorsal muscle	-
	FR_NGD1_WCT-8-2021-07-19	2021-Jul-19	WCT	85	-	5	u	Whole body	-
	FR_NGD1_WCT-9-2021-07-19	2021-Jul-19	WCT	75	-	3	u	Whole body	-
	FR_NGD1_WCT-10-2021-07-22	2021-Jul-22	WCT	99	-	10	u	Whole body	-
	FR_NGD1_WCT-11-2021-07-23	2021-Jul-23	WCT	84	-	7	u	Whole body	-
	FR_NGD1_WCT-12-2021-07-28	2021-Jul-28	WCT	98	-	10	u	Whole body	-
	FR_NGD1_WCT-13-M-2021-07-28	2021-Jul-28	WCT	91	-	8	u	Dorsal muscle	-
	FR_NGD1_WCT-15-2021-07-29	2021-Jul-29	WCT	84	-	-	u	Whole body	-
	FR_NGD1_WCT-16-2021-08-02	2021-Aug-02	WCT	71	-	5	u	Whole body	-
	FR_NGD1_WCT-17-M-2021-08-13	2021-Aug-13	WCT	82	-	11	u	Dorsal muscle	-
	FR_NGD1_WCT-19-M-2021-08-23	2021-Aug-23	WCT	77	-	4.62	u	Dorsal muscle	-
	FR_NGD1_WCT-21-M-2021-09-08	2021-Sept-8	WCT	98	-	15	u	Dorsal muscle	-
FR_FR3	FR_FR3_WCT-1-M-2021-08-11	2021-Aug-11	WCT	226	-	104	f	Dorsal muscle	-
FR_CC1	FR_CC1_WCT-1-M-2021-10-05	2021-Oct-05	WCT	112	-	9.1	m	Dorsal muscle	-
	FR_CC1_WCT-2-M-2021-10-05	2021-Oct-05	WCT	89	-	7.2	u	Dorsal muscle	-
	FR_CC1-WCT-6-M-2021-10-05	2021-Oct-05	WCT	94	-	7.9	u	Dorsal muscle	-
RG_FOUNGD	RG_FOUNGD-WCT-1-2021-10-12	2021-Oct-12	WCT	58	-	-	u	Whole body	-
	RG_FOUNGD-WCT-2-2021-10-12	2021-Oct-12	WCT	57	-	-	u	Whole body	-
	RG_FOUNGD-WCT-3-2021-10-12	2021-Oct-12	WCT	50	-	-	u	Whole body	-
	RG_FOUNGD-WCT-4-2021-10-12	2021-Oct-12	WCT	39	-	-	u	Whole body	-
	RG_FOUNGD-WCT-5-2021-10-12	2021-Oct-12	WCT	45	-	-	u	Whole body	-
	RG_FOUNGD-WCT-6-2021-10-12	2021-Oct-12	WCT	46	-	-	u	Whole body	-
	RG_FOUNGD-WCT-7-2021-10-12	2021-Oct-12	WCT	53	-	-	u	Whole body	-
	RG_FOUNGD-WCT-8-2021-10-12	2021-Oct-12	WCT	55	-	-	u	Whole body	-
	RG_FOUNGD-WCT-9-2021-10-12	2021-Oct-12	WCT	58	-	-	u	Whole body	-

Note: " - " indicates not data available.

Table I.3: **Meristics for Westslope Cutthroat Trout Caught in Upper Fording River for ECCC Requirement of RAEMP, FRO**

Date	Fish ID	Total Length (cm)	Fork Length (cm)	Weight (g)	Condition	Tissue Collected	Sex	Eggs Expressed (Y/N)	Anomaly
08-Jun-21	RG_CLFL-WCT-01	47.1	45.5	1190	1.26	Muscle	Female	Y	-
10-Jun-21	RG_CLFL-WCT-02	42.5	40.9	840	1.23	Muscle	Female	Y	-
10-Jun-21	RG_CLFL-WCT-03	44.1	42.7	950	1.22	Muscle	Female	Y	-
16-Jun-21	RG_FROXB-WCT-03	23.6	22.2	125	1.14	Muscle	Female	Y	Minor caudal fin erosion
24-Jun-21	RG_FROXB-WCT-08	23.2	22	135	1.27	Muscle	Female	Y	-
24-Jun-21	RG_FROXB-WCT-09	25.4	24.3	165	1.15	Muscle	Female	Y	-

Notes: '-' denotes no anomalies detected.

APPENDIX J
DATA ANALYSIS

APPENDIX J DATA QUALITY REVIEW

J1 DATA ANALYSIS 1
J1.1 Water Quality 1
J1.2 Benthic Invertebrate Community 3
J1.3 Integrated Analysis 5

J1 DATA ANALYSIS

J1.1 Water Quality

Water quality assessment focused on constituents with EWTs. Total mercury was not included as the source of aqueous mercury concentrations in the Elk Valley is not considered mining (Teck 2019a). Total phosphorus and orthophosphate were included in water quality assessment to address study question #2. Data extracted from Teck's EQuIS database were screened for text values and converted to a common unit (e.g., all metal concentrations were converted to mg/L).

Routine water quality monitoring results were screened against British Columbia Water Quality Guidelines (BCWQG; BCMOECCS 2019, 2021) as part of Teck's Annual Water Quality Monitoring Report under Permit 107517 (Teck 2022b). Water samples taken concurrently with biological monitoring samples were integrated with routine water quality monitoring stations for a more complete data set. Routine water quality monitoring stations were matched with concurrent water samples according to proximity (Table 2.2). Water quality constituents were compared to British Columbia Water Quality Guidelines (BCWQG; BCMOECCS 2019, 2021), EVWQP benchmarks (i.e., for total selenium, nitrate, sulphate, dissolved cadmium; Teck 2014), interim screening values for nickel (Teck 2017), and a screening value for total dissolved solids (TDS; Teck 2018), as applicable, for the 2021 calendar year. Plots of constituents with EWTs under the AMP (i.e., TDS, sulphate, total concentrations of antimony, barium, boron, lithium, manganese, molybdenum, nickel, selenium, uranium, and zinc, and dissolved concentrations of cadmium and cobalt; Azimuth 2018) and nutrients from 2012 to 2021 were prepared individually for each monitoring station.

Potential changes in constituents with EWTs and nutrients (total phosphorus and orthophosphate) at individual stations were analyzed statistically to evaluate (1) if there was an increase or decrease since the base year of monitoring (2012 or the earliest year if monitoring was initiated post-2012), (2) whether the annual mean was within the range of historical annual means, and (3) if the current monitoring year (2021) was different from the previous monitoring year (2020).

Monthly mean concentrations of each constituent were estimated using the Kaplan-Meier (K-M) method. The method involves transforming the left censored (i.e., < value) data set to a right censored (i.e., > value) data set, and then using the K-M estimator (used to estimate the mean survival time in survival analysis) to estimate the mean. The calculation was conducted using the survfit() function in the survival package (Therneau 2017) in R and involves calculating the area under the K-M survival curve. The K-M method is non-parametric and can accommodate multiple LRLs. The method of estimating the mean is equivalent to using the distribution of detectable values below the LRL to represent values that are < LRL. For example, the mean of the data set {1, 2, <4, 5} is estimated as the mean of 1, 2, [½×1 + ½×2], and 5 which is 2.375. The value <4 is replaced by the distribution of values below 4 (i.e., 1 and 2 with equal weight of ½). Similarly, the mean of the data set {1, 1.6, 2, 2.1, <4, 5} is estimated as the mean of 1, 1.6, 2, 2.1, [¼×1 + ¼×1.6 + ¼×2 + ¼×2.1], and 5 which is 2.229. Again, the value <4 is replaced by the distribution of values below 4 (i.e., 1, 1.6, 2, and 2.1 with equal weight of ¼). If there is only one LRL and no detected values below the LRL, then the K-M estimate of the mean is equivalent to replacing the value below the LRL with the LRL (i.e., the best estimate for the values < LRL is the LRL).

Temporal changes in monthly mean concentrations for water quality constituents were evaluated for each station (reference and mine-exposed) from 2012 to 2021. Only years with at least six months and only stations with at least three years of data were included in the analysis. Because of the presence of LRLs for most parameters, a censored regression analysis of variance (ANOVA) model with factors *Year* and *Month* and assuming a log-normal distribution of the response variable was fit with maximum likelihood estimation for each station. The significance of each term in the model was assessed using likelihood-ratio tests to determine if there is a significant change in log-likelihood with the addition of the term in the model. This tested for an overall difference among years (including the *Month* term in the model controlled for seasonal effects within a year). If the *Year* term was significant ($\alpha = 0.05$) then post-hoc contrasts were conducted to test for pairwise differences among years with an $\alpha = 0.05$ in a Tukey's HSD test which corrects for the number of comparisons.

For each year, a percent magnitude of difference from the base year (i.e., first year with minimum number of months) was calculated as:

$$\frac{Year_i - Base\ Year}{Base\ Year} \times 100\ \%$$

and the significant difference between 2020 and previous years was assessed.

A principal components analysis (PCA) is a multivariate approach which transforms a group of 'n' variables into a smaller new set of uncorrelated variables (the principal components; PCs). The principal components are defined to be linear combinations of the original 'n' variables. A PCA was conducted using Kaplan-Meier mean water chemistry constituents calculated over the year prior to the benthic sampling date. Seasons were defined based on changes in water chemistry across a year and designed to capture high and low concentration periods throughout a year. For each year, four seasons were defined: winter (December to March), early spring (May), spring (June) and summer (July). Each season had to have at least one record for an annual concentration to be calculated and used in the PCA. Because a PCA cannot incorporate LRL values, any constituents with >25% of the mean values below the LRL were excluded from the PCA and Kaplan-Meier mean values at the LRL were replaced with the LRL (Farnham et al. 2002). When there was more than one LRL for a given constituent, or detected values were below the highest LRL, these values were replaced with the highest LRL. The contribution of individual constituents to the first two principal components were quantified by calculating their correlation using a Pearson's correlation coefficient. The PCA and correlation analysis were conducted in R (R Core Team 2020).

Seasonal mean concentrations of order constituents (nitrate, total selenium, dissolved cadmium, and sulphate) and total nickel from 2021 were plotted spatially, while selenium species concentrations of samples taken concurrent with biological monitoring in 2021 were also plotted spatially.

J1.2 Benthic Invertebrate Community

To address the investigation into the changes in BIC structure, endpoints of total sample abundance, richness (LPL taxonomy), percent (%) and total abundance of Chirnonomidae, EPT, Ephemeroptera, Plecoptera, and Trichoptera individually, and total abundance of key Ephemeroptera families (Baetidae, Heptageniidaie, Ephemerellidae) were plotted spatially and temporally. Autotrophic to Heterotrophic Index, Shredder Index, Filtering to Collector Index, Predator Index, and Hyporheic to Benthic Index (Tables 2.6; Appendix Table E.1) were also computed for each biological monitoring area from CABIN kick samples and using the following equations:

$$Autotrophic\ to\ Heterotrophic\ Index = log10\left(\frac{Scrapers}{Shredders + Collector\ Gatherers + Filterers}\right)$$

$$Filtering\ Collector\ Index = \ log10\left(\frac{Filterers}{Collector\ Gatherers}\right)$$

$$Predator\ Index = log10\left(\frac{Predators}{All\ other\ Feeding\ Groups}\right)$$

$$Hyporheic\ to\ Benthic\ Index = \ log10\left(\frac{Burrowers}{Clingers + Sprawlers}\right)$$

$$Shredder\ Index = \ log10\left(\frac{Shredders}{Collector\ Gatherers + Filterers}\right)$$

Benthic invertebrate community data collected in September were compared to regional normal (reference area) ranges and habitat adjusted site-specific normal ranges. The regional normal range is defined as the 2.5th and 97.5th percentiles of the distribution of reference area data (pooled 2012 to 2019 data) reported in the 2017 to 2019 RAEMP report

(Minnow 2020). The site-specific normal ranges were calculated as prediction intervals from the final habitat model (Minnow 2020). Ninety-fifth percentile prediction intervals were calculated from linear mixed-effects models using simulations (n=100,000) to generate residual variation in random-effects terms. For Ephemeroptera and EPT Abundance endpoints, the prediction intervals from the % Ephemeroptera and % EPT models were multiplied by the prediction intervals from the Abundance model to generate the taxa specific abundance predictions. Prediction intervals were calculated using the predictInterval() function in the merTools R package (Knowles and Frederick, 2019). The residuals from the habitat models (observed minus model predicted values; on the transformed scale) were used in correlation analyses below (Section 2.7).

Endpoints from September were plotted spatially (2021), and temporally (2012 to 2021) for each area where data were available. Seasonal data for 2018 to 2021 were plotted by area but were not compared to normal ranges because insufficient seasonal reference data are available for the development of normal ranges in months other than September. The relative composition of BIC was plotted spatially by monitoring area for each season where samples were collected in 2021.

Temporal changes in benthic endpoints calculated from September kick and sweep data were evaluated for 2012 to 2021. For some (but not all) years there were replicate data for a given area within a year. Thus, for each endpoint, an ANOVA with factors *Year*, *Area* and *Year* × *Area* was fit. The best transformation for each endpoint was chosen as the transformation for which a Shapiro-Wilk's test on the residuals gave the highest P-value (i.e., most normally distributed). If there was a significant *Year* term, the variability within years and areas from the full model was used to test for significant differences between all pairwise comparisons of year for each area (i.e., is the difference between year *i* and year *j* greater than would be expected given the variability within areas for all stations for which we have replicates). This assumes the variability to be consistent among areas and years but allows for comparisons between years without replicates. Significance of the pairwise comparisons was assessed with an α of 0.05 in a Tukey's Honestly Significant Difference test (HSD) which corrects for the number of comparisons.

For each year, a magnitude of difference from the base year (i.e., first year with data) was calculated as:

$$\frac{Year_i - Base\ Year}{Pooled\ SD}$$

and the significant differences between 2020 and previous years was assessed. All statistics were conducted in R (R Core Team 2019).

Benthic invertebrate community structure was also assessed using a multivariate ordination technique known as correspondence analysis (CA), which is used to create synthetic species abundance axes extracted in a sequential manner. Each score (number) on a CA axis is the sum of a weighted vector of species abundances. Species with correlated abundances vary together and have similar weights and scores on a CA axis. When depicted in two-dimensional plots, taxa that tend to co-occur plot together, while those that rarely co-occur plot farther apart. Similarly, areas sharing many taxa plot closest to one another, while those with little in common plot furthest apart. The greatest variation among either taxa or areas is explained by the first axis, with other axes accounting for progressively less variation. Therefore, this type of multivariate analysis describes not only which areas have distinct benthic communities, but also how these benthic communities differ among areas (i.e., which particular taxa differ in abundance). Prior to CA, the data were ln(x+1) transformed and screened for rare taxa, as these can distort results. Taxa occurring at five or fewer of the areas, and constituting less than 5% of the total organism abundance, were removed from the analysis. Scores for both taxa and areas were calculated using the vegan package (Oksanen et al. 2019) in R (R Core Team 2019) to evaluate the associations of organisms and stations.

J1.3 Integrated Analysis

Correlations analysis and CCAs were used to understand how physical and chemical factors may contribute to variations in benthic invertebrate community structure within the FRO LAEMP study area. These analyses were conducted on data across the full study area, and then three individual study areas (upper, middle, and lower) within the full study area. In addition to analysis of the full study area, the three individual study areas were analyzed separately in 2021 to help tease apart covariation of habitat and water quality factors observed in previous analyses across the full study area (i.e., habitat and water quality factors change simultaneously across the full study area but may not change simultaneously within individual study areas). The upper, middle, and lower Study Areas were grouped based on spatial differences of habitat (water depth, water flow/velocity, water temperature, substrate size, etc.) and water quality identified in previous FRO LAEMP reports (Minnow and Lotic 2019b, 2020b). The upper study area ranges from downstream of the Henretta Creek confluence with the Fording River (RG_FODHE) to upstream of the South Tailings Pond (RG_FOUSH), the middle study area ranges from downstream of the South Tailings Pond (RG_FOUKI) to RG_FRCP1SW, and the lower study area ranges from upstream of the Porter Creek confluence with the Fording River (RG_FRUPO) to upstream of Ewin Creek (RG_FOUEW; Figure 2.1)

To determine what physical and chemical characteristics may be driving trends in BIC, Spearman Rank Correlations were conducted between abundance, richness, percent (%) and total abundance of Ephemeroptera, Plecoptera and Trichoptera individually, EPT combined, Chironomidae, and the residuals from the site-specific normal range model for total abundance, richness, percent and total abundance of EPT and Ephemeroptera, and the habitat and feeding indices (Table 2.6) against a variety of physical and chemical parameters (Appendix Table F.1). Correlations were conducted on data across the full study area, and then three individual study areas (upper, middle, and lower) within the Full Study Area. For water chemistry constituents, annual mean concentrations were calculated for different seasons and then averaged across the year prior to the benthic sampling date. Seasons were defined based on changes in water chemistry across a year and designed to capture high and low concentration periods throughout a year. For each year, four seasons were defined: winter (December to March), early spring (May), spring (June) and summer (July). Each season had to have at least one record. Significant correlations were assessed at $\alpha = 0.05$, Bonferroni corrected for 38 independent comparisons (corrected $\alpha = 0.05/38 = 0.00132$). Water chemistry constituents were also analyzed by PCA (Section 2.2.3) to combine multiple water quality variables into PC1 and PC2 and included in the correlation analysis. To ensure correlations were comparable among different constituents, only complete records (i.e., a value for every water and BIC endpoint) were included in the analysis. Correlation results were visualized using a heatmap, with colours corresponding to the strengths of the correlation (as measured by the Spearman Rho and varies from -1 to +1). In order to visualize the similarities among correlations between BIC endpoints and physical and chemical characteristics, the axes show hierarchical clustering diagrams using unweighted paired group mean method with arithmetic mean.

Additional analyses were performed to assess the potential relationships between temporal trends in BIC endpoints and nitrate concentrations (Study Question #1) within stations and across the watershed from long-term September sampling. Concurrent nitrate concentrations were analyzed with a Linear Model (LM) using log10-transformed nitrate because there were no replicate samples taken. Benthic invertebrate community endpoints were analyzed with Linear Mixed-Effects Models (LMM; with the following transformations: abundance and richness were log10-transformed, % EPT and % Ephemeroptera were logit-transformed) to account for replicate samples taken for some years. The LM was fit with a continuous Year term, a Station factor term, and an interaction between Year and Station. The LMM was fit with a fixed-effect continuous Year term, as well as a fixed-effect Year by Station interaction. Stations were also specified as random-effect intercepts to account for differences in the number of replicates taken, and differences between stations in baseline nitrate concentrations. Regression coefficients were standardized as Effect Sizes to allow comparison between endpoints. Effect Sizes were calculated as regression slope coefficients (representing time) divided by the standard error of the regression coefficient from LM and LMM. Station specific (represented by the Year by Station interaction terms) and watershed wide slopes (represented by the global Year term) were tested using estimated marginal mean slope coefficients to determine whether slopes were significantly different from zero. Only stations with a minimum of 4 years of data were included in the analysis.

A Canonical Correspondence Analysis (CCA) was performed to investigate patterns in BIC in June and September of 2018 to 2021 relative to habitat (Table 2.7) and stressor variables. The analyses were conducted separately for June and September across the Full Study Area the three individual study areas. Lowest Practical Level benthic invertebrate abundances were ln(x+1) transformed to reduce the effects of the most dominant taxa in order to better understand differences between sites that vary greatly in abundance. Only areas with at least 2 years of June and September data were included in the analysis. Taxa present at fewer than 10% of samples, and those that accounted for less than 1% of the total abundance in the dataset were excluded from the analysis. The CCA constrained CA axes by a suite of predictor variables by applying a multivariate multiple regression to the CA axis. This resulted in a set of new CCA axis that were linear combinations of the predictor variables (i.e., habitat or stressor) that explained a subset of variation of the original CA. Partial CCA (pCCA) was further used to account for the effects of one set of predictors before constraining on a second set (i.e., the variation in one set of predictors was conditioned out of the response, before applying a second set of predictors to the residuals of the first; Legendre and Legendre 2012). The significance of each predictor was evaluated using a permutation-based ANOVA with 10,000 permutations, and the relative importance of individual predictors assessed using the associated pseudo F-statistic (Legendre et al. 2011). Limitations in available data (e.g., field habitat, water quality) resulted in only a subset of sites that had all necessary input data and could therefore be included in the CCA (Table 2.8). The spatial and temporal coverage was enough to provide a general overview of the patterns exhibited by BIC.

Variables were selected for inclusion in the CCA model using a combination of best professional judgement and backwards variable elimination method with permutation-based ANOVA. The Variance Inflation Factor (VIF) of the final variables were all below 20 indicating the variable coefficients were not inflated by the presence of correlation among explanatory variables (i.e., no multicollinearity). For water quality variables, only concurrent water data was included, and only constituents with fewer than 15% of observations below the detection limit were considered. The multivariate multiple regression component of the CCA models fitted regression lines to CA axis representing the habitat and stressor variables. All analyses were done in R 4.1.2 (R Core Team 2021), using the Vegan package (Oksanen et al., 2020).

APPENDIX K
LAB REPORTS

Teck Coal Ltd.
ATTN: Mike Pope
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 14-SEP-21
Report Date: 07-OCT-21 14:42 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2641134

Project P.O. #: VPO00748510
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: September FRO LAEMP
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2641134-1	L2641134-2	L2641134-3	L2641134-4	L2641134-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	09-SEP-21	09-SEP-21	09-SEP-21	10-SEP-21	10-SEP-21
	Sampled Time	12:45	13:20	13:50	08:20	08:50
	Client ID	RG_FOBKS_SE-1_2021-09-09_1245	RG_FOBKS_SE-2_2021-09-09_1320	RG_FOBKS_SE-3_2021-09-09_1350	RG_FOBKS_SE-4_2021-09-10_0820	RG_FOBKS_SE-5_2021-09-10_0850
SOIL						
Physical Tests	Moisture (%)	34.8	43.7	41.9	53.0	43.0
	pH (1:2 soil:water) (pH)	8.43	8.47	8.42	8.41	8.48
Particle Size	% Gravel (>2mm) (%)	11.0	15.8	5.6	1.6	<1.0
	% Sand (2.00mm - 1.00mm) (%)	10.4	5.2	15.8	4.3	<1.0
	% Sand (1.00mm - 0.50mm) (%)	16.5	9.0	21.4	5.2	1.9
	% Sand (0.50mm - 0.25mm) (%)	18.8	10.9	10.6	8.3	7.4
	% Sand (0.25mm - 0.125mm) (%)	10.5	10.4	4.3	11.5	12.3
	% Sand (0.125mm - 0.063mm) (%)	6.8	9.8	6.2	14.6	16.3
	% Silt (0.063mm - 0.0312mm) (%)	11.0	16.0	13.1	24.3	27.5
	% Silt (0.0312mm - 0.004mm) (%)	12.3	19.5	18.6	26.4	29.1
	% Clay (<4um) (%)	2.6	3.4	4.4	4.0	3.9
	Texture	Sandy loam / Loamy sand	Sandy loam	Sandy loam	Silt loam	Silt loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	3.8	4.8	5.0	5.48	4.70
Metals	Aluminum (Al) (mg/kg)	5770	4730	4730	5370	5560
	Antimony (Sb) (mg/kg)	0.68	0.48	0.49	0.49	0.52
	Arsenic (As) (mg/kg)	5.25	4.27	4.16	4.06	4.24
	Barium (Ba) (mg/kg)	197	158	163	171	167
	Beryllium (Be) (mg/kg)	0.54	0.46	0.44	0.46	0.47
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	5.4	5.7	6.3
	Cadmium (Cd) (mg/kg)	1.44	1.24	1.35	1.23	1.07
	Calcium (Ca) (mg/kg)	72800	72400	88600	67300	64700
	Chromium (Cr) (mg/kg)	10.5	8.70	8.67	9.42	9.97
	Cobalt (Co) (mg/kg)	9.23	7.73	8.02	7.38	6.16
	Copper (Cu) (mg/kg)	14.0	10.9	10.5	11.2	11.1
	Iron (Fe) (mg/kg)	17700	13000	12500	12300	12200
	Lead (Pb) (mg/kg)	8.09	6.92	6.79	7.17	7.54
	Lithium (Li) (mg/kg)	10.7	9.5	9.7	10.3	11.1
	Magnesium (Mg) (mg/kg)	9090	9330	9290	11900	12600
	Manganese (Mn) (mg/kg)	661	555	626	577	460
	Mercury (Hg) (mg/kg)	0.0241	0.0274	0.0323	0.0235	0.0255
	Molybdenum (Mo) (mg/kg)	1.35	1.11	1.16	1.09	1.15
	Nickel (Ni) (mg/kg)	42.8	38.1	39.5	36.2	29.6
	Phosphorus (P) (mg/kg)	1250	981	1050	1030	1060
	Potassium (K) (mg/kg)	1170	1080	1140	1240	1300
	Selenium (Se) (mg/kg)	1.25	1.09	1.12	1.23	1.28

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-6	L2641134-7	L2641134-8	L2641134-9	L2641134-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21
	Sampled Time	14:09	13:10	11:10	10:50	09:00
	Client ID	RG_FO22_SE-1_2021-09-12_1409	RG_FO22_SE-2_2021-09-12_1310	RG_FO22_SE-3_2021-09-12_1110	RG_FO22_SE-4_2021-09-12_1050	RG_FO22_SE-5_2021-09-12_0900
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	36.8	34.6	34.9	51.7	54.2
	pH (1:2 soil:water) (pH)	8.45	8.31	8.45	8.40	8.43
Particle Size	% Gravel (>2mm) (%)	<1.0	2.9	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (1.00mm - 0.50mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.50mm - 0.25mm) (%)	3.6	11.7	4.6	<1.0	<1.0
	% Sand (0.25mm - 0.125mm) (%)	27.0	30.3	29.1	12.2	8.3
	% Sand (0.125mm - 0.063mm) (%)	22.3	16.3	22.9	22.1	18.6
	% Silt (0.063mm - 0.0312mm) (%)	22.8	18.4	21.7	29.5	30.4
	% Silt (0.0312mm - 0.004mm) (%)	20.7	16.8	18.9	30.7	35.7
	% Clay (<4um) (%)	2.7	2.6	2.5	4.8	6.2
	Texture	Sandy loam	Sandy loam	Sandy loam	Silt loam	Silt loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	2.82	2.51	2.81	5.43	6.09
Metals	Aluminum (Al) (mg/kg)	5740	6160	5430	5420	6830
	Antimony (Sb) (mg/kg)	0.49	0.59	0.58	0.54	0.55
	Arsenic (As) (mg/kg)	4.33	5.10	5.27	4.74	4.84
	Barium (Ba) (mg/kg)	150	166	153	164	175
	Beryllium (Be) (mg/kg)	0.47	0.54	0.52	0.51	0.52
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.1	5.6	<5.0	<5.0	6.4
	Cadmium (Cd) (mg/kg)	0.896	0.953	0.990	1.27	1.18
	Calcium (Ca) (mg/kg)	39100	31700	39500	43800	40800
	Chromium (Cr) (mg/kg)	10.8	11.2	10.8	11.1	13.1
	Cobalt (Co) (mg/kg)	4.63	5.67	5.51	5.52	5.62
	Copper (Cu) (mg/kg)	9.42	11.1	11.6	13.5	14.1
	Iron (Fe) (mg/kg)	12100	14600	14300	13000	13100
	Lead (Pb) (mg/kg)	7.34	8.33	8.51	7.94	8.44
	Lithium (Li) (mg/kg)	9.1	8.7	9.1	9.6	10.8
	Magnesium (Mg) (mg/kg)	11700	8590	12000	13200	13600
	Manganese (Mn) (mg/kg)	329	394	405	423	516
	Mercury (Hg) (mg/kg)	0.0247	0.0241	0.0245	0.0396	0.0394
	Molybdenum (Mo) (mg/kg)	1.05	1.18	1.22	1.17	1.26
	Nickel (Ni) (mg/kg)	21.3	24.1	23.6	29.0	26.5
	Phosphorus (P) (mg/kg)	1640	1670	1690	1400	1410
	Potassium (K) (mg/kg)	1360	1390	1160	1120	1450
	Selenium (Se) (mg/kg)	1.80	1.52	1.60	2.59	1.97

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-11				
	Description	SE				
	Sampled Date	12-SEP-21				
	Sampled Time	09:00				
	Client ID	RG_RIVER_SE_2021-09-12_0900				
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	53.7				
	pH (1:2 soil:water) (pH)	8.24				
Particle Size	% Gravel (>2mm) (%)	<1.0				
	% Sand (2.00mm - 1.00mm) (%)	<1.0				
	% Sand (1.00mm - 0.50mm) (%)	<1.0				
	% Sand (0.50mm - 0.25mm) (%)	<1.0				
	% Sand (0.25mm - 0.125mm) (%)	9.0				
	% Sand (0.125mm - 0.063mm) (%)	18.8				
	% Silt (0.063mm - 0.0312mm) (%)	29.4				
	% Silt (0.0312mm - 0.004mm) (%)	35.8				
	% Clay (<4um) (%)	6.2				
	Texture	Silt loam				
Organic / Inorganic Carbon	Total Organic Carbon (%)	5.17				
Metals	Aluminum (Al) (mg/kg)	6780				
	Antimony (Sb) (mg/kg)	0.52				
	Arsenic (As) (mg/kg)	4.50				
	Barium (Ba) (mg/kg)	164				
	Beryllium (Be) (mg/kg)	0.51				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	6.7				
	Cadmium (Cd) (mg/kg)	1.19				
	Calcium (Ca) (mg/kg)	40100				
	Chromium (Cr) (mg/kg)	12.8				
	Cobalt (Co) (mg/kg)	5.23				
	Copper (Cu) (mg/kg)	13.2				
	Iron (Fe) (mg/kg)	12200				
	Lead (Pb) (mg/kg)	8.08				
	Lithium (Li) (mg/kg)	10.6				
	Magnesium (Mg) (mg/kg)	12600				
	Manganese (Mn) (mg/kg)	471				
	Mercury (Hg) (mg/kg)	0.0482				
	Molybdenum (Mo) (mg/kg)	1.19				
	Nickel (Ni) (mg/kg)	24.8				
	Phosphorus (P) (mg/kg)	1270				
	Potassium (K) (mg/kg)	1500				
	Selenium (Se) (mg/kg)	1.98				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-1	L2641134-2	L2641134-3	L2641134-4	L2641134-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	09-SEP-21	09-SEP-21	09-SEP-21	10-SEP-21	10-SEP-21
	Sampled Time	12:45	13:20	13:50	08:20	08:50
	Client ID	RG_FOBKS_SE-1_2021-09-09_1245	RG_FOBKS_SE-2_2021-09-09_1320	RG_FOBKS_SE-3_2021-09-09_1350	RG_FOBKS_SE-4_2021-09-10_0820	RG_FOBKS_SE-5_2021-09-10_0850
Grouping	**Analyte**					
SOIL						
Metals	Silver (Ag) (mg/kg)	0.12	0.11	0.12	0.13	0.13
	Sodium (Na) (mg/kg)	66	60	65	68	70
	Strontium (Sr) (mg/kg)	79.5	68.0	75.1	66.2	72.4
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.178	0.159	0.155	0.156	0.171
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	6.9	7.3	8.7	9.0	8.4
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.09	0.926	1.02	0.871	0.899
	Vanadium (V) (mg/kg)	27.7	21.9	22.2	22.9	23.6
	Zinc (Zn) (mg/kg)	120	98.6	100	95.2	91.3
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	0.0406	0.0631	0.0618	0.0946	0.0596
	Acenaphthylene (mg/kg)	<0.0050	0.0098	<0.0050	0.0051	<0.0050
	Acridine (mg/kg)	DLCI <0.080	DLCI <0.12	DLCI <0.14	DLCI <0.16	DLCI <0.11
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	0.026	0.033	0.035	0.050	0.034
	Benzo(a)pyrene (mg/kg)	0.012	0.020	0.016	0.028	0.013
	Benzo(b&j)fluoranthene (mg/kg)	0.049	0.061	0.065	0.104	0.068
	Benzo(b+j+k)fluoranthene (mg/kg)	0.049	0.061	0.065	0.104	0.068
	Benzo(e)pyrene (mg/kg)	0.053	0.068	0.067	0.109	0.069
	Benzo(g,h,i)perylene (mg/kg)	0.019	0.026	0.026	0.036	0.023
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	0.131	0.168	0.165	0.247	0.181
	Dibenz(a,h)anthracene (mg/kg)	0.0076	<0.0050	0.0103	0.0087	0.0089
	Fluoranthene (mg/kg)	0.021	0.023	0.024	0.031	0.023
	Fluorene (mg/kg)	0.081	0.153	0.186	0.200	0.134
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	0.529	0.657	0.610	0.814	0.581
	2-Methylnaphthalene (mg/kg)	0.908	1.17	1.10	1.42	1.04
	Naphthalene (mg/kg)	0.295	0.361	0.326	0.409	0.295
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene (mg/kg)	0.500	0.583	0.659	0.796	0.618
	Pyrene (mg/kg)	0.039	0.046	0.050	0.071	0.048
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	77.7	86.5	119.4	125.6	90.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2641134-6	L2641134-7	L2641134-8	L2641134-9	L2641134-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21
	Sampled Time	14:09	13:10	11:10	10:50	09:00
	Client ID	RG_FO22_SE-1_2021-09-12_1409	RG_FO22_SE-2_2021-09-12_1310	RG_FO22_SE-3_2021-09-12_1110	RG_FO22_SE-4_2021-09-12_1050	RG_FO22_SE-5_2021-09-12_0900
SOIL						
Metals	Silver (Ag) (mg/kg)	0.12	0.11	0.13	0.18	0.20
	Sodium (Na) (mg/kg)	72	68	72	72	74
	Strontium (Sr) (mg/kg)	54.7	57.9	56.7	52.3	53.7
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.170	0.173	0.170	0.181	0.218
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	11.5	9.1	8.7	10.3	14.4
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.08	1.13	1.15	0.975	1.06
	Vanadium (V) (mg/kg)	25.9	28.5	26.3	25.1	29.3
	Zinc (Zn) (mg/kg)	88.3	101	100	98.4	97.3
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	0.0092	<0.0050	<0.0050	0.0247	0.0279
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acridine (mg/kg)	0.018	<0.010	<0.010	0.035	0.040
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	<0.010	<0.010	<0.010	0.013	0.015
	Benzo(a)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b&j)fluoranthene (mg/kg)	0.019	0.014	0.017	0.033	0.035
	Benzo(b+j+k)fluoranthene (mg/kg)	0.019	<0.015	0.017	0.033	0.035
	Benzo(e)pyrene (mg/kg)	0.019	0.016	0.018	0.034	0.035
	Benzo(g,h,i)perylene (mg/kg)	<0.010	<0.010	<0.010	0.012	<0.010
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	0.042	0.037	0.040	0.076	0.087
	Dibenz(a,h)anthracene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	0.016
	Fluorene (mg/kg)	0.021	<0.010	0.014	0.052	0.066
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	0.102	0.096	0.100	0.240	0.261
	2-Methylnaphthalene (mg/kg)	0.164	0.146	0.159	0.382	0.436
	Naphthalene (mg/kg)	0.050	0.053	0.060	0.118	0.141
	Perylene (mg/kg)	0.021	0.016	0.021	0.028	0.015
	Phenanthrene (mg/kg)	0.138	0.121	0.134	0.295	0.328
	Pyrene (mg/kg)	0.012	0.011	<0.010	0.027	0.034
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	95.3	79.4	78.2	91.1	87.0

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-11				
	Description	SE				
	Sampled Date	12-SEP-21				
	Sampled Time	09:00				
	Client ID	RG_RIVER_SE_2021-09-12_0900				
Grouping	**Analyte**					
SOIL						
Metals	Silver (Ag) (mg/kg)	0.23				
	Sodium (Na) (mg/kg)	70				
	Strontium (Sr) (mg/kg)	52.2				
	Sulfur (S) (mg/kg)	<1000				
	Thallium (Tl) (mg/kg)	0.216				
	Tin (Sn) (mg/kg)	<2.0				
	Titanium (Ti) (mg/kg)	13.0				
	Tungsten (W) (mg/kg)	<0.50				
	Uranium (U) (mg/kg)	1.01				
	Vanadium (V) (mg/kg)	28.3				
	Zinc (Zn) (mg/kg)	91.3				
	Zirconium (Zr) (mg/kg)	<1.0				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	0.0287				
	Acenaphthylene (mg/kg)	<0.0050				
	Acridine (mg/kg)	0.039				
	Anthracene (mg/kg)	<0.0040				
	Benz(a)anthracene (mg/kg)	0.019				
	Benzo(a)pyrene (mg/kg)	<0.010				
	Benzo(b&j)fluoranthene (mg/kg)	0.038				
	Benzo(b+j+k)fluoranthene (mg/kg)	0.038				
	Benzo(e)pyrene (mg/kg)	0.039				
	Benzo(g,h,i)perylene (mg/kg)	0.017				
	Benzo(k)fluoranthene (mg/kg)	<0.010				
	Chrysene (mg/kg)	0.091				
	Dibenz(a,h)anthracene (mg/kg)	<0.0050				
	Fluoranthene (mg/kg)	0.016				
	Fluorene (mg/kg)	0.066				
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010				
	1-Methylnaphthalene (mg/kg)	0.275				
	2-Methylnaphthalene (mg/kg)	0.440				
	Naphthalene (mg/kg)	0.143				
	Perylene (mg/kg)	0.021				
	Phenanthrene (mg/kg)	0.378				
	Pyrene (mg/kg)	0.028				
	Quinoline (mg/kg)	<0.050				
	Surrogate: d10-Acenaphthene (%)	87.9				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-1	L2641134-2	L2641134-3	L2641134-4	L2641134-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	09-SEP-21	09-SEP-21	09-SEP-21	10-SEP-21	10-SEP-21
	Sampled Time	12:45	13:20	13:50	08:20	08:50
	Client ID	RG_FOBKS_SE-1_2021-09-09_1245	RG_FOBKS_SE-2_2021-09-09_1320	RG_FOBKS_SE-3_2021-09-09_1350	RG_FOBKS_SE-4_2021-09-10_0820	RG_FOBKS_SE-5_2021-09-10_0850
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d12-Chrysene (%)	87.1	95.3	118.1	103	101.3
	Surrogate: d8-Naphthalene (%)	74.8	78.4	106.7	111.9	84.4
	Surrogate: d10-Phenanthrene (%)	82.4	89.3	129.4	118.9	93.1
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	0.063	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	0.029	0.034	0.039	0.056	0.035
	IACR (CCME)	0.55	0.66	0.72	1.07	0.72

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-6	L2641134-7	L2641134-8	L2641134-9	L2641134-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21	12-SEP-21
	Sampled Time	14:09	13:10	11:10	10:50	09:00
	Client ID	RG_FO22_SE-1_2021-09-12_1409	RG_FO22_SE-2_2021-09-12_1310	RG_FO22_SE-3_2021-09-12_1110	RG_FO22_SE-4_2021-09-12_1050	RG_FO22_SE-5_2021-09-12_0900
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d12-Chrysene (%)	94.2	92.5	84.5	90.5	87.9
	Surrogate: d8-Naphthalene (%)	82.3	77.9	73.7	83.5	85.5
	Surrogate: d10-Phenanthrene (%)	107.9	100.1	79.8	95.5	97.7
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	IACR (CCME)	0.21	0.18	0.20	0.34	0.37

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641134-11				
	Description	SE				
	Sampled Date	12-SEP-21				
	Sampled Time	09:00				
	Client ID	RG_RIVER_SE_2021-09-12_0900				
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d12-Chrysene (%)	85.5				
	Surrogate: d8-Naphthalene (%)	83.1				
	Surrogate: d10-Phenanthrene (%)	98.1				
	IACR:Coarse	<0.050				
	IACR:Fine	<0.050				
	B(a)P Total Potency Equivalent (mg/kg)	<0.020				
	IACR (CCME)	0.40				

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

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	CSSS (2008) 21.2

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAA-CL	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-CL	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MOISTURE-CL	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C

PAH-TMB-H/A-MS-CL	Soil	PAH Tumbler Extraction (Hexane/Acetone)	EPA 3570/8270-GC/MS

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-1:2-CL	Soil	pH in soil (1:2 Soil:Water Extraction)	CSSS Ch. 16

Soil and de-ionized water (by volume) are mixed in a defined ratio. The slurry is allowed to stand, shaken, and then allowed to stand again prior to taking measurements. After equilibration, the pH of the liquid portion of the extract is measured by a pH meter. Field Measurement is recommended where accurate pH measurements are required, due to the 15 minute recommended hold time.

PSA-PIPET-DETAIL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

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

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

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

Chain of Custody Numbers:

September FRO LAEMP

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L2641134 Report Date: 07-OCT-21

Client: Teck Coal Ltd.
421 Pine Avenue
Sparwood BC V0B 2G0

Contact: Mike Pope

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TIC-PCT-SK	**Soil**							
Batch R5598776								
WG3622536-1 DUP		**L2641134-6**						
Inorganic Carbon		1.07	1.02		%	4.3	20	24-SEP-21
WG3622536-4 IRM		**08-109_SOIL**						
Inorganic Carbon			91.2		%		80-120	24-SEP-21
WG3622536-2 LCS		**0.5**						
Inorganic Carbon			96.2		%		90-110	24-SEP-21
WG3622536-3 MB								
Inorganic Carbon			<0.050		%		0.05	24-SEP-21
C-TOT-LECO-SK	**Soil**							
Batch R5605744								
WG3622201-1 DUP		**L2641134-10**						
Total Carbon by Combustion		7.46	7.41		%	0.7	20	24-SEP-21
WG3622201-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			105.3		%		80-120	24-SEP-21
WG3622201-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			103.7		%		90-110	24-SEP-21
WG3622201-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	24-SEP-21
HG-200.2-CVAA-CL	**Soil**							
Batch R5601233								
WG3625634-9 CRM		**TILL-2**						
Mercury (Hg)			102.7		%		70-130	27-SEP-21
WG3625634-8 LCS								
Mercury (Hg)			103.0		%		80-120	27-SEP-21
WG3625634-6 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	27-SEP-21
MET-200.2-CCMS-CL	**Soil**							
Batch R5603003								
WG3625634-9 CRM		**TILL-2**						
Aluminum (Al)			92.5		%		70-130	27-SEP-21
Antimony (Sb)			107.3		%		70-130	27-SEP-21
Arsenic (As)			94.5		%		70-130	27-SEP-21
Barium (Ba)			94.6		%		70-130	27-SEP-21
Beryllium (Be)			88.1		%		70-130	27-SEP-21
Bismuth (Bi)			95.0		%		70-130	27-SEP-21
Cadmium (Cd)			89.6		%		70-130	27-SEP-21
Calcium (Ca)			93.0		%		70-130	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5603003								
WG3625634-9 CRM		**TILL-2**						
Chromium (Cr)			91.0		%		70-130	27-SEP-21
Cobalt (Co)			93.5		%		70-130	27-SEP-21
Copper (Cu)			92.9		%		70-130	27-SEP-21
Iron (Fe)			93.4		%		70-130	27-SEP-21
Lead (Pb)			96.9		%		70-130	27-SEP-21
Lithium (Li)			87.1		%		70-130	27-SEP-21
Magnesium (Mg)			91.3		%		70-130	27-SEP-21
Manganese (Mn)			90.7		%		70-130	27-SEP-21
Molybdenum (Mo)			88.8		%		70-130	27-SEP-21
Nickel (Ni)			92.8		%		70-130	27-SEP-21
Phosphorus (P)			93.0		%		70-130	27-SEP-21
Potassium (K)			94.1		%		70-130	27-SEP-21
Selenium (Se)			0.35		mg/kg		0.15-0.55	27-SEP-21
Silver (Ag)			0.27		mg/kg		0.16-0.36	27-SEP-21
Sodium (Na)			104.0		%		70-130	27-SEP-21
Strontium (Sr)			100.1		%		70-130	27-SEP-21
Thallium (Tl)			96.3		%		70-130	27-SEP-21
Tin (Sn)			2.2		mg/kg		0.2-4.2	27-SEP-21
Titanium (Ti)			87.5		%		70-130	27-SEP-21
Tungsten (W)			1.43		mg/kg		1-2	27-SEP-21
Uranium (U)			99.5		%		70-130	27-SEP-21
Vanadium (V)			92.2		%		70-130	27-SEP-21
Zinc (Zn)			89.1		%		70-130	27-SEP-21
Zirconium (Zr)			96.7		%		70-130	27-SEP-21
WG3625634-8 LCS								
Aluminum (Al)			109.6		%		80-120	27-SEP-21
Antimony (Sb)			112.9		%		80-120	27-SEP-21
Arsenic (As)			105.8		%		80-120	27-SEP-21
Barium (Ba)			106.4		%		80-120	27-SEP-21
Beryllium (Be)			100.0		%		80-120	27-SEP-21
Bismuth (Bi)			104.8		%		80-120	27-SEP-21
Boron (B)			97.4		%		80-120	27-SEP-21
Cadmium (Cd)			105.3		%		80-120	27-SEP-21
Calcium (Ca)			102.3		%		80-120	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5603003								
WG3625634-8 LCS								
Chromium (Cr)			105.0		%		80-120	27-SEP-21
Cobalt (Co)			106.7		%		80-120	27-SEP-21
Copper (Cu)			105.2		%		80-120	27-SEP-21
Iron (Fe)			112.1		%		80-120	27-SEP-21
Lead (Pb)			106.0		%		80-120	27-SEP-21
Lithium (Li)			91.0		%		80-120	27-SEP-21
Magnesium (Mg)			108.5		%		80-120	27-SEP-21
Manganese (Mn)			106.4		%		80-120	27-SEP-21
Molybdenum (Mo)			103.2		%		80-120	27-SEP-21
Nickel (Ni)			104.3		%		80-120	27-SEP-21
Phosphorus (P)			109.6		%		80-120	27-SEP-21
Potassium (K)			113.1		%		80-120	27-SEP-21
Selenium (Se)			102.8		%		80-120	27-SEP-21
Silver (Ag)			110.5		%		80-120	27-SEP-21
Sodium (Na)			103.1		%		80-120	27-SEP-21
Strontium (Sr)			109.9		%		80-120	27-SEP-21
Sulfur (S)			102.7		%		80-120	27-SEP-21
Thallium (Tl)			103.6		%		80-120	27-SEP-21
Tin (Sn)			107.8		%		80-120	27-SEP-21
Titanium (Ti)			97.8		%		80-120	27-SEP-21
Tungsten (W)			106.9		%		80-120	27-SEP-21
Uranium (U)			115.0		%		80-120	27-SEP-21
Vanadium (V)			107.4		%		80-120	27-SEP-21
Zinc (Zn)			102.2		%		80-120	27-SEP-21
Zirconium (Zr)			109.9		%		80-120	27-SEP-21
WG3625634-6 MB								
Aluminum (Al)			<50		mg/kg		50	27-SEP-21
Antimony (Sb)			<0.10		mg/kg		0.1	27-SEP-21
Arsenic (As)			<0.10		mg/kg		0.1	27-SEP-21
Barium (Ba)			<0.50		mg/kg		0.5	27-SEP-21
Beryllium (Be)			<0.10		mg/kg		0.1	27-SEP-21
Bismuth (Bi)			<0.20		mg/kg		0.2	27-SEP-21
Boron (B)			<5.0		mg/kg		5	27-SEP-21
Cadmium (Cd)			<0.020		mg/kg		0.02	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5603003								
WG3625634-6 MB								
Calcium (Ca)			<50		mg/kg		50	27-SEP-21
Chromium (Cr)			<0.50		mg/kg		0.5	27-SEP-21
Cobalt (Co)			<0.10		mg/kg		0.1	27-SEP-21
Copper (Cu)			<0.50		mg/kg		0.5	27-SEP-21
Iron (Fe)			<50		mg/kg		50	27-SEP-21
Lead (Pb)			<0.50		mg/kg		0.5	27-SEP-21
Lithium (Li)			<2.0		mg/kg		2	27-SEP-21
Magnesium (Mg)			<20		mg/kg		20	27-SEP-21
Manganese (Mn)			<1.0		mg/kg		1	27-SEP-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	27-SEP-21
Nickel (Ni)			<0.50		mg/kg		0.5	27-SEP-21
Phosphorus (P)			<50		mg/kg		50	27-SEP-21
Potassium (K)			<100		mg/kg		100	27-SEP-21
Selenium (Se)			<0.20		mg/kg		0.2	27-SEP-21
Silver (Ag)			<0.10		mg/kg		0.1	27-SEP-21
Sodium (Na)			<50		mg/kg		50	27-SEP-21
Strontium (Sr)			<0.50		mg/kg		0.5	27-SEP-21
Sulfur (S)			<1000		mg/kg		1000	27-SEP-21
Thallium (Tl)			<0.050		mg/kg		0.05	27-SEP-21
Tin (Sn)			<2.0		mg/kg		2	27-SEP-21
Titanium (Ti)			<1.0		mg/kg		1	27-SEP-21
Tungsten (W)			<0.50		mg/kg		0.5	27-SEP-21
Uranium (U)			<0.050		mg/kg		0.05	27-SEP-21
Vanadium (V)			<0.20		mg/kg		0.2	27-SEP-21
Zinc (Zn)			<2.0		mg/kg		2	27-SEP-21
Zirconium (Zr)			<1.0		mg/kg		1	27-SEP-21
MOISTURE-CL	**Soil**							
Batch R5596817								
WG3623544-2 LCS								
Moisture			98.2		%		90-110	24-SEP-21
WG3623544-1 MB								
Moisture			<0.25		%		0.25	24-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-CL	**Soil**							
Batch R5600316								
WG3625303-2 LCS								
Moisture			98.7		%		90-110	27-SEP-21
WG3625303-1 MB								
Moisture			<0.25		%		0.25	27-SEP-21
Batch R5600377								
WG3625244-2 LCS								
Moisture			97.3		%		90-110	27-SEP-21
WG3625244-1 MB								
Moisture			<0.25		%		0.25	27-SEP-21
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-12 IRM		**ALS PAH RM2**						
Acenaphthene			83.5		%		60-130	25-SEP-21
Acenaphthylene			95.1		%		60-130	25-SEP-21
Anthracene			98.6		%		60-130	25-SEP-21
Acridine			106.1		%		60-130	25-SEP-21
Benz(a)anthracene			94.2		%		60-130	25-SEP-21
Benzo(a)pyrene			92.4		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			87.2		%		60-130	25-SEP-21
Benzo(e)pyrene			94.7		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			89.4		%		60-130	25-SEP-21
Benzo(k)fluoranthene			78.9		%		60-130	25-SEP-21
Chrysene			94.4		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			78.7		%		60-130	25-SEP-21
Fluoranthene			84.6		%		60-130	25-SEP-21
Fluorene			85.7		%		60-130	25-SEP-21
Indeno(1,2,3-c,d)pyrene			103.7		%		60-130	25-SEP-21
2-Methylnaphthalene			83.4		%		60-130	25-SEP-21
Naphthalene			78.6		%		50-130	25-SEP-21
Perylene			100.5		%		60-130	25-SEP-21
Phenanthrene			85.2		%		60-130	25-SEP-21
Pyrene			87.6		%		60-130	25-SEP-21
1-Methylnaphthalene			81.6		%		60-130	25-SEP-21
WG3625117-20 IRM		**ALS PAH RM2**						
Acenaphthene			91.5		%		60-130	26-SEP-21
Acenaphthylene			97.2		%		60-130	26-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-20 IRM		**ALS PAH RM2**						
Anthracene			105.0		%		60-130	26-SEP-21
Acridine			109.7		%		60-130	26-SEP-21
Benz(a)anthracene			97.1		%		60-130	26-SEP-21
Benzo(a)pyrene			98.7		%		60-130	26-SEP-21
Benzo(b&j)fluoranthene			91.2		%		60-130	26-SEP-21
Benzo(e)pyrene			104.3		%		60-130	26-SEP-21
Benzo(g,h,i)perylene			89.9		%		60-130	26-SEP-21
Benzo(k)fluoranthene			91.2		%		60-130	26-SEP-21
Chrysene			97.0		%		60-130	26-SEP-21
Dibenz(a,h)anthracene			92.8		%		60-130	26-SEP-21
Fluoranthene			88.2		%		60-130	26-SEP-21
Fluorene			93.3		%		60-130	26-SEP-21
Indeno(1,2,3-c,d)pyrene			113.3		%		60-130	26-SEP-21
2-Methylnaphthalene			85.2		%		60-130	26-SEP-21
Naphthalene			80.2		%		50-130	26-SEP-21
Perylene			92.2		%		60-130	26-SEP-21
Phenanthrene			90.5		%		60-130	26-SEP-21
Pyrene			91.5		%		60-130	26-SEP-21
1-Methylnaphthalene			85.5		%		60-130	26-SEP-21
WG3625117-5 IRM		**ALS PAH RM2**						
Acenaphthene			82.8		%		60-130	25-SEP-21
Acenaphthylene			88.3		%		60-130	25-SEP-21
Anthracene			93.0		%		60-130	25-SEP-21
Acridine			96.0		%		60-130	25-SEP-21
Benz(a)anthracene			84.4		%		60-130	25-SEP-21
Benzo(a)pyrene			80.0		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			79.0		%		60-130	25-SEP-21
Benzo(e)pyrene			84.0		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			73.8		%		60-130	25-SEP-21
Benzo(k)fluoranthene			69.4		%		60-130	25-SEP-21
Chrysene			84.4		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			74.1		%		60-130	25-SEP-21
Fluoranthene			78.9		%		60-130	25-SEP-21
Fluorene			87.5		%		60-130	25-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-5 IRM		**ALS PAH RM2**						
Indeno(1,2,3-c,d)pyrene			98.0		%		60-130	25-SEP-21
2-Methylnaphthalene			78.2		%		60-130	25-SEP-21
Naphthalene			69.6		%		50-130	25-SEP-21
Perylene			83.7		%		60-130	25-SEP-21
Phenanthrene			81.8		%		60-130	25-SEP-21
Pyrene			80.7		%		60-130	25-SEP-21
1-Methylnaphthalene			78.0		%		60-130	25-SEP-21
WG3625117-8 IRM		**ALS PAH RM2**						
Acenaphthene			79.0		%		60-130	25-SEP-21
Acenaphthylene			82.6		%		60-130	25-SEP-21
Anthracene			88.8		%		60-130	25-SEP-21
Acridine			81.2		%		60-130	25-SEP-21
Benz(a)anthracene			81.4		%		60-130	25-SEP-21
Benzo(a)pyrene			76.9		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			74.2		%		60-130	25-SEP-21
Benzo(e)pyrene			81.5		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			71.7		%		60-130	25-SEP-21
Benzo(k)fluoranthene			70.1		%		60-130	25-SEP-21
Chrysene			80.1		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			76.0		%		60-130	25-SEP-21
Fluoranthene			74.6		%		60-130	25-SEP-21
Fluorene			78.0		%		60-130	25-SEP-21
Indeno(1,2,3-c,d)pyrene			89.0		%		60-130	25-SEP-21
2-Methylnaphthalene			75.5		%		60-130	25-SEP-21
Naphthalene			67.6		%		50-130	25-SEP-21
Perylene			80.3		%		60-130	25-SEP-21
Phenanthrene			77.0		%		60-130	25-SEP-21
Pyrene			76.4		%		60-130	25-SEP-21
1-Methylnaphthalene			74.7		%		60-130	25-SEP-21
WG3625117-1 LCS								
Acenaphthene			101.3		%		60-130	24-SEP-21
Acenaphthylene			92.7		%		60-130	24-SEP-21
Anthracene			93.8		%		60-130	24-SEP-21
Acridine			98.0		%		60-130	24-SEP-21
Benz(a)anthracene			99.7		%		60-130	24-SEP-21

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-1 LCS								
Benzo(a)pyrene			78.9		%		60-130	24-SEP-21
Benzo(b&j)fluoranthene			91.1		%		60-130	24-SEP-21
Benzo(e)pyrene			100.0		%		60-130	24-SEP-21
Benzo(g,h,i)perylene			91.1		%		60-130	24-SEP-21
Benzo(k)fluoranthene			95.7		%		60-130	24-SEP-21
Chrysene			99.3		%		60-130	24-SEP-21
Dibenz(a,h)anthracene			84.8		%		60-130	24-SEP-21
Fluoranthene			98.4		%		60-130	24-SEP-21
Fluorene			97.8		%		60-130	24-SEP-21
Indeno(1,2,3-c,d)pyrene			92.2		%		60-130	24-SEP-21
2-Methylnaphthalene			100.5		%		60-130	24-SEP-21
Naphthalene			96.6		%		50-130	24-SEP-21
Perylene			93.2		%		60-130	24-SEP-21
Phenanthrene			102.7		%		60-130	24-SEP-21
Pyrene			97.6		%		60-130	24-SEP-21
1-Methylnaphthalene			105.7		%		60-130	24-SEP-21
Quinoline			92.2		%		60-130	24-SEP-21
WG3625117-11 LCS								
Acenaphthene			96.9		%		60-130	25-SEP-21
Acenaphthylene			92.6		%		60-130	25-SEP-21
Anthracene			96.5		%		60-130	25-SEP-21
Acridine			92.5		%		60-130	25-SEP-21
Benz(a)anthracene			96.9		%		60-130	25-SEP-21
Benzo(a)pyrene			85.7		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			90.1		%		60-130	25-SEP-21
Benzo(e)pyrene			96.6		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			89.7		%		60-130	25-SEP-21
Benzo(k)fluoranthene			92.3		%		60-130	25-SEP-21
Chrysene			94.3		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			83.0		%		60-130	25-SEP-21
Fluoranthene			94.1		%		60-130	25-SEP-21
Fluorene			93.4		%		60-130	25-SEP-21
Indeno(1,2,3-c,d)pyrene			91.2		%		60-130	25-SEP-21
2-Methylnaphthalene			97.0		%		60-130	25-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-11 LCS								
Naphthalene			94.0		%		50-130	25-SEP-21
Perylene			91.7		%		60-130	25-SEP-21
Phenanthrene			97.5		%		60-130	25-SEP-21
Pyrene			94.1		%		60-130	25-SEP-21
1-Methylnaphthalene			96.3		%		60-130	25-SEP-21
Quinoline			85.5		%		60-130	25-SEP-21
WG3625117-19 LCS								
Acenaphthene			100.6		%		60-130	26-SEP-21
Acenaphthylene			99.1		%		60-130	26-SEP-21
Anthracene			103.3		%		60-130	26-SEP-21
Acridine			98.8		%		60-130	26-SEP-21
Benz(a)anthracene			105.8		%		60-130	26-SEP-21
Benzo(a)pyrene			95.0		%		60-130	26-SEP-21
Benzo(b&j)fluoranthene			96.9		%		60-130	26-SEP-21
Benzo(e)pyrene			102.4		%		60-130	26-SEP-21
Benzo(g,h,i)perylene			98.5		%		60-130	26-SEP-21
Benzo(k)fluoranthene			98.6		%		60-130	26-SEP-21
Chrysene			100.4		%		60-130	26-SEP-21
Dibenz(a,h)anthracene			93.7		%		60-130	26-SEP-21
Fluoranthene			100.7		%		60-130	26-SEP-21
Fluorene			103.5		%		60-130	26-SEP-21
Indeno(1,2,3-c,d)pyrene			98.1		%		60-130	26-SEP-21
2-Methylnaphthalene			103.7		%		60-130	26-SEP-21
Naphthalene			101.5		%		50-130	26-SEP-21
Perylene			98.7		%		60-130	26-SEP-21
Phenanthrene			104.9		%		60-130	26-SEP-21
Pyrene			101.1		%		60-130	26-SEP-21
1-Methylnaphthalene			104.0		%		60-130	26-SEP-21
Quinoline			91.2		%		60-130	26-SEP-21
WG3625117-22 LCS								
Acenaphthene			100.6		%		60-130	26-SEP-21
Acenaphthylene			101.0		%		60-130	26-SEP-21
Anthracene			99.8		%		60-130	26-SEP-21
Acridine			95.0		%		60-130	26-SEP-21
Benz(a)anthracene			115.6		%		60-130	26-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-22 LCS								
Benzo(a)pyrene			96.9		%		60-130	26-SEP-21
Benzo(b&j)fluoranthene			98.6		%		60-130	26-SEP-21
Benzo(e)pyrene			105.0		%		60-130	26-SEP-21
Benzo(g,h,i)perylene			96.1		%		60-130	26-SEP-21
Benzo(k)fluoranthene			103.6		%		60-130	26-SEP-21
Chrysene			116.2		%		60-130	26-SEP-21
Dibenz(a,h)anthracene			90.2		%		60-130	26-SEP-21
Fluoranthene			100.4		%		60-130	26-SEP-21
Fluorene			99.5		%		60-130	26-SEP-21
Indeno(1,2,3-c,d)pyrene			94.1		%		60-130	26-SEP-21
2-Methylnaphthalene			100.6		%		60-130	26-SEP-21
Naphthalene			96.2		%		50-130	26-SEP-21
Perylene			102.2		%		60-130	26-SEP-21
Phenanthrene			100.5		%		60-130	26-SEP-21
Pyrene			101.6		%		60-130	26-SEP-21
1-Methylnaphthalene			104.5		%		60-130	26-SEP-21
Quinoline			92.4		%		60-130	26-SEP-21
WG3625117-4 LCS								
Acenaphthene			105.1		%		60-130	25-SEP-21
Acenaphthylene			94.1		%		60-130	25-SEP-21
Anthracene			100.2		%		60-130	25-SEP-21
Acridine			101.9		%		60-130	25-SEP-21
Benz(a)anthracene			111.0		%		60-130	25-SEP-21
Benzo(a)pyrene			91.6		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			103.2		%		60-130	25-SEP-21
Benzo(e)pyrene			111.1		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			99.5		%		60-130	25-SEP-21
Benzo(k)fluoranthene			106.3		%		60-130	25-SEP-21
Chrysene			103.4		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			96.8		%		60-130	25-SEP-21
Fluoranthene			103.8		%		60-130	25-SEP-21
Fluorene			103.7		%		60-130	25-SEP-21
Indeno(1,2,3-c,d)pyrene			104.5		%		60-130	25-SEP-21
2-Methylnaphthalene			106.9		%		60-130	25-SEP-21

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-4 LCS								
Naphthalene			99.4		%		50-130	25-SEP-21
Perylene			103.1		%		60-130	25-SEP-21
Phenanthrene			106.9		%		60-130	25-SEP-21
Pyrene			105.1		%		60-130	25-SEP-21
1-Methylnaphthalene			108.2		%		60-130	25-SEP-21
Quinoline			94.2		%		60-130	25-SEP-21
WG3625117-7 LCS								
Acenaphthene			92.3		%		60-130	25-SEP-21
Acenaphthylene			87.8		%		60-130	25-SEP-21
Anthracene			92.5		%		60-130	25-SEP-21
Acridine			82.4		%		60-130	25-SEP-21
Benz(a)anthracene			96.9		%		60-130	25-SEP-21
Benzo(a)pyrene			89.6		%		60-130	25-SEP-21
Benzo(b&j)fluoranthene			92.6		%		60-130	25-SEP-21
Benzo(e)pyrene			95.4		%		60-130	25-SEP-21
Benzo(g,h,i)perylene			84.3		%		60-130	25-SEP-21
Benzo(k)fluoranthene			93.9		%		60-130	25-SEP-21
Chrysene			91.7		%		60-130	25-SEP-21
Dibenz(a,h)anthracene			84.4		%		60-130	25-SEP-21
Fluoranthene			90.8		%		60-130	25-SEP-21
Fluorene			90.3		%		60-130	25-SEP-21
Indeno(1,2,3-c,d)pyrene			92.0		%		60-130	25-SEP-21
2-Methylnaphthalene			95.3		%		60-130	25-SEP-21
Naphthalene			88.8		%		50-130	25-SEP-21
Perylene			90.8		%		60-130	25-SEP-21
Phenanthrene			94.1		%		60-130	25-SEP-21
Pyrene			90.5		%		60-130	25-SEP-21
1-Methylnaphthalene			95.1		%		60-130	25-SEP-21
Quinoline			74.7		%		60-130	25-SEP-21
WG3625117-13 MB								
Acenaphthene			<0.0050		mg/kg		0.005	26-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	26-SEP-21
Anthracene			<0.0040		mg/kg		0.004	26-SEP-21
Acridine			<0.010		mg/kg		0.01	26-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	26-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-13 MB								
Benzo(a)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Chrysene			<0.010		mg/kg		0.01	26-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	26-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Fluorene			<0.010		mg/kg		0.01	26-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	26-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	26-SEP-21
Naphthalene			<0.010		mg/kg		0.01	26-SEP-21
Perylene			<0.010		mg/kg		0.01	26-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	26-SEP-21
Pyrene			<0.010		mg/kg		0.01	26-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	26-SEP-21
Quinoline			<0.050		mg/kg		0.05	26-SEP-21
Surrogate: d8-Naphthalene			75.4		%		50-130	26-SEP-21
Surrogate: d10-Acenaphthene			82.3		%		60-130	26-SEP-21
Surrogate: d10-Phenanthrene			85.2		%		60-130	26-SEP-21
Surrogate: d12-Chrysene			88.5		%		60-130	26-SEP-21
WG3625117-15 MB								
Acenaphthene			<0.0050		mg/kg		0.005	26-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	26-SEP-21
Anthracene			<0.0040		mg/kg		0.004	26-SEP-21
Acridine			<0.010		mg/kg		0.01	26-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Chrysene			<0.010		mg/kg		0.01	26-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	26-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-15 MB								
Fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Fluorene			<0.010		mg/kg		0.01	26-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	26-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	26-SEP-21
Naphthalene			<0.010		mg/kg		0.01	26-SEP-21
Perylene			<0.010		mg/kg		0.01	26-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	26-SEP-21
Pyrene			<0.010		mg/kg		0.01	26-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	26-SEP-21
Quinoline			<0.050		mg/kg		0.05	26-SEP-21
Surrogate: d8-Naphthalene			88.2		%		50-130	26-SEP-21
Surrogate: d10-Acenaphthene			103.5		%		60-130	26-SEP-21
Surrogate: d10-Phenanthrene			99.3		%		60-130	26-SEP-21
Surrogate: d12-Chrysene			122		%		60-130	26-SEP-21
WG3625117-17 MB								
Acenaphthene			<0.0050		mg/kg		0.005	26-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	26-SEP-21
Anthracene			<0.0040		mg/kg		0.004	26-SEP-21
Acridine			<0.010		mg/kg		0.01	26-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	26-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Chrysene			<0.010		mg/kg		0.01	26-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	26-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	26-SEP-21
Fluorene			<0.010		mg/kg		0.01	26-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	26-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	26-SEP-21
Naphthalene			<0.010		mg/kg		0.01	26-SEP-21
Perylene			<0.010		mg/kg		0.01	26-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	26-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-17 MB								
Pyrene			<0.010		mg/kg		0.01	26-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	26-SEP-21
Quinoline			<0.050		mg/kg		0.05	26-SEP-21
Surrogate: d8-Naphthalene			93.2		%		50-130	26-SEP-21
Surrogate: d10-Acenaphthene			97.7		%		60-130	26-SEP-21
Surrogate: d10-Phenanthrene			107.7		%		60-130	26-SEP-21
Surrogate: d12-Chrysene			109.9		%		60-130	26-SEP-21
WG3625117-2 MB								
Acenaphthene			<0.0050		mg/kg		0.005	24-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	24-SEP-21
Anthracene			<0.0040		mg/kg		0.004	24-SEP-21
Acridine			<0.010		mg/kg		0.01	24-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	24-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	24-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	24-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	24-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	24-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	24-SEP-21
Chrysene			<0.010		mg/kg		0.01	24-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	24-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	24-SEP-21
Fluorene			<0.010		mg/kg		0.01	24-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	24-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	24-SEP-21
Naphthalene			<0.010		mg/kg		0.01	24-SEP-21
Perylene			<0.010		mg/kg		0.01	24-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	24-SEP-21
Pyrene			<0.010		mg/kg		0.01	24-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	24-SEP-21
Quinoline			<0.050		mg/kg		0.05	24-SEP-21
Surrogate: d8-Naphthalene			77.0		%		50-130	24-SEP-21
Surrogate: d10-Acenaphthene			72.7		%		60-130	24-SEP-21
Surrogate: d10-Phenanthrene			77.1		%		60-130	24-SEP-21
Surrogate: d12-Chrysene			79.3		%		60-130	24-SEP-21
WG3625117-6 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-6 MB								
Acenaphthene			<0.0050		mg/kg		0.005	25-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	25-SEP-21
Anthracene			<0.0040		mg/kg		0.004	25-SEP-21
Acridine			<0.010		mg/kg		0.01	25-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	25-SEP-21
Chrysene			<0.010		mg/kg		0.01	25-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	25-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	25-SEP-21
Fluorene			<0.010		mg/kg		0.01	25-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	25-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	25-SEP-21
Naphthalene			<0.010		mg/kg		0.01	25-SEP-21
Perylene			<0.010		mg/kg		0.01	25-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	25-SEP-21
Pyrene			<0.010		mg/kg		0.01	25-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	25-SEP-21
Quinoline			<0.050		mg/kg		0.05	25-SEP-21
Surrogate: d8-Naphthalene			82.7		%		50-130	25-SEP-21
Surrogate: d10-Acenaphthene			76.0		%		60-130	25-SEP-21
Surrogate: d10-Phenanthrene			80.5		%		60-130	25-SEP-21
Surrogate: d12-Chrysene			86.8		%		60-130	25-SEP-21
WG3625117-9 MB								
Acenaphthene			<0.0050		mg/kg		0.005	25-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	25-SEP-21
Anthracene			<0.0040		mg/kg		0.004	25-SEP-21
Acridine			<0.010		mg/kg		0.01	25-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	25-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5599599								
WG3625117-9 MB								
Benzo(e)pyrene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	25-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	25-SEP-21
Chrysene			<0.010		mg/kg		0.01	25-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	25-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	25-SEP-21
Fluorene			<0.010		mg/kg		0.01	25-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	25-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	25-SEP-21
Naphthalene			<0.010		mg/kg		0.01	25-SEP-21
Perylene			<0.010		mg/kg		0.01	25-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	25-SEP-21
Pyrene			<0.010		mg/kg		0.01	25-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	25-SEP-21
Quinoline			<0.050		mg/kg		0.05	25-SEP-21
Surrogate: d8-Naphthalene			113.5		%		50-130	25-SEP-21
Surrogate: d10-Acenaphthene			86.1		%		60-130	25-SEP-21
Surrogate: d10-Phenanthrene			82.1		%		60-130	25-SEP-21
Surrogate: d12-Chrysene			79.5		%		60-130	25-SEP-21
PH-1:2-CL	**Soil**							
Batch R5603911								
WG3626750-5 IRM		**SAL-STD11**						
pH (1:2 soil:water)			7.92		pH		7.7-8.3	28-SEP-21
WG3626750-4 LCS								
pH (1:2 soil:water)			7.00		pH		6.8-7.2	28-SEP-21
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5604000								
WG3622182-1 DUP		**L2641134-1**						
% Gravel (>2mm)		11.0	11.0		%	0.0	25	28-SEP-21
% Sand (2.00mm - 1.00mm)		10.4	9.2	J	%	1.2	5	28-SEP-21
% Sand (1.00mm - 0.50mm)		16.5	16.1	J	%	0.4	5	28-SEP-21
% Sand (0.50mm - 0.25mm)		18.8	18.7	J	%	0.1	5	28-SEP-21
% Sand (0.25mm - 0.125mm)		10.5	10.6	J	%	0.1	5	28-SEP-21
% Sand (0.125mm - 0.063mm)		6.8	6.7	J	%	0.1	5	28-SEP-21
% Silt (0.063mm - 0.0312mm)		11.0	11.7	J	%	0.7	5	28-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5604000								
WG3622182-1 DUP		**L2641134-1**						
% Silt (0.0312mm - 0.004mm)		12.3	13.5	J	%	1.1	5	28-SEP-21
% Clay (<4um)		2.6	2.6	J	%	0.0	5	28-SEP-21
WG3622182-2 IRM		**2020-PSA_SOIL**						
% Sand (2.00mm - 1.00mm)			2.7		%		0-7.2	28-SEP-21
% Sand (1.00mm - 0.50mm)			3.3		%		0-8.7	28-SEP-21
% Sand (0.50mm - 0.25mm)			9.1		%		4-14	28-SEP-21
% Sand (0.25mm - 0.125mm)			16.4		%		11.7-21.7	28-SEP-21
% Sand (0.125mm - 0.063mm)			14.1		%		8.4-18.4	28-SEP-21
% Silt (0.063mm - 0.0312mm)			12.0		%		8.5-18.5	28-SEP-21
% Silt (0.0312mm - 0.004mm)			20.8		%		15.1-25.1	28-SEP-21
% Clay (<4um)			21.7		%		16.5-26.5	28-SEP-21

Quality Control Report

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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

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

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

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[illegible]@teck.com	x	x	x
pschnair@minnow.ca	x	x	x

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

L2641134-COFC

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	C-TOC-SK	MET-CCME+FULL-CL	MOISTURE-CL - % Moisture	PSA-PIPET-DETAIL-SK Particle Size	PAH-TMB-D/A-MS-CL-PAHs
Filtered								N	N	N	N	N
Preservative								NONE	NONE	NONE	NONE	NONE
RG_FOBKS_SE-1_2021-09-09_1245	RG_FOBKS	SE	No	9/9/2021	1245	G	2	X	X	X	X	X
RG_FOBKS_SE-2_2021-09-09_1320	RG_FOBKS	SE	No	9/9/2021	1320	G	2	X	X	X	X	X
RG_FOBKS_SE-3_2021-09-09_1350	RG_FOBKS	SE	No	9/9/2021	1350	G	2	X	X	X	X	X
RG_FOBKS_SE-4_2021-09-10_0820	RG_FOBKS	SE	No	9/10/2021	820	G	2	X	X	X	X	X
RG_FOBKS_SE-5_2021-09-10_0850	RG_FOBKS	SE	No	9/10/2021	850	G	2	X	X	X	X	X
RG_FO22_SE-1_2021-09-12_1409	RG_FO22	SE	No	9/12/2021	1409	G	2	X	X	X	X	X
RG_FO22_SE-2_2021-09-12_1310	RG_FO22	SE	No	9/12/2021	1310	G	2	X	X	X	X	X
RG_FO22_SE-3_2021-09-12_1110	RG_FO22	SE	No	9/12/2021	1110	G	2	X	X	X	X	X
RG_FO22_SE-4_2021-09-12_1050	RG_FO22	SE	No	9/12/2021	1050	G	2	X	X	X	X	X
RG_FO22_SE-5_2021-09-12_0900	RG_FO22	SE	No	9/12/2021	900	G	2	X	X	X	X	X
RG_RIVER_SE_2021-09-12_0900	RG_RIVER	SE	No	9/12/2021	0:00	G	2	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
Jennifer Ings/Minnow	################	[signature]	9/14 1030

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature	[signature]	Date/Time	September 13, 2021

4

Teck Coal Ltd.
ATTN: Mike Pope
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 16-SEP-21
Report Date: 05-OCT-21 12:50 (MT)
Version: FINAL

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2641267

Project P.O. #: VPO00748510
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: September FRO LAEMP
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2641267-1	L2641267-2	L2641267-3	L2641267-4	L2641267-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	13-SEP-21	13-SEP-21	13-SEP-21	13-SEP-21	14-SEP-21
	Sampled Time	12:54	13:45	14:45	15:15	09:40
	Client ID	RG_FOBCP_SE-1_2021-09-13_1254	RG_FOBCP_SE-2_2021-09-13_1345	RG_FOBCP_SE-3_2021-09-13_1445	RG_FOBCP_SE-4_2021-09-13_1515	RG_FOBCP_SE-5_2021-09-14_0940
SOIL						
Physical Tests	Moisture (%)	41.1	36.1	53.5	67.5	59.5
	pH (1:2 soil:water) (pH)	8.33	8.34	8.37	8.27	8.35
Particle Size	% Gravel (>2mm) (%)	3.8	<1.0	<1.0	4.2	17.7
	% Sand (2.00mm - 1.00mm) (%)	5.0	<1.0	1.5	1.4	7.1
	% Sand (1.00mm - 0.50mm) (%)	10.4	1.4	4.2	4.4	4.3
	% Sand (0.50mm - 0.25mm) (%)	18.0	9.9	14.0	12.5	3.8
	% Sand (0.25mm - 0.125mm) (%)	12.0	25.4	16.1	16.6	5.4
	% Sand (0.125mm - 0.063mm) (%)	8.9	19.5	13.5	14.3	9.0
	% Silt (0.063mm - 0.0312mm) (%)	18.1	20.2	21.2	20.7	22.6
	% Silt (0.0312mm - 0.004mm) (%)	20.2	20.0	24.3	22.6	25.9
	% Clay (<4um) (%)	3.6	3.3	4.5	3.4	4.0
	Texture	Sandy loam	Sandy loam	Sandy loam	Sandy loam	Silt loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	5.01	4.0	5.33	6.30	7.89
Metals	Aluminum (Al) (mg/kg)	6360	4390	5530	5250	4450
	Antimony (Sb) (mg/kg)	0.68	0.61	0.57	0.46	0.37
	Arsenic (As) (mg/kg)	5.08	4.52	4.34	4.12	3.50
	Barium (Ba) (mg/kg)	215	160	180	204	251
	Beryllium (Be) (mg/kg)	0.56	0.43	0.48	0.44	0.33
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.9	<5.0	5.8	5.6	7.9
	Cadmium (Cd) (mg/kg)	2.02	1.56	1.77	1.99	1.29
	Calcium (Ca) (mg/kg)	58600	56600	57600	65700	67100
	Chromium (Cr) (mg/kg)	12.0	8.80	10.5	10.1	8.11
	Cobalt (Co) (mg/kg)	7.73	6.67	7.25	7.06	7.42
	Copper (Cu) (mg/kg)	12.9	11.1	11.5	11.4	9.73
	Iron (Fe) (mg/kg)	16400	13700	13300	12200	9080
	Lead (Pb) (mg/kg)	7.69	7.40	7.24	6.49	5.79
	Lithium (Li) (mg/kg)	9.3	8.1	8.5	7.3	5.4
	Magnesium (Mg) (mg/kg)	9350	11600	10100	9390	4620
	Manganese (Mn) (mg/kg)	570	521	582	553	308
	Mercury (Hg) (mg/kg)	0.0357	0.0351	0.0454	0.0446	0.0400
	Molybdenum (Mo) (mg/kg)	1.51	1.24	1.25	1.04	0.84
	Nickel (Ni) (mg/kg)	51.3	46.8	52.9	53.1	35.2
	Phosphorus (P) (mg/kg)	1300	1170	1160	1050	808
	Potassium (K) (mg/kg)	1900	1020	1510	1500	1190
	Selenium (Se) (mg/kg)	2.24	1.71	2.08	3.12	2.73
	Silver (Ag) (mg/kg)	0.15	0.14	0.14	0.14	0.13

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641267-6	L2641267-7	L2641267-8	L2641267-9	L2641267-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21
	Sampled Time	10:45	11:00	11:15	11:30	11:45
	Client ID	RG_SCOUTDS_SE-1_2021-09-14_1045	RG_SCOUTDS_SE-2_2021-09-14_1100	RG_SCOUTDS_SE-3_2021-09-14_1115	RG_SCOUTDS_SE-4_2021-09-14_1130	RG_SCOUTDS_SE-5_2021-09-14_1145
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	83.3	71.7	31.6	37.9	37.1
	pH (1:2 soil:water) (pH)	8.21	8.42	8.60	8.45	8.44
Particle Size	% Gravel (>2mm) (%)	2.1	9.8	2.0	3.3	4.9
	% Sand (2.00mm - 1.00mm) (%)	4.1	17.7	5.7	3.8	1.8
	% Sand (1.00mm - 0.50mm) (%)	17.0	21.8	23.4	10.3	6.5
	% Sand (0.50mm - 0.25mm) (%)	30.0	6.1	38.7	27.6	25.4
	% Sand (0.25mm - 0.125mm) (%)	11.3	5.3	11.1	17.5	18.5
	% Sand (0.125mm - 0.063mm) (%)	5.8	7.3	5.0	8.3	9.7
	% Silt (0.063mm - 0.0312mm) (%)	11.6	12.3	6.1	12.3	14.2
	% Silt (0.0312mm - 0.004mm) (%)	14.4	15.5	6.6	13.9	15.9
	% Clay (<4um) (%)	3.8	4.0	1.4	3.0	3.1
	Texture	Sandy loam	Sandy loam	Sand	Sandy loam	Sandy loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	3.8	5.66	2.69	4.22	4.45
Metals	Aluminum (Al) (mg/kg)	7320	6140	5960	5800	5610
	Antimony (Sb) (mg/kg)	0.69	0.55	0.68	0.74	0.60
	Arsenic (As) (mg/kg)	5.12	4.48	5.10	5.44	4.62
	Barium (Ba) (mg/kg)	209	212	180	170	180
	Beryllium (Be) (mg/kg)	0.60	0.53	0.55	0.57	0.48
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.7	6.2	5.2	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	2.21	1.81	1.21	1.56	1.47
	Calcium (Ca) (mg/kg)	61000	49600	44200	55100	46500
	Chromium (Cr) (mg/kg)	13.2	11.1	10.2	10.8	10.1
	Cobalt (Co) (mg/kg)	11.8	9.75	6.07	7.59	7.44
	Copper (Cu) (mg/kg)	13.7	13.0	11.2	13.0	11.5
	Iron (Fe) (mg/kg)	17400	14900	17700	17400	14500
	Lead (Pb) (mg/kg)	8.16	6.94	7.29	8.48	7.24
	Lithium (Li) (mg/kg)	10.2	8.9	9.3	10.1	8.5
	Magnesium (Mg) (mg/kg)	8870	6850	7180	10200	8660
	Manganese (Mn) (mg/kg)	813	730	441	513	529
	Mercury (Hg) (mg/kg)	0.0375	0.0375	0.0280	0.0298	0.0382
	Molybdenum (Mo) (mg/kg)	1.45	1.21	1.16	1.49	1.23
	Nickel (Ni) (mg/kg)	56.0	46.2	33.6	45.8	40.9
	Phosphorus (P) (mg/kg)	1230	1020	1210	1300	1070
	Potassium (K) (mg/kg)	2080	1720	1550	1390	1440
	Selenium (Se) (mg/kg)	1.90	1.31	0.87	1.76	1.22
	Silver (Ag) (mg/kg)	0.15	0.14	0.11	0.15	0.12

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641267-1	L2641267-2	L2641267-3	L2641267-4	L2641267-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	13-SEP-21	13-SEP-21	13-SEP-21	13-SEP-21	14-SEP-21
	Sampled Time	12:54	13:45	14:45	15:15	09:40
	Client ID	RG_FOBCP_SE-1_2021-09-13_1254	RG_FOBCP_SE-2_2021-09-13_1345	RG_FOBCP_SE-3_2021-09-13_1445	RG_FOBCP_SE-4_2021-09-13_1515	RG_FOBCP_SE-5_2021-09-14_0940
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	73	68	71	72	81
	Strontium (Sr) (mg/kg)	77.4	60.6	68.0	64.8	86.6
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.219	0.189	0.210	0.188	0.154
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	8.2	6.4	8.3	8.4	10.5
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.12	0.984	1.05	0.936	0.696
	Vanadium (V) (mg/kg)	30.4	22.1	25.8	25.2	19.0
	Zinc (Zn) (mg/kg)	161	127	139	143	78.2
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.085 DLCI	<0.060 DLCI	<0.090 DLCI	<0.11 DLCI	<0.13 DLCI
	Acenaphthylene (mg/kg)	<0.016 DLCI	<0.015 DLCI	<0.015 DLCI	<0.010 DLCI	<0.0050
	Acridine (mg/kg)	0.137	0.120	<0.17 DLCI	<0.23 DLCI	<0.27 DLCI
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0060 DLHM	0.0044
	Benz(a)anthracene (mg/kg)	0.042	0.046	<0.050 DLCI	<0.080 DLCI	<0.080 DLCI
	Benzo(a)pyrene (mg/kg)	0.025	0.022	0.024	0.044 DLHM	0.045
	Benzo(b&j)fluoranthene (mg/kg)	0.082	0.089	0.095	0.136 DLHM	0.141
	Benzo(b+j+k)fluoranthene (mg/kg)	0.082	0.089	0.095	0.152	0.151
	Benzo(e)pyrene (mg/kg)	0.090	0.098	0.098	0.163 DLHM	0.149
	Benzo(g,h,i)perylene (mg/kg)	0.038	0.040	0.037	0.070 DLHM	0.065
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	0.016 DLHM	0.010
	Chrysene (mg/kg)	0.199	0.219	<0.25 DLCI	<0.36 DLCI	<0.34 DLCI
	Dibenz(a,h)anthracene (mg/kg)	<0.030 DLCI	<0.030 DLCI	<0.0050	0.0191 DLHM	<0.030 DLCI
	Fluoranthene (mg/kg)	0.028	0.029	0.039	0.043 DLHM	0.048
	Fluorene (mg/kg)	0.181	0.157	0.217	0.305 DLHM	0.332
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.020 DLCI	0.010	<0.010	<0.015 DLHM	0.011
	1-Methylnaphthalene (mg/kg)	0.810	0.675	0.889	1.25 DLHM	1.26
	2-Methylnaphthalene (mg/kg)	1.32	1.10	1.48	2.13 DLHM	2.14
	Naphthalene (mg/kg)	0.395	0.324	0.428	0.614 DLHM	0.653
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.015 DLHM	<0.010
	Phenanthrene (mg/kg)	0.757	0.711	0.836	1.20 DLHM	1.25
	Pyrene (mg/kg)	0.058	0.059	0.066	0.093 DLHM	0.096
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.015 DLHM	<0.050
	Surrogate: d10-Acenaphthene (%)	97.6	110.2	99.7	96.7	102.9
	Surrogate: d12-Chrysene (%)	99.8	106.9	104.0	101.8	105.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641267-6	L2641267-7	L2641267-8	L2641267-9	L2641267-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21
	Sampled Time	10:45	11:00	11:15	11:30	11:45
	Client ID	RG_SCOUTDS_SE-1_2021-09-14_1045	RG_SCOUTDS_SE-2_2021-09-14_1100	RG_SCOUTDS_SE-3_2021-09-14_1115	RG_SCOUTDS_SE-4_2021-09-14_1130	RG_SCOUTDS_SE-5_2021-09-14_1145
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	73	58	65	72	63
	Strontium (Sr) (mg/kg)	83.1	75.0	75.3	74.1	70.6
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.211	0.182	0.176	0.192	0.179
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	9.3	7.4	5.7	6.1	6.3
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.05	0.932	0.967	1.09	0.890
	Vanadium (V) (mg/kg)	33.9	27.3	27.3	28.0	25.4
	Zinc (Zn) (mg/kg)	176	146	115	143	127
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.22 DLCI	<0.12 DLCI	<0.025 DLCI	<0.060 DLCI	<0.070 DLCI
	Acenaphthylene (mg/kg)	<0.010 DLHM	0.019 DLHM	<0.0050	0.0055	<0.0050
	Acridine (mg/kg)	0.482 DLHM	0.269 DLHM	<0.040 DLCI	<0.090 DLCI	<0.15 DLCI
	Anthracene (mg/kg)	<0.0080 DLHM	<0.0080 DLHM	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	0.224 DLHM	0.084 DLHM	0.041	<0.030 DLCI	<0.050 DLCI
	Benzo(a)pyrene (mg/kg)	0.070 DLHM	0.038 DLHM	<0.010	0.012	<0.030 DLCI
	Benzo(b&j)fluoranthene (mg/kg)	0.237 DLHM	0.127 DLHM	0.027	0.050	0.080
	Benzo(b+j+k)fluoranthene (mg/kg)	0.237	0.127	0.027	0.050	0.080
	Benzo(e)pyrene (mg/kg)	0.273 DLHM	0.147 DLHM	0.029	0.048	0.093
	Benzo(g,h,i)perylene (mg/kg)	0.115 DLHM	0.068 DLHM	0.011	<0.030 DLCI	0.042
	Benzo(k)fluoranthene (mg/kg)	<0.020 DLHM	<0.020 DLHM	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	0.276 DLHM	0.325 DLHM	0.041	<0.14 DLCI	<0.13 DLCI
	Dibenz(a,h)anthracene (mg/kg)	0.037 DLHM	0.023 DLHM	<0.0050	<0.0050	<0.020 DLCI
	Fluoranthene (mg/kg)	0.076 DLHM	0.043 DLHM	<0.010	0.018	0.032
	Fluorene (mg/kg)	0.581 DLHM	0.331 DLHM	0.034	0.115	0.159
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.020 DLHM	<0.020 DLHM	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	2.19 DLHM	1.30 DLHM	0.278	0.543	0.703
	2-Methylnaphthalene (mg/kg)	3.75 DLHM	2.27 DLHM	0.483	0.909	1.19
	Naphthalene (mg/kg)	1.09 DLHM	0.671 DLHM	0.156	0.269	0.369
	Perylene (mg/kg)	<0.020 DLHM	<0.020 DLHM	<0.010	<0.010	<0.010
	Phenanthrene (mg/kg)	2.05 DLHM	1.15 DLHM	0.267	0.538	0.707
	Pyrene (mg/kg)	0.156 DLHM	0.096 DLHM	0.019	0.035	0.055
	Quinoline (mg/kg)	<0.020 DLHM	<0.020 DLHM	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	121.1	89.6	95.1	90.3	104.3
	Surrogate: d12-Chrysene (%)	127.4	91.0	100.0	92.7	106.6

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641267-1	L2641267-2	L2641267-3	L2641267-4	L2641267-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	13-SEP-21	13-SEP-21	13-SEP-21	13-SEP-21	14-SEP-21
	Sampled Time	12:54	13:45	14:45	15:15	09:40
	Client ID	RG_FOBCP_SE-1_2021-09-13_1254	RG_FOBCP_SE-2_2021-09-13_1345	RG_FOBCP_SE-3_2021-09-13_1445	RG_FOBCP_SE-4_2021-09-13_1515	RG_FOBCP_SE-5_2021-09-14_0940
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	93.8	99.7	93.3	91.1	96.4
	Surrogate: d10-Phenanthrene (%)	98.8	105.1	100.8	98.5	101.2
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	0.054	0.057	0.051	0.092	0.084
	B(a)P Total Potency Equivalent (mg/kg)	0.056	0.055	0.041	0.085	0.083
	IACR (CCME)	0.91	0.97	0.84	1.37	1.35

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2641267-6	L2641267-7	L2641267-8	L2641267-9	L2641267-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21	14-SEP-21
	Sampled Time	10:45	11:00	11:15	11:30	11:45
	Client ID	RG_SCOUTDS_SE-1_2021-09-14_1045	RG_SCOUTDS_SE-2_2021-09-14_1100	RG_SCOUTDS_SE-3_2021-09-14_1115	RG_SCOUTDS_SE-4_2021-09-14_1130	RG_SCOUTDS_SE-5_2021-09-14_1145
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	112.5	83.2	89.0	85.1	97.9
	Surrogate: d10-Phenanthrene (%)	122.8	89.5	97.2	90.4	102.2
	IACR:Coarse	0.081	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	0.156	0.091	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	0.160	0.089	<0.020	0.023	0.038
	IACR (CCME)	2.72	1.49	0.37	0.47	0.73

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

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.
DLHM	Detection Limit Adjusted: Sample has High Moisture Content

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

ALS Test Code	Matrix	Test Description	Method Reference**
C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

ALS Test Code	Matrix	Test Description	Method Reference**
C-TOT-LECO-SK	Soil	Total Carbon by combustion method	CSSS (2008) 21.2

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

ALS Test Code	Matrix	Test Description	Method Reference**
HG-200.2-CVAA-CL	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

ALS Test Code	Matrix	Test Description	Method Reference**
IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-CL	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

ALS Test Code	Matrix	Test Description	Method Reference**
MOISTURE-CL	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C

ALS Test Code	Matrix	Test Description	Method Reference**
PAH-TMB-H/A-MS-CL	Soil	PAH Tumbler Extraction (Hexane/Acetone)	EPA 3570/8270-GC/MS

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

ALS Test Code	Matrix	Test Description	Method Reference**
PH-1:2-CL	Soil	pH in soil (1:2 Soil:Water Extraction)	CSSS Ch. 16

Soil and de-ionized water (by volume) are mixed in a defined ratio. The slurry is allowed to stand, shaken, and then allowed to stand again prior to taking measurements. After equilibration, the pH of the liquid portion of the extract is measured by a pH meter. Field Measurement is recommended where accurate pH measurements are required, due to the 15 minute recommended hold time.

ALS Test Code	Matrix	Test Description	Method Reference**
PSA-PIPET-DETAIL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

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

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

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

Chain of Custody Numbers:

September FRO LAEMP

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Teck Coal Ltd.
421 Pine Avenue
Sparwood BC V0B 2G0

Contact: Mike Pope

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TIC-PCT-SK	**Soil**							
Batch R5602037								
WG3622547-1 DUP		**L2641267-7**						
Inorganic Carbon		2.26	2.25		%	0.3	20	27-SEP-21
WG3622547-4 IRM		**08-109_SOIL**						
Inorganic Carbon			107.9		%		80-120	27-SEP-21
WG3622547-2 LCS		**0.5**						
Inorganic Carbon			94.7		%		90-110	27-SEP-21
WG3622547-3 MB								
Inorganic Carbon			<0.050		%		0.05	27-SEP-21
C-TOT-LECO-SK	**Soil**							
Batch R5599818								
WG3622204-1 DUP		**L2641267-9**						
Total Carbon by Combustion		6.05	6.16		%	1.7	20	22-SEP-21
WG3622204-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			99.3		%		80-120	22-SEP-21
WG3622204-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			106.0		%		90-110	22-SEP-21
WG3622204-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	22-SEP-21
HG-200.2-CVAA-CL	**Soil**							
Batch R5605501								
WG3627462-4 CRM		**TILL-2**						
Mercury (Hg)			98.1		%		70-130	30-SEP-21
WG3627462-5 DUP		**L2641267-1**						
Mercury (Hg)		0.0357	0.0357		mg/kg	0.0	40	30-SEP-21
WG3627462-3 LCS								
Mercury (Hg)			94.4		%		80-120	30-SEP-21
WG3627462-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	30-SEP-21
MET-200.2-CCMS-CL	**Soil**							
Batch R5605699								
WG3627462-4 CRM		**TILL-2**						
Aluminum (Al)			89.5		%		70-130	30-SEP-21
Antimony (Sb)			102.3		%		70-130	30-SEP-21
Arsenic (As)			103.1		%		70-130	30-SEP-21
Barium (Ba)			103.0		%		70-130	30-SEP-21
Beryllium (Be)			91.6		%		70-130	30-SEP-21
Bismuth (Bi)			99.5		%		70-130	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5605699								
WG3627462-4 CRM		**TILL-2**						
Cadmium (Cd)			99.6		%		70-130	30-SEP-21
Calcium (Ca)			97.1		%		70-130	30-SEP-21
Chromium (Cr)			100.6		%		70-130	30-SEP-21
Cobalt (Co)			100.0		%		70-130	30-SEP-21
Copper (Cu)			101.8		%		70-130	30-SEP-21
Iron (Fe)			99.8		%		70-130	30-SEP-21
Lead (Pb)			100.2		%		70-130	30-SEP-21
Lithium (Li)			94.4		%		70-130	30-SEP-21
Magnesium (Mg)			92.5		%		70-130	30-SEP-21
Manganese (Mn)			97.0		%		70-130	30-SEP-21
Molybdenum (Mo)			92.8		%		70-130	30-SEP-21
Nickel (Ni)			102.6		%		70-130	30-SEP-21
Phosphorus (P)			91.0		%		70-130	30-SEP-21
Potassium (K)			100.1		%		70-130	30-SEP-21
Selenium (Se)			0.42		mg/kg		0.15-0.55	30-SEP-21
Silver (Ag)			0.26		mg/kg		0.16-0.36	30-SEP-21
Sodium (Na)			90.8		%		70-130	30-SEP-21
Strontium (Sr)			97.4		%		70-130	30-SEP-21
Thallium (Tl)			106.3		%		70-130	30-SEP-21
Tin (Sn)			2.3		mg/kg		0.2-4.2	30-SEP-21
Titanium (Ti)			98.0		%		70-130	30-SEP-21
Tungsten (W)			1.39		mg/kg		1-2	30-SEP-21
Uranium (U)			99.6		%		70-130	30-SEP-21
Vanadium (V)			97.7		%		70-130	30-SEP-21
Zinc (Zn)			103.4		%		70-130	30-SEP-21
Zirconium (Zr)			98.3		%		70-130	30-SEP-21
WG3627462-5 DUP		**L2641267-1**						
Aluminum (Al)		6360	6390		mg/kg	0.5	40	30-SEP-21
Antimony (Sb)		0.68	0.77		mg/kg	12	30	30-SEP-21
Arsenic (As)		5.08	5.63		mg/kg	10	30	30-SEP-21
Barium (Ba)		215	220		mg/kg	2.4	40	30-SEP-21
Beryllium (Be)		0.56	0.63		mg/kg	11	30	30-SEP-21
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	30-SEP-21
Boron (B)		6.9	6.8		mg/kg	1.2	30	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5605699								
WG3627462-5 DUP		**L2641267-1**						
Cadmium (Cd)		2.02	2.06		mg/kg	2.0	30	30-SEP-21
Calcium (Ca)		58600	64200		mg/kg	9.2	30	30-SEP-21
Chromium (Cr)		12.0	12.4		mg/kg	3.1	30	30-SEP-21
Cobalt (Co)		7.73	8.44		mg/kg	8.7	30	30-SEP-21
Copper (Cu)		12.9	14.3		mg/kg	10	30	30-SEP-21
Iron (Fe)		16400	17500		mg/kg	6.8	30	30-SEP-21
Lead (Pb)		7.69	8.71		mg/kg	12	40	30-SEP-21
Lithium (Li)		9.3	10.2		mg/kg	9.5	30	30-SEP-21
Magnesium (Mg)		9350	9850		mg/kg	5.2	30	30-SEP-21
Manganese (Mn)		570	622		mg/kg	8.6	30	30-SEP-21
Molybdenum (Mo)		1.51	1.58		mg/kg	4.5	40	30-SEP-21
Nickel (Ni)		51.3	55.1		mg/kg	7.2	30	30-SEP-21
Phosphorus (P)		1300	1400		mg/kg	7.7	30	30-SEP-21
Potassium (K)		1900	1750		mg/kg	7.7	40	30-SEP-21
Selenium (Se)		2.24	2.29		mg/kg	2.0	30	30-SEP-21
Silver (Ag)		0.15	0.16		mg/kg	7.6	40	30-SEP-21
Sodium (Na)		73	75		mg/kg	2.6	40	30-SEP-21
Strontium (Sr)		77.4	88.6		mg/kg	13	40	30-SEP-21
Sulfur (S)		<1000	<1000	RPD-NA	mg/kg	N/A	30	30-SEP-21
Thallium (Tl)		0.219	0.227		mg/kg	3.5	30	30-SEP-21
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	30-SEP-21
Titanium (Ti)		8.2	7.5		mg/kg	7.7	40	30-SEP-21
Tungsten (W)		<0.50	<0.50	RPD-NA	mg/kg	N/A	30	30-SEP-21
Uranium (U)		1.12	1.21		mg/kg	7.3	30	30-SEP-21
Vanadium (V)		30.4	31.4		mg/kg	3.2	30	30-SEP-21
Zinc (Zn)		161	171		mg/kg	5.8	30	30-SEP-21
Zirconium (Zr)		<1.0	<1.0	RPD-NA	mg/kg	N/A	30	30-SEP-21
WG3627462-3 LCS								
Aluminum (Al)			95.1		%		80-120	30-SEP-21
Antimony (Sb)			99.8		%		80-120	30-SEP-21
Arsenic (As)			101.2		%		80-120	30-SEP-21
Barium (Ba)			103.4		%		80-120	30-SEP-21
Beryllium (Be)			94.4		%		80-120	30-SEP-21
Bismuth (Bi)			92.3		%		80-120	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5605699								
WG3627462-3 LCS								
Boron (B)			91.1		%		80-120	30-SEP-21
Cadmium (Cd)			102.2		%		80-120	30-SEP-21
Calcium (Ca)			91.1		%		80-120	30-SEP-21
Chromium (Cr)			101.0		%		80-120	30-SEP-21
Cobalt (Co)			101.7		%		80-120	30-SEP-21
Copper (Cu)			98.3		%		80-120	30-SEP-21
Iron (Fe)			104.8		%		80-120	30-SEP-21
Lead (Pb)			93.6		%		80-120	30-SEP-21
Lithium (Li)			96.3		%		80-120	30-SEP-21
Magnesium (Mg)			97.2		%		80-120	30-SEP-21
Manganese (Mn)			102.4		%		80-120	30-SEP-21
Molybdenum (Mo)			94.4		%		80-120	30-SEP-21
Nickel (Ni)			101.9		%		80-120	30-SEP-21
Phosphorus (P)			98.5		%		80-120	30-SEP-21
Potassium (K)			104.0		%		80-120	30-SEP-21
Selenium (Se)			103.1		%		80-120	30-SEP-21
Silver (Ag)			96.4		%		80-120	30-SEP-21
Sodium (Na)			102.4		%		80-120	30-SEP-21
Strontium (Sr)			93.1		%		80-120	30-SEP-21
Sulfur (S)			102.0		%		80-120	30-SEP-21
Thallium (Tl)			92.8		%		80-120	30-SEP-21
Tin (Sn)			94.4		%		80-120	30-SEP-21
Titanium (Ti)			99.2		%		80-120	30-SEP-21
Tungsten (W)			99.2		%		80-120	30-SEP-21
Uranium (U)			96.0		%		80-120	30-SEP-21
Vanadium (V)			100.2		%		80-120	30-SEP-21
Zinc (Zn)			102.2		%		80-120	30-SEP-21
Zirconium (Zr)			96.6		%		80-120	30-SEP-21
WG3627462-1 MB								
Aluminum (Al)			<50		mg/kg		50	30-SEP-21
Antimony (Sb)			<0.10		mg/kg		0.1	30-SEP-21
Arsenic (As)			<0.10		mg/kg		0.1	30-SEP-21
Barium (Ba)			<0.50		mg/kg		0.5	30-SEP-21
Beryllium (Be)			<0.10		mg/kg		0.1	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5605699								
WG3627462-1 MB								
Bismuth (Bi)			<0.20		mg/kg		0.2	30-SEP-21
Boron (B)			<5.0		mg/kg		5	30-SEP-21
Cadmium (Cd)			<0.020		mg/kg		0.02	30-SEP-21
Calcium (Ca)			<50		mg/kg		50	30-SEP-21
Chromium (Cr)			<0.50		mg/kg		0.5	30-SEP-21
Cobalt (Co)			<0.10		mg/kg		0.1	30-SEP-21
Copper (Cu)			<0.50		mg/kg		0.5	30-SEP-21
Iron (Fe)			<50		mg/kg		50	30-SEP-21
Lead (Pb)			<0.50		mg/kg		0.5	30-SEP-21
Lithium (Li)			<2.0		mg/kg		2	30-SEP-21
Magnesium (Mg)			<20		mg/kg		20	30-SEP-21
Manganese (Mn)			<1.0		mg/kg		1	30-SEP-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	30-SEP-21
Nickel (Ni)			<0.50		mg/kg		0.5	30-SEP-21
Phosphorus (P)			<50		mg/kg		50	30-SEP-21
Potassium (K)			<100		mg/kg		100	30-SEP-21
Selenium (Se)			<0.20		mg/kg		0.2	30-SEP-21
Silver (Ag)			<0.10		mg/kg		0.1	30-SEP-21
Sodium (Na)			<50		mg/kg		50	30-SEP-21
Strontium (Sr)			<0.50		mg/kg		0.5	30-SEP-21
Sulfur (S)			<1000		mg/kg		1000	30-SEP-21
Thallium (Tl)			<0.050		mg/kg		0.05	30-SEP-21
Tin (Sn)			<2.0		mg/kg		2	30-SEP-21
Titanium (Ti)			<1.0		mg/kg		1	30-SEP-21
Tungsten (W)			<0.50		mg/kg		0.5	30-SEP-21
Uranium (U)			<0.050		mg/kg		0.05	30-SEP-21
Vanadium (V)			<0.20		mg/kg		0.2	30-SEP-21
Zinc (Zn)			<2.0		mg/kg		2	30-SEP-21
Zirconium (Zr)			<1.0		mg/kg		1	30-SEP-21
MOISTURE-CL	**Soil**							
Batch R5600298								
WG3625228-3 DUP		**L2641267-1**						
Moisture		41.1	41.8		%	1.6	20	27-SEP-21
WG3625228-2 LCS								

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-CL	**Soil**							
Batch R5600298								
WG3625228-2 LCS								
Moisture			100.8		%		90-110	27-SEP-21
WG3625228-1 MB								
Moisture			<0.25		%		0.25	27-SEP-21
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-2 DUP		**L2641267-1**						
Acenaphthene		<0.085	<0.085	RPD-NA	mg/kg	N/A	50	27-SEP-21
Acenaphthylene		<0.016	<0.016	RPD-NA	mg/kg	N/A	50	27-SEP-21
Anthracene		<0.0040	<0.0040	RPD-NA	mg/kg	N/A	50	27-SEP-21
Acridine		0.137	0.180		mg/kg	27	50	27-SEP-21
Benz(a)anthracene		0.042	0.055		mg/kg	26	50	27-SEP-21
Benzo(a)pyrene		0.025	0.027		mg/kg	7.4	50	27-SEP-21
Benzo(b&j)fluoranthene		0.082	0.099		mg/kg	19	50	27-SEP-21
Benzo(e)pyrene		0.090	0.115		mg/kg	24	50	27-SEP-21
Benzo(g,h,i)perylene		0.038	0.046		mg/kg	20	50	27-SEP-21
Benzo(k)fluoranthene		<0.010	0.010	RPD-NA	mg/kg	N/A	50	27-SEP-21
Chrysene		0.199	0.225		mg/kg	12	50	27-SEP-21
Dibenz(a,h)anthracene		<0.030	<0.030	RPD-NA	mg/kg	N/A	50	27-SEP-21
Fluoranthene		0.028	0.034		mg/kg	19	50	27-SEP-21
Fluorene		0.181	0.216		mg/kg	18	50	27-SEP-21
Indeno(1,2,3-c,d)pyrene		<0.020	<0.020	RPD-NA	mg/kg	N/A	50	27-SEP-21
2-Methylnaphthalene		1.32	1.50		mg/kg	13	50	27-SEP-21
Naphthalene		0.395	0.443		mg/kg	11	50	27-SEP-21
Perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	27-SEP-21
Phenanthrene		0.757	0.893		mg/kg	16	50	27-SEP-21
Pyrene		0.058	0.066		mg/kg	14	50	27-SEP-21
1-Methylnaphthalene		0.810	0.933		mg/kg	14	50	27-SEP-21
Quinoline		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	27-SEP-21
WG3626733-4 IRM		**ALS PAH RM2**						
Acenaphthene			84.8		%		60-130	27-SEP-21
Acenaphthylene			101.9		%		60-130	27-SEP-21
Anthracene			107.6		%		60-130	27-SEP-21
Acridine			116.5		%		60-130	27-SEP-21
Benz(a)anthracene			103.0		%		60-130	27-SEP-21
Benzo(a)pyrene			103.6		%		60-130	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-4 IRM		**ALS PAH RM2**						
Benzo(b&j)fluoranthene			98.0		%		60-130	27-SEP-21
Benzo(e)pyrene			104.0		%		60-130	27-SEP-21
Benzo(g,h,i)perylene			91.4		%		60-130	27-SEP-21
Benzo(k)fluoranthene			80.6		%		60-130	27-SEP-21
Chrysene			99.7		%		60-130	27-SEP-21
Dibenz(a,h)anthracene			91.3		%		60-130	27-SEP-21
Fluoranthene			87.0		%		60-130	27-SEP-21
Fluorene			88.5		%		60-130	27-SEP-21
Indeno(1,2,3-c,d)pyrene			116.1		%		60-130	27-SEP-21
2-Methylnaphthalene			83.4		%		60-130	27-SEP-21
Naphthalene			78.6		%		50-130	27-SEP-21
Perylene			103.9		%		60-130	27-SEP-21
Phenanthrene			89.7		%		60-130	27-SEP-21
Pyrene			90.3		%		60-130	27-SEP-21
1-Methylnaphthalene			82.5		%		60-130	27-SEP-21
WG3626733-6 IRM		**ALS PAH RM2**						
Acenaphthene			93.6		%		60-130	27-SEP-21
Acenaphthylene			107.4		%		60-130	27-SEP-21
Anthracene			116.1		%		60-130	27-SEP-21
Acridine			111.2		%		60-130	27-SEP-21
Benz(a)anthracene			106.0		%		60-130	27-SEP-21
Benzo(a)pyrene			102.6		%		60-130	27-SEP-21
Benzo(b&j)fluoranthene			101.7		%		60-130	27-SEP-21
Benzo(e)pyrene			96.6		%		60-130	27-SEP-21
Benzo(g,h,i)perylene			95.0		%		60-130	27-SEP-21
Benzo(k)fluoranthene			87.8		%		60-130	27-SEP-21
Chrysene			102.8		%		60-130	27-SEP-21
Dibenz(a,h)anthracene			96.7		%		60-130	27-SEP-21
Fluoranthene			92.5		%		60-130	27-SEP-21
Fluorene			98.4		%		60-130	27-SEP-21
Indeno(1,2,3-c,d)pyrene			69.6		%		60-130	27-SEP-21
2-Methylnaphthalene			92.5		%		60-130	27-SEP-21
Naphthalene			86.2		%		50-130	27-SEP-21
Perylene			84.2		%		60-130	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-6 IRM		**ALS PAH RM2**						
Phenanthrene			97.9		%		60-130	27-SEP-21
Pyrene			95.5		%		60-130	27-SEP-21
1-Methylnaphthalene			91.3		%		60-130	27-SEP-21
WG3626733-9 IRM		**ALS PAH RM2**						
Acenaphthene			87.0		%		60-130	28-SEP-21
Acenaphthylene			98.8		%		60-130	28-SEP-21
Anthracene			108.2		%		60-130	28-SEP-21
Acridine			106.5		%		60-130	28-SEP-21
Benz(a)anthracene			97.5		%		60-130	28-SEP-21
Benzo(a)pyrene			94.3		%		60-130	28-SEP-21
Benzo(b&j)fluoranthene			93.3		%		60-130	28-SEP-21
Benzo(e)pyrene			97.8		%		60-130	28-SEP-21
Benzo(g,h,i)perylene			87.6		%		60-130	28-SEP-21
Benzo(k)fluoranthene			89.4		%		60-130	28-SEP-21
Chrysene			93.8		%		60-130	28-SEP-21
Dibenz(a,h)anthracene			83.5		%		60-130	28-SEP-21
Fluoranthene			83.6		%		60-130	28-SEP-21
Fluorene			86.4		%		60-130	28-SEP-21
Indeno(1,2,3-c,d)pyrene			109.6		%		60-130	28-SEP-21
2-Methylnaphthalene			84.8		%		60-130	28-SEP-21
Naphthalene			82.3		%		50-130	28-SEP-21
Perylene			98.3		%		60-130	28-SEP-21
Phenanthrene			87.9		%		60-130	28-SEP-21
Pyrene			86.9		%		60-130	28-SEP-21
1-Methylnaphthalene			83.4		%		60-130	28-SEP-21
WG3626733-3 LCS								
Acenaphthene			104.8		%		60-130	27-SEP-21
Acenaphthylene			101.8		%		60-130	27-SEP-21
Anthracene			110.1		%		60-130	27-SEP-21
Acridine			91.6		%		60-130	27-SEP-21
Benz(a)anthracene			115.1		%		60-130	27-SEP-21
Benzo(a)pyrene			105.5		%		60-130	27-SEP-21
Benzo(b&j)fluoranthene			109.0		%		60-130	27-SEP-21
Benzo(e)pyrene			112.1		%		60-130	27-SEP-21
Benzo(g,h,i)perylene			98.5		%		60-130	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-3 LCS								
Benzo(k)fluoranthene			103.7		%		60-130	27-SEP-21
Chrysene			106.2		%		60-130	27-SEP-21
Dibenz(a,h)anthracene			95.6		%		60-130	27-SEP-21
Fluoranthene			104.3		%		60-130	27-SEP-21
Fluorene			105.0		%		60-130	27-SEP-21
Indeno(1,2,3-c,d)pyrene			100.6		%		60-130	27-SEP-21
2-Methylnaphthalene			107.0		%		60-130	27-SEP-21
Naphthalene			101.6		%		50-130	27-SEP-21
Perylene			99.6		%		60-130	27-SEP-21
Phenanthrene			110.2		%		60-130	27-SEP-21
Pyrene			105.5		%		60-130	27-SEP-21
1-Methylnaphthalene			107.9		%		60-130	27-SEP-21
Quinoline			86.7		%		60-130	27-SEP-21
WG3626733-5 LCS								
Acenaphthene			107.5		%		60-130	27-SEP-21
Acenaphthylene			104.6		%		60-130	27-SEP-21
Anthracene			114.7		%		60-130	27-SEP-21
Acridine			112.8		%		60-130	27-SEP-21
Benz(a)anthracene			119.5		%		60-130	27-SEP-21
Benzo(a)pyrene			110.0		%		60-130	27-SEP-21
Benzo(b&j)fluoranthene			111.3		%		60-130	27-SEP-21
Benzo(e)pyrene			118.1		%		60-130	27-SEP-21
Benzo(g,h,i)perylene			103.3		%		60-130	27-SEP-21
Benzo(k)fluoranthene			110.3		%		60-130	27-SEP-21
Chrysene			112.7		%		60-130	27-SEP-21
Dibenz(a,h)anthracene			100.2		%		60-130	27-SEP-21
Fluoranthene			108.9		%		60-130	27-SEP-21
Fluorene			112.1		%		60-130	27-SEP-21
Indeno(1,2,3-c,d)pyrene			80.6		%		60-130	27-SEP-21
2-Methylnaphthalene			113.5		%		60-130	27-SEP-21
Naphthalene			106.5		%		50-130	27-SEP-21
Perylene			108.2		%		60-130	27-SEP-21
Phenanthrene			115.4		%		60-130	27-SEP-21
Pyrene			110.2		%		60-130	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-5 LCS								
1-Methylnaphthalene			110.8		%		60-130	27-SEP-21
Quinoline			103.2		%		60-130	27-SEP-21
WG3626733-1 MB								
Acenaphthene			<0.0050		mg/kg		0.005	27-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	27-SEP-21
Anthracene			<0.0040		mg/kg		0.004	27-SEP-21
Acridine			<0.010		mg/kg		0.01	27-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Chrysene			<0.010		mg/kg		0.01	27-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	27-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Fluorene			<0.010		mg/kg		0.01	27-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	27-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	27-SEP-21
Naphthalene			<0.010		mg/kg		0.01	27-SEP-21
Perylene			<0.010		mg/kg		0.01	27-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	27-SEP-21
Pyrene			<0.010		mg/kg		0.01	27-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	27-SEP-21
Quinoline			<0.050		mg/kg		0.05	27-SEP-21
Surrogate: d8-Naphthalene			84.6		%		50-130	27-SEP-21
Surrogate: d10-Acenaphthene			89.8		%		60-130	27-SEP-21
Surrogate: d10-Phenanthrene			91.4		%		60-130	27-SEP-21
Surrogate: d12-Chrysene			93.8		%		60-130	27-SEP-21
WG3626733-10 MB								
Acenaphthene			<0.0050		mg/kg		0.005	28-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	28-SEP-21
Anthracene			<0.0040		mg/kg		0.004	28-SEP-21
Acridine			<0.010		mg/kg		0.01	28-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	28-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-10 MB								
Benzo(a)pyrene			<0.010		mg/kg		0.01	28-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	28-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	28-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	28-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	28-SEP-21
Chrysene			<0.010		mg/kg		0.01	28-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	28-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	28-SEP-21
Fluorene			<0.010		mg/kg		0.01	28-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	28-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	28-SEP-21
Naphthalene			<0.010		mg/kg		0.01	28-SEP-21
Perylene			<0.010		mg/kg		0.01	28-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	28-SEP-21
Pyrene			<0.010		mg/kg		0.01	28-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	28-SEP-21
Quinoline			<0.050		mg/kg		0.05	28-SEP-21
Surrogate: d8-Naphthalene			82.5		%		50-130	28-SEP-21
Surrogate: d10-Acenaphthene			94.5		%		60-130	28-SEP-21
Surrogate: d10-Phenanthrene			95.0		%		60-130	28-SEP-21
Surrogate: d12-Chrysene			99.1		%		60-130	28-SEP-21
WG3626733-7 MB								
Acenaphthene			<0.0050		mg/kg		0.005	27-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	27-SEP-21
Anthracene			<0.0040		mg/kg		0.004	27-SEP-21
Acridine			<0.010		mg/kg		0.01	27-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	27-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Chrysene			<0.010		mg/kg		0.01	27-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5603578								
WG3626733-7 MB								
Fluoranthene			<0.010		mg/kg		0.01	27-SEP-21
Fluorene			<0.010		mg/kg		0.01	27-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	27-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	27-SEP-21
Naphthalene			<0.010		mg/kg		0.01	27-SEP-21
Perylene			<0.010		mg/kg		0.01	27-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	27-SEP-21
Pyrene			<0.010		mg/kg		0.01	27-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	27-SEP-21
Quinoline			<0.050		mg/kg		0.05	27-SEP-21
Surrogate: d8-Naphthalene			85.4		%		50-130	27-SEP-21
Surrogate: d10-Acenaphthene			94.6		%		60-130	27-SEP-21
Surrogate: d10-Phenanthrene			98.6		%		60-130	27-SEP-21
Surrogate: d12-Chrysene			102.3		%		60-130	27-SEP-21
PH-1:2-CL	**Soil**							
Batch R5604712								
WG3627849-2 IRM		**SAL-STD11**						
pH (1:2 soil:water)			7.94		pH		7.7-8.3	29-SEP-21
WG3627849-1 LCS								
pH (1:2 soil:water)			6.99		pH		6.8-7.2	29-SEP-21
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5602040								
WG3622187-1 DUP		**L2641267-1**						
% Gravel (>2mm)		3.8	3.8		%	0.0	25	27-SEP-21
% Sand (2.00mm - 1.00mm)		5.0	4.7	J	%	0.2	5	27-SEP-21
% Sand (1.00mm - 0.50mm)		10.4	10.4	J	%	0.0	5	27-SEP-21
% Sand (0.50mm - 0.25mm)		18.0	18.0	J	%	0.0	5	27-SEP-21
% Sand (0.25mm - 0.125mm)		12.0	12.3	J	%	0.3	5	27-SEP-21
% Sand (0.125mm - 0.063mm)		8.9	9.4	J	%	0.5	5	27-SEP-21
% Silt (0.063mm - 0.0312mm)		18.1	17.5	J	%	0.7	5	27-SEP-21
% Silt (0.0312mm - 0.004mm)		20.2	20.0	J	%	0.2	5	27-SEP-21
% Clay (<4um)		3.6	3.9	J	%	0.3	5	27-SEP-21
WG3622187-2 IRM		**2020-PSA_SOIL**						
% Sand (2.00mm - 1.00mm)			2.3		%		0-7.2	27-SEP-21
% Sand (1.00mm - 0.50mm)			2.9		%		0-8.7	27-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5602040								
WG3622187-2 IRM		**2020-PSA_SOIL**						
% Sand (0.50mm - 0.25mm)			8.9		%		4-14	27-SEP-21
% Sand (0.25mm - 0.125mm)			16.6		%		11.7-21.7	27-SEP-21
% Sand (0.125mm - 0.063mm)			13.4		%		8.4-18.4	27-SEP-21
% Silt (0.063mm - 0.0312mm)			13.4		%		8.5-18.5	27-SEP-21
% Silt (0.0312mm - 0.004mm)			21.1		%		15.1-25.1	27-SEP-21
% Clay (<4um)			21.4		%		16.5-26.5	27-SEP-21

Legend:

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

Sample Parameter Qualifier Definitions:

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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

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

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
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LABORATORY

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[illegible]	x	x	x
[illegible]	x	x	x
pschnurr@minnow.ca	x	x	x

SAMPLE DETAILS / **ANALYSIS REQUESTED**

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

L2641267-COFC

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	C-TOC-SK	MET-CCME+FULL-CL	MOISTURE-CL - % Moisture	PSA-PIPET-DETAIL-SK Particle Size	PAH-TMB-D/A-MS-CL-PAHs
Filtered								N	N	N	N	N
Preservative								NONE	NONE	NONE	NONE	NONE
RG_FOBCP_SE-1_2021-09-13_1254	RG_FOBCP	SE	No	9/13/2021	1254	G	2	X	X	X	X	X
RG_FOBCP_SE-2_2021-09-13_1345	RG_FOBCP	SE	No	9/13/2021	1345	G	2	X	X	X	X	X
RG_FOBCP_SE-3_2021-09-13_1445	RG_FOBCP	SE	No	9/13/2021	1445	G	2	X	X	X	X	X
RG_FOBCP_SE-4_2021-09-13_1515	RG_FOBCP	SE	No	9/13/2021	1515	G	2	X	X	X	X	X
RG_FOBCP_SE-5_2021-09-14_0940	RG_FOBCP	SE	No	9/14/2021	940	G	2	X	X	X	X	X
RG_SCOUTDS_SE-1_2021-09-14_1045	RG_SCOUTDS	SE	No	9/14/2021	1045	G	2	X	X	X	X	X
RG_SCOUTDS_SE-2_2021-09-14_1100	RG_SCOUTDS	SE	No	9/14/2021	1100	G	2	X	X	X	X	X
RG_SCOUTDS_SE-3_2021-09-14_1115	RG_SCOUTDS	SE	No	9/14/2021	1115	G	2	X	X	X	X	X
RG_SCOUTDS_SE-4_2021-09-14_1130	RG_SCOUTDS	SE	No	9/14/2021	1130	G	2	X	X	X	X	X
RG_SCOUTDS_SE-5_2021-09-14_1145	RG_SCOUTDS	SE	No	9/14/2021	1145	G	2	X	X	X	X	X
		SE	No			G	2	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510	Jennifer Ings/Minnow	################	[signature]	9/16/21

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x	Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Priority (2-3 business days) - 50% surcharge		Sampler's Signature	[signature]	Date/Time	September 15, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

Teck Coal Ltd.
ATTN: Mike Pope
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 23-SEP-21
Report Date: 10-NOV-21 12:18 (MT)
Version: FINAL REV. 3

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2644098
Project P.O. #: VPO00748510
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers:
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644098-1	L2644098-2	L2644098-3	L2644098-4	L2644098-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21
	Sampled Time	11:00	12:00	13:00	14:00	15:00
	Client ID	RG_FOUKI_SE-1_2021-09-20_1100	RG_FOUKI_SE-2_2021-09-20_1200	RG_FOUKI_SE-3_2021-09-20_1300	RG_FOUKI_SE-4_2021-09-20_1400	RG_FOUKI_SE-5_2021-09-20_1500
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	28.7	24.5	33.5	29.4	29.5
	pH (1:2 soil:water) (pH)	8.45	8.63	8.44	8.63	8.36
Particle Size	% Gravel (>2mm) (%)	8.8	8.5	8.0	9.6	27.7
	% Sand (2.00mm - 1.00mm) (%)	12.7	8.9	15.5	8.8	16.7
	% Sand (1.00mm - 0.50mm) (%)	24.9	21.9	21.1	17.0	11.4
	% Sand (0.50mm - 0.25mm) (%)	22.5	24.3	16.6	17.0	5.6
	% Sand (0.25mm - 0.125mm) (%)	6.6	8.0	6.7	8.4	3.4
	% Sand (0.125mm - 0.063mm) (%)	3.8	4.9	5.0	6.1	4.3
	% Silt (0.063mm - 0.0312mm) (%)	8.4	9.3	10.2	12.4	11.7
	% Silt (0.0312mm - 0.004mm) (%)	10.1	11.7	13.7	17.2	16.1
	% Clay (<4um) (%)	2.3	2.5	3.3	3.6	3.1
	Texture	Loamy sand	Loamy sand	Sandy loam	Sandy loam	Sandy loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.64	4.69	4.7	5.56	5.59
Metals	Aluminum (Al) (mg/kg)	7840	5640	5770	6690	6960
	Antimony (Sb) (mg/kg)	0.86	0.64	0.71	0.66	0.59
	Arsenic (As) (mg/kg)	6.54	5.07	5.82	5.72	4.93
	Barium (Ba) (mg/kg)	231	165	210	221	197
	Beryllium (Be) (mg/kg)	0.66	0.52	0.51	0.54	0.54
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	6.3	<5.0	<5.0	5.7	7.2
	Cadmium (Cd) (mg/kg)	1.48	1.19	1.89	1.61	1.31
	Calcium (Ca) (mg/kg)	69500	60700	87500	87100	84900
	Chromium (Cr) (mg/kg)	13.3	9.55	10.5	11.5	12.1
	Cobalt (Co) (mg/kg)	11.2	8.88	11.7	10.6	10.4
	Copper (Cu) (mg/kg)	16.5	13.0	15.8	15.0	14.2
	Iron (Fe) (mg/kg)	20900	17400	18300	18700	16500
	Lead (Pb) (mg/kg)	9.86	7.57	8.26	8.16	8.36
	Lithium (Li) (mg/kg)	13.7	10.9	9.8	10.4	12.1
	Magnesium (Mg) (mg/kg)	11300	9350	12700	11800	13800
	Manganese (Mn) (mg/kg)	773	647	962	763	691
	Mercury (Hg) (mg/kg)	0.0335	0.0371	0.0341	0.0315	0.0293
	Molybdenum (Mo) (mg/kg)	1.80	1.41	1.55	1.48	1.45
	Nickel (Ni) (mg/kg)	53.4	42.9	56.9	51.4	46.7
	Phosphorus (P) (mg/kg)	1410	1160	1460	1330	1280
	Potassium (K) (mg/kg)	1680	1140	1190	1470	1500
	Selenium (Se) (mg/kg)	1.56	1.28	1.65	1.65	1.76
	Silver (Ag) (mg/kg)	0.16	0.13	0.15	0.16	0.15

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644098-1	L2644098-2	L2644098-3	L2644098-4	L2644098-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21
	Sampled Time	11:00	12:00	13:00	14:00	15:00
	Client ID	RG_FOUKI_SE-1_2021-09-20_1100	RG_FOUKI_SE-2_2021-09-20_1200	RG_FOUKI_SE-3_2021-09-20_1300	RG_FOUKI_SE-4_2021-09-20_1400	RG_FOUKI_SE-5_2021-09-20_1500
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	85	66	85	81	89
	Strontium (Sr) (mg/kg)	87.0	66.8	82.1	85.6	88.5
	Sulfur (S) (mg/kg)	1300	1000	1100	1200	1200
	Thallium (Tl) (mg/kg)	0.235	0.174	0.178	0.188	0.172
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	10.5	6.1	9.4	10.0	10.1
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.05	0.850	1.02	1.07	0.986
	Vanadium (V) (mg/kg)	33.1	23.5	26.5	29.2	26.4
	Zinc (Zn) (mg/kg)	149	115	155	140	130
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	DLCI <0.060	DLCI <0.045	DLCI <0.055	DLCI <0.055	DLCI <0.055
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	0.0105
	Acridine (mg/kg)	DLCI <0.10	DLCI <0.080	DLCI <0.11	DLCI <0.11	DLCI <0.10
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	0.083	DLCI <0.080	0.030	DLCI <0.090	0.029
	Benzo(a)pyrene (mg/kg)	0.011	<0.010	0.011	0.014	0.015
	Benzo(b&j)fluoranthene (mg/kg)	0.053	0.045	0.053	0.048	0.052
	Benzo(b+j+k)fluoranthene (mg/kg)	0.053	0.045	0.053	0.048	0.052
	Benzo(e)pyrene (mg/kg)	0.057	0.049	0.055	0.053	0.061
	Benzo(g,h,i)perylene (mg/kg)	0.024	0.017	0.021	0.022	0.023
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	0.087	DLCI <0.050	0.132	DLCI <0.080	DLCI <0.16
	Dibenz(a,h)anthracene (mg/kg)	DLCI <0.010	0.0079	0.0091	DLCI <0.010	0.0106
	Fluoranthene (mg/kg)	0.026	0.021	0.025	0.024	0.021
	Fluorene (mg/kg)	0.087	0.075	0.148	0.139	0.128
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	0.632	0.540	0.611	0.579	0.571
	2-Methylnaphthalene (mg/kg)	1.14	0.929	1.09	0.995	0.988
	Naphthalene (mg/kg)	0.373	0.309	0.346	0.320	0.374
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene (mg/kg)	0.579	0.490	0.593	0.545	0.531
	Pyrene (mg/kg)	0.044	0.036	0.043	0.041	0.042
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	71.0	68.6	79.2	73.9	76.1
	Surrogate: d12-Chrysene (%)	77.5	74.6	89.7	82.2	86.4

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644098-1	L2644098-2	L2644098-3	L2644098-4	L2644098-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21	20-SEP-21
	Sampled Time	11:00	12:00	13:00	14:00	15:00
	Client ID	RG_FOUKI_SE-1_2021-09-20_1100	RG_FOUKI_SE-2_2021-09-20_1200	RG_FOUKI_SE-3_2021-09-20_1300	RG_FOUKI_SE-4_2021-09-20_1400	RG_FOUKI_SE-5_2021-09-20_1500
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	72.5	68.6	80.4	72.8	74.7
	Surrogate: d10-Phenanthrene (%)	76.3	72.4	85.8	79.2	80.6
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	0.032	0.023	0.031	0.030	0.036
	IACR (CCME)	0.71	0.50	0.59	0.55	0.57

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic Interference due to co-elution.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	CSSS (2008) 21.2

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAA-CL	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-CL	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MOISTURE-CL	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C

PAH-TMB-H/A-MS-CL	Soil	PAH Tumbler Extraction (Hexane/Acetone)	EPA 3570/8270-GC/MS

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-1:2-CL	Soil	pH in soil (1:2 Soil:Water Extraction)	CSSS Ch. 16

Soil and de-ionized water (by volume) are mixed in a defined ratio. The slurry is allowed to stand, shaken, and then allowed to stand again prior to taking measurements. After equilibration, the pH of the liquid portion of the extract is measured by a pH meter. Field Measurement is recommended where accurate pH measurements are required, due to the 15 minute recommended hold time.

PSA-PIPET-DETAIL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

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

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

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

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2644098   Report Date: 10-NOV-21

Client: Teck Coal Ltd.
421 Pine Avenue
Sparwood BC V0B 2G0

Contact: Mike Pope

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TIC-PCT-SK	**Soil**							
Batch R5607215								
WG3628793-4 IRM		**08-109_SOIL**						
Inorganic Carbon			99.7		%		80-120	01-NOV-21
WG3628793-2 LCS		**0.5**						
Inorganic Carbon			95.4		%		90-110	01-NOV-21
WG3628793-3 MB								
Inorganic Carbon			<0.050		%		0.05	01-NOV-21
C-TOT-LECO-SK	**Soil**							
Batch R5606062								
WG3627085-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			101.5		%		80-120	30-SEP-21
WG3627085-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			98.4		%		90-110	30-SEP-21
WG3627085-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	30-SEP-21
HG-200.2-CVAA-CL	**Soil**							
Batch R5609738								
WG3631632-9 CRM		**TILL-2**						
Mercury (Hg)			119.4		%		70-130	05-OCT-21
WG3631632-7 LCS								
Mercury (Hg)			97.8		%		80-120	05-OCT-21
WG3631632-6 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	05-OCT-21
MET-200.2-CCMS-CL	**Soil**							
Batch R5609818								
WG3631632-9 CRM		**TILL-2**						
Aluminum (Al)			103.7		%		70-130	05-OCT-21
Antimony (Sb)			100.4		%		70-130	05-OCT-21
Arsenic (As)			107.9		%		70-130	05-OCT-21
Barium (Ba)			112.2		%		70-130	05-OCT-21
Beryllium (Be)			89.5		%		70-130	05-OCT-21
Bismuth (Bi)			88.3		%		70-130	05-OCT-21
Cadmium (Cd)			101.6		%		70-130	05-OCT-21
Calcium (Ca)			97.6		%		70-130	05-OCT-21
Chromium (Cr)			108.9		%		70-130	05-OCT-21
Cobalt (Co)			109.2		%		70-130	05-OCT-21
Copper (Cu)			109.2		%		70-130	05-OCT-21
Iron (Fe)			103.7		%		70-130	05-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5609818								
WG3631632-9 CRM		**TILL-2**						
Lead (Pb)			96.8		%		70-130	05-OCT-21
Lithium (Li)			89.5		%		70-130	05-OCT-21
Magnesium (Mg)			107.7		%		70-130	05-OCT-21
Manganese (Mn)			106.7		%		70-130	05-OCT-21
Molybdenum (Mo)			99.0		%		70-130	05-OCT-21
Nickel (Ni)			108.5		%		70-130	05-OCT-21
Phosphorus (P)			103.6		%		70-130	05-OCT-21
Potassium (K)			98.7		%		70-130	05-OCT-21
Selenium (Se)			0.36		mg/kg		0.15-0.55	05-OCT-21
Silver (Ag)			0.26		mg/kg		0.16-0.36	05-OCT-21
Sodium (Na)			94.7		%		70-130	05-OCT-21
Strontium (Sr)			98.0		%		70-130	05-OCT-21
Thallium (Tl)			94.6		%		70-130	05-OCT-21
Tin (Sn)			2.3		mg/kg		0.2-4.2	05-OCT-21
Titanium (Ti)			98.0		%		70-130	05-OCT-21
Tungsten (W)			1.34		mg/kg		1-2	05-OCT-21
Uranium (U)			88.3		%		70-130	05-OCT-21
Vanadium (V)			104.7		%		70-130	05-OCT-21
Zinc (Zn)			101.8		%		70-130	05-OCT-21
Zirconium (Zr)			82.9		%		70-130	05-OCT-21
WG3631632-7 LCS								
Aluminum (Al)			101.4		%		80-120	05-OCT-21
Antimony (Sb)			101.9		%		80-120	05-OCT-21
Arsenic (As)			99.0		%		80-120	05-OCT-21
Barium (Ba)			100.1		%		80-120	05-OCT-21
Beryllium (Be)			91.9		%		80-120	05-OCT-21
Bismuth (Bi)			92.7		%		80-120	05-OCT-21
Boron (B)			93.5		%		80-120	05-OCT-21
Cadmium (Cd)			98.5		%		80-120	05-OCT-21
Calcium (Ca)			95.2		%		80-120	05-OCT-21
Chromium (Cr)			102.4		%		80-120	05-OCT-21
Cobalt (Co)			101.5		%		80-120	05-OCT-21
Copper (Cu)			96.8		%		80-120	05-OCT-21
Iron (Fe)			104.8		%		80-120	05-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5609818								
WG3631632-7 LCS								
Lead (Pb)			95.9		%		80-120	05-OCT-21
Lithium (Li)			97.4		%		80-120	05-OCT-21
Magnesium (Mg)			103.8		%		80-120	05-OCT-21
Manganese (Mn)			99.6		%		80-120	05-OCT-21
Molybdenum (Mo)			99.5		%		80-120	05-OCT-21
Nickel (Ni)			99.97		%		80-120	05-OCT-21
Phosphorus (P)			101.6		%		80-120	05-OCT-21
Potassium (K)			98.2		%		80-120	05-OCT-21
Selenium (Se)			97.9		%		80-120	05-OCT-21
Silver (Ag)			97.6		%		80-120	05-OCT-21
Sodium (Na)			100.2		%		80-120	05-OCT-21
Strontium (Sr)			99.98		%		80-120	05-OCT-21
Sulfur (S)			98.9		%		80-120	05-OCT-21
Thallium (Tl)			93.4		%		80-120	05-OCT-21
Tin (Sn)			100.1		%		80-120	05-OCT-21
Titanium (Ti)			94.1		%		80-120	05-OCT-21
Tungsten (W)			98.0		%		80-120	05-OCT-21
Uranium (U)			90.9		%		80-120	05-OCT-21
Vanadium (V)			99.9		%		80-120	05-OCT-21
Zinc (Zn)			95.1		%		80-120	05-OCT-21
Zirconium (Zr)			106.1		%		80-120	05-OCT-21
WG3631632-6 MB								
Aluminum (Al)			<50		mg/kg		50	05-OCT-21
Antimony (Sb)			<0.10		mg/kg		0.1	05-OCT-21
Arsenic (As)			<0.10		mg/kg		0.1	05-OCT-21
Barium (Ba)			<0.50		mg/kg		0.5	05-OCT-21
Beryllium (Be)			<0.10		mg/kg		0.1	05-OCT-21
Bismuth (Bi)			<0.20		mg/kg		0.2	05-OCT-21
Boron (B)			<5.0		mg/kg		5	05-OCT-21
Cadmium (Cd)			<0.020		mg/kg		0.02	05-OCT-21
Calcium (Ca)			<50		mg/kg		50	05-OCT-21
Chromium (Cr)			<0.50		mg/kg		0.5	05-OCT-21
Cobalt (Co)			<0.10		mg/kg		0.1	05-OCT-21
Copper (Cu)			<0.50		mg/kg		0.5	05-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5609818								
WG3631632-6 MB								
Iron (Fe)			<50		mg/kg		50	05-OCT-21
Lead (Pb)			<0.50		mg/kg		0.5	05-OCT-21
Lithium (Li)			<2.0		mg/kg		2	05-OCT-21
Magnesium (Mg)			<20		mg/kg		20	05-OCT-21
Manganese (Mn)			<1.0		mg/kg		1	05-OCT-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	05-OCT-21
Nickel (Ni)			<0.50		mg/kg		0.5	05-OCT-21
Phosphorus (P)			<50		mg/kg		50	05-OCT-21
Potassium (K)			<100		mg/kg		100	05-OCT-21
Selenium (Se)			<0.20		mg/kg		0.2	05-OCT-21
Silver (Ag)			<0.10		mg/kg		0.1	05-OCT-21
Sodium (Na)			<50		mg/kg		50	05-OCT-21
Strontium (Sr)			<0.50		mg/kg		0.5	05-OCT-21
Sulfur (S)			<1000		mg/kg		1000	05-OCT-21
Thallium (Tl)			<0.050		mg/kg		0.05	05-OCT-21
Tin (Sn)			<2.0		mg/kg		2	05-OCT-21
Titanium (Ti)			<1.0		mg/kg		1	05-OCT-21
Tungsten (W)			<0.50		mg/kg		0.5	05-OCT-21
Uranium (U)			<0.050		mg/kg		0.05	05-OCT-21
Vanadium (V)			<0.20		mg/kg		0.2	05-OCT-21
Zinc (Zn)			<2.0		mg/kg		2	05-OCT-21
Zirconium (Zr)			<1.0		mg/kg		1	05-OCT-21
MOISTURE-CL	**Soil**							
Batch R5607066								
WG3630257-2 LCS								
Moisture			99.5		%		90-110	04-OCT-21
WG3630257-1 MB								
Moisture			<0.25		%		0.25	04-OCT-21
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5609857								
WG3631673-3 IRM		**ALS PAH RM2**						
Acenaphthene			79.4		%		60-130	04-OCT-21
Acenaphthylene			88.4		%		60-130	04-OCT-21
Anthracene			90.2		%		60-130	04-OCT-21
Acridine			94.8		%		60-130	04-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5609857								
WG3631673-3 IRM		**ALS PAH RM2**						
Benz(a)anthracene			82.5		%		60-130	04-OCT-21
Benzo(a)pyrene			77.6		%		60-130	04-OCT-21
Benzo(b&j)fluoranthene			74.7		%		60-130	04-OCT-21
Benzo(e)pyrene			81.5		%		60-130	04-OCT-21
Benzo(g,h,i)perylene			73.4		%		60-130	04-OCT-21
Benzo(k)fluoranthene			84.9		%		60-130	04-OCT-21
Chrysene			83.1		%		60-130	04-OCT-21
Dibenz(a,h)anthracene			76.0		%		60-130	04-OCT-21
Fluoranthene			78.5		%		60-130	04-OCT-21
Fluorene			79.3		%		60-130	04-OCT-21
Indeno(1,2,3-c,d)pyrene			110.3		%		60-130	04-OCT-21
2-Methylnaphthalene			77.6		%		60-130	04-OCT-21
Naphthalene			73.5		%		50-130	04-OCT-21
Perylene			77.1		%		60-130	04-OCT-21
Phenanthrene			80.3		%		60-130	04-OCT-21
Pyrene			80.3		%		60-130	04-OCT-21
1-Methylnaphthalene			76.4		%		60-130	04-OCT-21
WG3631673-5 IRM		**ALS PAH RM2**						
Acenaphthene			87.9		%		60-130	05-OCT-21
Acenaphthylene			98.3		%		60-130	05-OCT-21
Anthracene			102.2		%		60-130	05-OCT-21
Acridine			104.6		%		60-130	05-OCT-21
Benz(a)anthracene			95.3		%		60-130	05-OCT-21
Benzo(a)pyrene			103.7		%		60-130	05-OCT-21
Benzo(b&j)fluoranthene			91.7		%		60-130	05-OCT-21
Benzo(e)pyrene			99.0		%		60-130	05-OCT-21
Benzo(g,h,i)perylene			89.3		%		60-130	05-OCT-21
Benzo(k)fluoranthene			75.9		%		60-130	05-OCT-21
Chrysene			93.9		%		60-130	05-OCT-21
Dibenz(a,h)anthracene			80.5		%		60-130	05-OCT-21
Fluoranthene			87.0		%		60-130	05-OCT-21
Fluorene			88.9		%		60-130	05-OCT-21
Indeno(1,2,3-c,d)pyrene			122.4		%		60-130	05-OCT-21
2-Methylnaphthalene			82.0		%		60-130	05-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5609857								
WG3631673-5 IRM		**ALS PAH RM2**						
Naphthalene			76.1		%		50-130	05-OCT-21
Perylene			104.4		%		60-130	05-OCT-21
Phenanthrene			86.7		%		60-130	05-OCT-21
Pyrene			89.0		%		60-130	05-OCT-21
1-Methylnaphthalene			81.6		%		60-130	05-OCT-21
WG3631673-2 LCS								
Acenaphthene			121.1		%		60-130	04-OCT-21
Acenaphthylene			114.3		%		60-130	04-OCT-21
Anthracene			113.8		%		60-130	04-OCT-21
Acridine			99.6		%		60-130	04-OCT-21
Benz(a)anthracene			113.2		%		60-130	04-OCT-21
Benzo(a)pyrene			95.7		%		60-130	04-OCT-21
Benzo(b&j)fluoranthene			104.4		%		60-130	04-OCT-21
Benzo(e)pyrene			111.9		%		60-130	04-OCT-21
Benzo(g,h,i)perylene			111.5		%		60-130	04-OCT-21
Benzo(k)fluoranthene			108.8		%		60-130	04-OCT-21
Chrysene			118.7		%		60-130	04-OCT-21
Dibenz(a,h)anthracene			110.6		%		60-130	04-OCT-21
Fluoranthene			118.0		%		60-130	04-OCT-21
Fluorene			115.6		%		60-130	04-OCT-21
Indeno(1,2,3-c,d)pyrene			106.0		%		60-130	04-OCT-21
2-Methylnaphthalene			124.7		%		60-130	04-OCT-21
Naphthalene			114.5		%		50-130	04-OCT-21
Perylene			102.2		%		60-130	04-OCT-21
Phenanthrene			120.5		%		60-130	04-OCT-21
Pyrene			117.4		%		60-130	04-OCT-21
1-Methylnaphthalene			126.2		%		60-130	04-OCT-21
Quinoline			103.7		%		60-130	04-OCT-21
WG3631673-1 MB								
Acenaphthene			<0.0050		mg/kg		0.005	04-OCT-21
Acenaphthylene			<0.0050		mg/kg		0.005	04-OCT-21
Anthracene			<0.0040		mg/kg		0.004	04-OCT-21
Acridine			<0.010		mg/kg		0.01	04-OCT-21
Benz(a)anthracene			<0.010		mg/kg		0.01	04-OCT-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	04-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5609857								
WG3631673-1 MB								
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	04-OCT-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	04-OCT-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	04-OCT-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	04-OCT-21
Chrysene			<0.010		mg/kg		0.01	04-OCT-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	04-OCT-21
Fluoranthene			<0.010		mg/kg		0.01	04-OCT-21
Fluorene			<0.010		mg/kg		0.01	04-OCT-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	04-OCT-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	04-OCT-21
Naphthalene			<0.010		mg/kg		0.01	04-OCT-21
Perylene			<0.010		mg/kg		0.01	04-OCT-21
Phenanthrene			<0.010		mg/kg		0.01	04-OCT-21
Pyrene			<0.010		mg/kg		0.01	04-OCT-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	04-OCT-21
Quinoline			<0.050		mg/kg		0.05	04-OCT-21
Surrogate: d8-Naphthalene			66.8		%		50-130	04-OCT-21
Surrogate: d10-Acenaphthene			67.8		%		60-130	04-OCT-21
Surrogate: d10-Phenanthrene			74.5		%		60-130	04-OCT-21
Surrogate: d12-Chrysene			79.6		%		60-130	04-OCT-21
WG3631673-6 MB								
Acenaphthene			<0.0050		mg/kg		0.005	05-OCT-21
Acenaphthylene			<0.0050		mg/kg		0.005	05-OCT-21
Anthracene			<0.0040		mg/kg		0.004	05-OCT-21
Acridine			<0.010		mg/kg		0.01	05-OCT-21
Benz(a)anthracene			<0.010		mg/kg		0.01	05-OCT-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	05-OCT-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	05-OCT-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	05-OCT-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	05-OCT-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	05-OCT-21
Chrysene			<0.010		mg/kg		0.01	05-OCT-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	05-OCT-21
Fluoranthene			<0.010		mg/kg		0.01	05-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5609857								
WG3631673-6 MB								
Fluorene			<0.010		mg/kg		0.01	05-OCT-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	05-OCT-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	05-OCT-21
Naphthalene			<0.010		mg/kg		0.01	05-OCT-21
Perylene			<0.010		mg/kg		0.01	05-OCT-21
Phenanthrene			<0.010		mg/kg		0.01	05-OCT-21
Pyrene			<0.010		mg/kg		0.01	05-OCT-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	05-OCT-21
Quinoline			<0.050		mg/kg		0.05	05-OCT-21
Surrogate: d8-Naphthalene			87.4		%		50-130	05-OCT-21
Surrogate: d10-Acenaphthene			84.7		%		60-130	05-OCT-21
Surrogate: d10-Phenanthrene			95.8		%		60-130	05-OCT-21
Surrogate: d12-Chrysene			104.2		%		60-130	05-OCT-21
PH-1:2-CL	**Soil**							
Batch R5608982								
WG3631678-2 IRM		**SAL-STD11**						
pH (1:2 soil:water)			7.95		pH		7.7-8.3	05-OCT-21
WG3631678-1 LCS								
pH (1:2 soil:water)			7.00		pH		6.8-7.2	05-OCT-21
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5606524								
WG3627496-1 DUP		**L2644098-2**						
% Gravel (>2mm)		8.5	8.5		%	0.0	25	01-OCT-21
% Sand (2.00mm - 1.00mm)		8.9	9.7	J	%	0.7	5	01-OCT-21
% Sand (1.00mm - 0.50mm)		21.9	23.4	J	%	1.5	5	01-OCT-21
% Sand (0.50mm - 0.25mm)		24.3	24.4	J	%	0.1	5	01-OCT-21
% Sand (0.25mm - 0.125mm)		8.0	7.9	J	%	0.1	5	01-OCT-21
% Sand (0.125mm - 0.063mm)		4.9	4.4	J	%	0.5	5	01-OCT-21
% Silt (0.063mm - 0.0312mm)		9.3	9.0	J	%	0.3	5	01-OCT-21
% Silt (0.0312mm - 0.004mm)		11.7	10.7	J	%	0.9	5	01-OCT-21
% Clay (<4um)		2.5	2.1	J	%	0.4	5	01-OCT-21
WG3627496-2 IRM		**2020-PSA_SOIL**						
% Sand (2.00mm - 1.00mm)			2.8		%		0-7.2	01-OCT-21
% Sand (1.00mm - 0.50mm)			3.5		%		0-8.7	01-OCT-21
% Sand (0.50mm - 0.25mm)			8.7		%		4-14	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5606524								
WG3627496-2 IRM		**2020-PSA_SOIL**						
% Sand (0.25mm - 0.125mm)			16.3		%		11.7-21.7	01-OCT-21
% Sand (0.125mm - 0.063mm)			14.0		%		8.4-18.4	01-OCT-21
% Silt (0.063mm - 0.0312mm)			12.1		%		8.5-18.5	01-OCT-21
% Silt (0.0312mm - 0.004mm)			21.0		%		15.1-25.1	01-OCT-21
% Clay (<4um)			21.5		%		16.5-26.5	01-OCT-21

Quality Control Report

Legend:

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Organic / Inorganic Carbon							
Inorganic Carbon as CaCO3 Equivalent							
	1	20-SEP-21 11:00	01-NOV-21 18:45	28	42	days	EHT
	2	20-SEP-21 12:00	01-NOV-21 18:45	28	42	days	EHT
	3	20-SEP-21 13:00	01-NOV-21 18:45	28	42	days	EHT
	4	20-SEP-21 14:00	01-NOV-21 18:45	28	42	days	EHT
	5	20-SEP-21 15:00	01-NOV-21 18:45	28	42	days	EHT
Total Inorganic Carbon in Soil							
	1	20-SEP-21 11:00	01-NOV-21 17:00	28	42	days	EHT
	2	20-SEP-21 12:00	01-NOV-21 17:00	28	42	days	EHT
	3	20-SEP-21 13:00	01-NOV-21 17:00	28	42	days	EHT
	4	20-SEP-21 14:00	01-NOV-21 17:00	28	42	days	EHT
	5	20-SEP-21 15:00	01-NOV-21 17:00	28	42	days	EHT

Legend & Qualifier Definitions:

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

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2644098 were received on 23-SEP-21 09:00.

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

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

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

Teck

Page 1 of 1

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Mike Pope
Email	[illegible]
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
City	Calgary
Province	AB
Postal Code	T1Y 7B5
Country	Canada
Phone Number	1 403 407 1794

Email	Excel	PDF	EDD
[illegible]	x	x	x
teckcoal@equisonline.com			x
[illegible]	x	x	x
[illegible]	x	x	x
pschnurr@minnow.ca	x	x	x

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	C-TOC-SK	MET-CCME+FULL-CL	MOISTURE-CL - % Moisture	PSA-PIPET-DETAIL-SK Particle Size	PAH-TMB-D/A-MS-CL-PAHs
Filtered								N	N	N	N	N
Preservative								NONE	NONE	NONE	NONE	NONE
RG_FOUKI_SE-1_2021-09-20_1100	RG_FOUKI	SE	No	9/20/2021	1100	G	2	X	X	X	X	X
RG_FOUKI_SE-2_2021-09-20_1200	RG_FOUKI	SE	No	9/20/2021	1200	G	2	X	X	X	X	X
RG_FOUKI_SE-3_2021-09-20_1300	RG_FOUKI	SE	No	9/20/2021	1300	G	2	X	X	X	X	X
RG_FOUKI_SE-4_2021-09-20_1400	RG_FOUKI	SE	No	9/20/2021	1400	G	2	X	X	X	X	X
RG_FOUKI_SE-5_2021-09-20_1500	RG_FOUKI	SE	No	9/20/2021	1500	G	2	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
ALS PO 748510	Jennifer Ings/Minnow	################	[signature]	9/23 9:08

NB OF BOTTLES RETURNED/DESCRIPTION				
Regular (default) x	Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature	[signature]	Date/Time	September 22, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

6

L2644098-COFC

Teck Coal Ltd.
ATTN: Mike Pope
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 21-SEP-21
Report Date: 12-OCT-21 09:44 (MT)
Version: FINAL REV. 2

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2644311

Project P.O. #: VPO00748510
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: September FRO LAEMP
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-1	L2644311-2	L2644311-3	L2644311-4	L2644311-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21
	Sampled Time	09:00	09:30	10:00	09:30	11:15
	Client ID	RG_FO26_SE-1_2021-09-16_0900	RG_FO26_SE-2_2021-09-16_0930	RG_FO26_SE-3_2021-09-16_1000	RG_HENUP_SE-1_2021-09-16_0930	RG_HENUP_SE-2_2021-09-16_1115
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	75.8	69.1	50.5	56.7	60.9
	pH (1:2 soil:water) (pH)	7.67	8.06	8.28	8.27	8.23
Particle Size	% Gravel (>2mm) (%)	1.4 PSAL	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	1.4 PSAL	2.6	<1.0	1.1	6.8
	% Sand (1.00mm - 0.50mm) (%)	3.5 PSAL	8.3	1.9	6.3	10.9
	% Sand (0.50mm - 0.25mm) (%)	10.1 PSAL	8.9	4.2	10.3	26.1
	% Sand (0.25mm - 0.125mm) (%)	16.1 PSAL	12.3	15.3	25.3	22.3
	% Sand (0.125mm - 0.063mm) (%)	12.1 PSAL	12.6	18.2	26.5	10.1
	% Silt (0.063mm - 0.0312mm) (%)	24.1 PSAL	24.8	27.2	15.6	10.4
	% Silt (0.0312mm - 0.004mm) (%)	26.8 PSAL	26.5	28.5	12.8	11.5
	% Clay (<4um) (%)	4.5 PSAL	3.5	4.0	2.1	2.1
	Texture	Silt loam	Silt loam	Silt loam	Loamy sand	Loamy sand
Organic / Inorganic Carbon	Total Organic Carbon (%)	7.76	8.92	4.61	4.3	4.4
Metals	Aluminum (Al) (mg/kg)	7090	6880	6010	2440	1340
	Antimony (Sb) (mg/kg)	0.58	0.60	0.59	0.12	<0.10
	Arsenic (As) (mg/kg)	5.99	5.85	5.82	1.78	1.14
	Barium (Ba) (mg/kg)	175	170	145	23.1	13.9
	Beryllium (Be) (mg/kg)	0.67	0.67	0.53	0.14	<0.10
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	7.0	6.6	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.922	0.882	0.819	0.297	0.271
	Calcium (Ca) (mg/kg)	60200	55900	51600	237000	229000
	Chromium (Cr) (mg/kg)	13.8	12.6	11.0	7.87	5.19
	Cobalt (Co) (mg/kg)	6.08	5.91	6.04	1.43	0.93
	Copper (Cu) (mg/kg)	14.8	14.9	14.6	2.21	1.47
	Iron (Fe) (mg/kg)	15300	15300	15000	3830	2480
	Lead (Pb) (mg/kg)	9.13	8.81	9.06	2.52	1.63
	Lithium (Li) (mg/kg)	10.4	10.0	10.6	10.9	6.5
	Magnesium (Mg) (mg/kg)	10300	9380	11600	53100	36900
	Manganese (Mn) (mg/kg)	548	490	448	148	92.9
	Mercury (Hg) (mg/kg)	0.0349	0.0342	0.0445	0.0086 RRV	<0.0050 RRV
	Molybdenum (Mo) (mg/kg)	1.57	1.52	1.41	0.44	0.34
	Nickel (Ni) (mg/kg)	21.5	21.2	20.3	9.02	6.63
	Phosphorus (P) (mg/kg)	1350	1330	1340	494	319
	Potassium (K) (mg/kg)	1860	1800	1300	660	410
	Selenium (Se) (mg/kg)	1.26	0.96	0.93	0.35	0.32
	Silver (Ag) (mg/kg)	0.15	0.14	0.18	<0.10	<0.10

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2644311-6	L2644311-7	L2644311-8	L2644311-9	L2644311-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21
	Sampled Time	13:30	09:15	10:15	11:15	12:15
	Client ID	RG_HENUP_SE-3_2021-09-16_1330	RG_FRUPO_SE-1_2021-09-19_0915	RG_FRUPO_SE-2_2021-09-19_1015	RG_FRUPO_SE-3_2021-09-19_1115	RG_FRUPO_SE-4_2021-09-19_1215
SOIL						
Physical Tests	Moisture (%)	33.7	47.9	50.8	69.5	50.1
	pH (1:2 soil:water) (pH)	8.47	8.40	8.30	8.21	8.41
Particle Size	% Gravel (>2mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	3.5	<1.0	2.2	2.2	<1.0
	% Sand (1.00mm - 0.50mm) (%)	13.0	8.1	2.4	6.7	<1.0
	% Sand (0.50mm - 0.25mm) (%)	33.9	15.1	6.2	12.5	8.6
	% Sand (0.25mm - 0.125mm) (%)	26.0	16.4	17.1	20.1	20.8
	% Sand (0.125mm - 0.063mm) (%)	9.1	14.1	22.3	14.9	19.8
	% Silt (0.063mm - 0.0312mm) (%)	6.3	19.4	22.1	17.0	21.9
	% Silt (0.0312mm - 0.004mm) (%)	6.7	22.1	23.4	22.0	24.0
	% Clay (<4um) (%)	1.6	4.2	4.2	4.6	4.0
	Texture	Sand	Sandy loam	Sandy loam	Sandy loam	Sandy loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	3.7	5.38	4.86	5.80	5.52
Metals	Aluminum (Al) (mg/kg)	1130	6800	5450	4960	5260
	Antimony (Sb) (mg/kg)	<0.10	0.64	0.56	0.59	0.58
	Arsenic (As) (mg/kg)	1.11	5.63	5.03	5.19	4.90
	Barium (Ba) (mg/kg)	10.6	181	160	161	166
	Beryllium (Be) (mg/kg)	<0.10	0.60	0.48	0.53	0.48
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	6.4	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.209	1.26	1.18	1.24	1.20
	Calcium (Ca) (mg/kg)	233000	40000	51900	46300	49500
	Chromium (Cr) (mg/kg)	4.46	13.0	11.0	10.1	10.6
	Cobalt (Co) (mg/kg)	0.73	6.15	5.79	6.43	5.90
	Copper (Cu) (mg/kg)	1.06	13.0	11.9	12.2	12.4
	Iron (Fe) (mg/kg)	2290	16100	13400	14600	13300
	Lead (Pb) (mg/kg)	1.46	8.08	7.28	7.33	7.34
	Lithium (Li) (mg/kg)	5.9	9.8	9.0	8.0	8.9
	Magnesium (Mg) (mg/kg)	34500	9670	13000	9760	12100
	Manganese (Mn) (mg/kg)	78.1	521	475	479	491
	Mercury (Hg) (mg/kg)	<0.0050 RRV	0.0301	0.0289	0.0267	0.0338
	Molybdenum (Mo) (mg/kg)	0.24	1.56	1.36	1.35	1.42
	Nickel (Ni) (mg/kg)	5.06	32.3	29.3	29.4	31.0
	Phosphorus (P) (mg/kg)	383	1420	1390	1490	1370
	Potassium (K) (mg/kg)	380	1760	1290	1200	1230
	Selenium (Se) (mg/kg)	0.27	2.20	2.11	1.52	1.61
	Silver (Ag) (mg/kg)	<0.10	0.15	0.15	0.13	0.15

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2644311-11
	Sample ID	L2644311-11
	Description	SE
	Sampled Date	19-SEP-21
	Sampled Time	13:15
	Client ID	RG_FRUPO_SE-5_2021-09-19_1315
SOIL		
Physical Tests	Moisture (%)	50.7
	pH (1:2 soil:water) (pH)	8.13
Particle Size	% Gravel (>2mm) (%)	<1.0
	% Sand (2.00mm - 1.00mm) (%)	<1.0
	% Sand (1.00mm - 0.50mm) (%)	8.8
	% Sand (0.50mm - 0.25mm) (%)	27.9
	% Sand (0.25mm - 0.125mm) (%)	20.5
	% Sand (0.125mm - 0.063mm) (%)	11.5
	% Silt (0.063mm - 0.0312mm) (%)	12.6
	% Silt (0.0312mm - 0.004mm) (%)	15.0
	% Clay (<4um) (%)	3.2
	Texture	Sandy loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	4.54
Metals	Aluminum (Al) (mg/kg)	6800
	Antimony (Sb) (mg/kg)	0.66
	Arsenic (As) (mg/kg)	5.53
	Barium (Ba) (mg/kg)	196
	Beryllium (Be) (mg/kg)	0.59
	Bismuth (Bi) (mg/kg)	<0.20
	Boron (B) (mg/kg)	7.2
	Cadmium (Cd) (mg/kg)	1.25
	Calcium (Ca) (mg/kg)	43800
	Chromium (Cr) (mg/kg)	12.8
	Cobalt (Co) (mg/kg)	6.34
	Copper (Cu) (mg/kg)	12.9
	Iron (Fe) (mg/kg)	15800
	Lead (Pb) (mg/kg)	8.04
	Lithium (Li) (mg/kg)	9.7
	Magnesium (Mg) (mg/kg)	9290
	Manganese (Mn) (mg/kg)	511
	Mercury (Hg) (mg/kg)	0.0330
	Molybdenum (Mo) (mg/kg)	1.58
	Nickel (Ni) (mg/kg)	31.0
	Phosphorus (P) (mg/kg)	1490
	Potassium (K) (mg/kg)	1830
	Selenium (Se) (mg/kg)	1.62
	Silver (Ag) (mg/kg)	0.14

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-1	L2644311-2	L2644311-3	L2644311-4	L2644311-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21
	Sampled Time	09:00	09:30	10:00	09:30	11:15
	Client ID	RG_FO26_SE-1_2021-09-16_0900	RG_FO26_SE-2_2021-09-16_0930	RG_FO26_SE-3_2021-09-16_1000	RG_HENUP_SE-1_2021-09-16_0930	RG_HENUP_SE-2_2021-09-16_1115
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	94	86	85	185	148
	Strontium (Sr) (mg/kg)	74.2	73.9	57.3	97.2	104
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.216	0.194	0.188	0.061	<0.050
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	9.5	8.6	6.5	22.5	12.9
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	0.933	0.903	0.814	0.506	0.375
	Vanadium (V) (mg/kg)	27.7	27.8	22.9	8.03	4.99
	Zinc (Zn) (mg/kg)	100	105	93.9	48.3	43.7
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	DLHM 0.030	DLHM 0.041	0.0384	0.0052	0.0111
	Acenaphthylene (mg/kg)	DLHM <0.010	DLHM <0.010	0.0050	<0.0050	<0.0050
	Acridine (mg/kg)	DLHM 0.029	DLHM 0.042	0.063	0.011	0.022
	Anthracene (mg/kg)	DLHM <0.0080	DLHM <0.0080	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	DLHM <0.020	DLHM 0.042	0.029	<0.010	0.013
	Benzo(a)pyrene (mg/kg)	DLHM <0.020	DLHM <0.020	0.013	<0.010	<0.010
	Benzo(b&j)fluoranthene (mg/kg)	DLHM 0.040	DLHM 0.078	0.073	<0.010	0.014
	Benzo(b+j+k)fluoranthene (mg/kg)	0.040	0.078	0.073	<0.015	<0.015
	Benzo(e)pyrene (mg/kg)	DLHM 0.038	DLHM 0.077	0.071	<0.010	0.015
	Benzo(g,h,i)perylene (mg/kg)	DLHM <0.020	DLHM <0.020	0.026	<0.010	<0.010
	Benzo(k)fluoranthene (mg/kg)	DLHM <0.020	DLHM <0.020	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	DLHM 0.098	DLHM 0.225	0.179	0.014	0.023
	Dibenz(a,h)anthracene (mg/kg)	DLHM <0.010	DLHM <0.010	0.0134	<0.0050	<0.0050
	Fluoranthene (mg/kg)	DLHM <0.020	DLHM 0.029	0.024	<0.010	<0.010
	Fluorene (mg/kg)	DLHM 0.060	DLHM 0.080	0.095	0.014	0.022
	Indeno(1,2,3-c,d)pyrene (mg/kg)	DLHM <0.020	DLHM <0.020	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	DLHM 0.284	DLHM 0.471	0.418	0.071	0.108
	2-Methylnaphthalene (mg/kg)	DLHM 0.469	DLHM 0.751	0.724	0.114	0.200
	Naphthalene (mg/kg)	DLHM 0.168	DLHM 0.290	0.246	0.038	0.070
	Perylene (mg/kg)	DLHM <0.020	DLHM <0.020	0.042	<0.010	<0.010
	Phenanthrene (mg/kg)	DLHM 0.369	DLHM 0.774	0.563	0.063	0.081
	Pyrene (mg/kg)	DLHM 0.029	DLHM 0.073	0.044	<0.010	0.013
	Quinoline (mg/kg)	DLHM <0.020	DLHM <0.020	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	75.0	97.8	92.7	82.8	72.5
	Surrogate: d12-Chrysene (%)	90.8	116.4	109.3	97.3	82.6

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2644311-6	L2644311-7	L2644311-8	L2644311-9	L2644311-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21
	Sampled Time	13:30	09:15	10:15	11:15	12:15
	Client ID	RG_HENUP_SE-3_2021-09-16_1330	RG_FRUPO_SE-1_2021-09-19_0915	RG_FRUPO_SE-2_2021-09-19_1015	RG_FRUPO_SE-3_2021-09-19_1115	RG_FRUPO_SE-4_2021-09-19_1215
SOIL						
Metals	Sodium (Na) (mg/kg)	152	86	90	77	85
	Strontium (Sr) (mg/kg)	104	64.6	62.1	61.2	60.1
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	<0.050	0.195	0.165	0.157	0.172
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	8.5	10.1	10.4	7.7	9.3
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	0.342	1.08	0.947	1.00	0.933
	Vanadium (V) (mg/kg)	4.36	32.5	25.2	25.3	25.2
	Zinc (Zn) (mg/kg)	34.1	118	104	107	105
	Zirconium (Zr) (mg/kg)	<1.0	<1.0	<1.0	<1.0	<1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.0050	0.0373	0.0386	0.042 DLHM	0.0406
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.010 DLHM	<0.0050
	Acridine (mg/kg)	0.013	0.042	0.063	0.060 DLHM	0.074
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0080 DLHM	<0.0040
	Benz(a)anthracene (mg/kg)	<0.010	0.024	0.023	0.027 DLHM	0.034
	Benzo(a)pyrene (mg/kg)	<0.010	<0.010	0.012	<0.020 DLHM	0.016
	Benzo(b&j)fluoranthene (mg/kg)	<0.010	0.053	0.054	0.047 DLHM	0.069
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.015	0.053	0.054	0.047 DLHM	0.069
	Benzo(e)pyrene (mg/kg)	<0.010	0.054	0.053	0.048 DLHM	0.067
	Benzo(g,h,i)perylene (mg/kg)	<0.010	0.023	0.019	<0.020 DLHM	0.028
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.020 DLHM	<0.010
	Chrysene (mg/kg)	0.016	0.134	0.140	0.128 DLHM	0.163
	Dibenz(a,h)anthracene (mg/kg)	<0.0050	<0.0050	0.0053	<0.010 DLHM	0.0120
	Fluoranthene (mg/kg)	<0.010	0.022	0.020	<0.020 DLHM	0.025
	Fluorene (mg/kg)	0.019	0.065	0.091	0.094 DLHM	0.110
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.020 DLHM	<0.010
	1-Methylnaphthalene (mg/kg)	0.085	0.367	0.404	0.513 DLHM	0.486
	2-Methylnaphthalene (mg/kg)	0.143	0.591	0.672	0.813 DLHM	0.774
	Naphthalene (mg/kg)	0.045	0.217	0.211	0.274 DLHM	0.240
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.020 DLHM	<0.010
	Phenanthrene (mg/kg)	0.066	0.480	0.482	0.522 DLHM	0.578
	Pyrene (mg/kg)	<0.010	0.036	0.037	0.035 DLHM	0.045
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.020 DLHM	<0.050
	Surrogate: d10-Acenaphthene (%)	82.6	87.8	82.4	88.7	85.4
	Surrogate: d12-Chrysene (%)	96.0	98.7	93.4	102.9	95.0

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-11				
	Description	SE				
	Sampled Date	19-SEP-21				
	Sampled Time	13:15				
	Client ID	RG_FRUPO_SE-5_2021-09-19_1315				
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	87				
	Strontium (Sr) (mg/kg)	68.5				
	Sulfur (S) (mg/kg)	<1000				
	Thallium (Tl) (mg/kg)	0.199				
	Tin (Sn) (mg/kg)	<2.0				
	Titanium (Ti) (mg/kg)	10.6				
	Tungsten (W) (mg/kg)	<0.50				
	Uranium (U) (mg/kg)	1.05				
	Vanadium (V) (mg/kg)	32.0				
	Zinc (Zn) (mg/kg)	113				
	Zirconium (Zr) (mg/kg)	<1.0				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	0.0331				
	Acenaphthylene (mg/kg)	<0.0050				
	Acridine (mg/kg)	0.052				
	Anthracene (mg/kg)	<0.0040				
	Benz(a)anthracene (mg/kg)	0.022				
	Benzo(a)pyrene (mg/kg)	0.013				
	Benzo(b&j)fluoranthene (mg/kg)	0.043				
	Benzo(b+j+k)fluoranthene (mg/kg)	0.043				
	Benzo(e)pyrene (mg/kg)	0.044				
	Benzo(g,h,i)perylene (mg/kg)	0.017				
	Benzo(k)fluoranthene (mg/kg)	<0.010				
	Chrysene (mg/kg)	0.108				
	Dibenz(a,h)anthracene (mg/kg)	<0.0050				
	Fluoranthene (mg/kg)	0.024				
	Fluorene (mg/kg)	0.072				
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010				
	1-Methylnaphthalene (mg/kg)	0.379				
	2-Methylnaphthalene (mg/kg)	0.619				
	Naphthalene (mg/kg)	0.202				
	Perylene (mg/kg)	<0.010				
	Phenanthrene (mg/kg)	0.425				
	Pyrene (mg/kg)	0.033				
	Quinoline (mg/kg)	<0.050				
	Surrogate: d10-Acenaphthene (%)	82.5				
	Surrogate: d12-Chrysene (%)	93.9				

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-1	L2644311-2	L2644311-3	L2644311-4	L2644311-5
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21	16-SEP-21
	Sampled Time	09:00	09:30	10:00	09:30	11:15
	Client ID	RG_FO26_SE-1_2021-09-16_0900	RG_FO26_SE-2_2021-09-16_0930	RG_FO26_SE-3_2021-09-16_1000	RG_HENUP_SE-1_2021-09-16_0930	RG_HENUP_SE-2_2021-09-16_1115
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	75.3	101.1	94.4	82.4	77.4
	Surrogate: d10-Phenanthrene (%)	88.0	109.6	104.7	94.1	84.5
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	0.057	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	0.023	0.031	0.040	<0.020	<0.020
	IACR (CCME)	0.45	0.84	0.76	<0.15	0.19

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-6	L2644311-7	L2644311-8	L2644311-9	L2644311-10
	Description	SE	SE	SE	SE	SE
	Sampled Date	16-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21	19-SEP-21
	Sampled Time	13:30	09:15	10:15	11:15	12:15
	Client ID	RG_HENUP_SE-3_2021-09-16_1330	RG_FRUPO_SE-1_2021-09-19_0915	RG_FRUPO_SE-2_2021-09-19_1015	RG_FRUPO_SE-3_2021-09-19_1115	RG_FRUPO_SE-4_2021-09-19_1215
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	81.9	87.3	78.2	87.8	83.1
	Surrogate: d10-Phenanthrene (%)	93.1	96.1	92.1	101.0	92.0
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	<0.020	<0.020	0.027	0.026	0.042
	IACR (CCME)	<0.15	0.53	0.56	0.55	0.74

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2644311-11				
	Description	SE				
	Sampled Date	19-SEP-21				
	Sampled Time	13:15				
	Client ID	RG_FRUPO_SE-5_2021-09-19_1315				
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	81.6				
	Surrogate: d10-Phenanthrene (%)	91.6				
	IACR:Coarse	<0.050				
	IACR:Fine	<0.050				
	B(a)P Total Potency Equivalent (mg/kg)	0.024				
	IACR (CCME)	0.47				

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

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments
L2644311-11	Soil	Note: Watery Sample	
L2644311-3	Soil	Note: Watery Sample	
L2644311-4	Soil	Note: Watery Sample	
L2644311-5	Soil	Note: Watery Sample	
L2644311-6	Soil	Note: Watery Sample	
L2644311-7	Soil	Note: Watery Sample	
L2644311-8	Soil	Note: Watery Sample	

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Dibenz(a,h)anthracene	DUP-H	L2644311-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Pyrene	DUP-H,J	L2644311-1, -10, -11, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has High Moisture Content
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
PSAL	Limited sample was available for Particle Size Analysis (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217

A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.

C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2

Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)

C-TOT-LECO-SK	Soil	Total Carbon by combustion method	CSSS (2008) 21.2

The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.

HG-200.2-CVAA-CL	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.

IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-CL	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MOISTURE-CL	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C

PAH-TMB-H/A-MS-CL	Soil	PAH Tumbler Extraction (Hexane/Acetone)	EPA 3570/8270-GC/MS

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.

PH-1:2-CL	Soil	pH in soil (1:2 Soil:Water Extraction)	CSSS Ch. 16

Soil and de-ionized water (by volume) are mixed in a defined ratio. The slurry is allowed to stand, shaken, and then allowed to stand again prior to taking measurements. After equilibration, the pH of the liquid portion of the extract is measured by a pH meter. Field Measurement is recommended where accurate pH measurements are required, due to the 15 minute recommended hold time.

Reference Information

PSA-PIPET-DETAIL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1

Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.

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

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

Laboratory Definition Code	**Laboratory Location**
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

September FRO LAEMP

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Environmental

Quality Control Report

Workorder: L2644311 Report Date: 12-OCT-21

Client: Teck Coal Ltd.
421 Pine Avenue
Sparwood BC V0B 2G0

Contact: Mike Pope

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TIC-PCT-SK	**Soil**							
Batch R5610041								
WG3630720-1 DUP		**L2644311-3**						
Inorganic Carbon		1.68	1.69		%	0.6	20	05-OCT-21
WG3630720-4 IRM		**08-109_SOIL**						
Inorganic Carbon			96.3		%		80-120	05-OCT-21
WG3630720-2 LCS		**0.5**						
Inorganic Carbon			94.8		%		90-110	05-OCT-21
WG3630720-3 MB								
Inorganic Carbon			<0.050		%		0.05	05-OCT-21
C-TOT-LECO-SK	**Soil**							
Batch R5610920								
WG3628017-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			94.9		%		80-120	04-OCT-21
WG3628017-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			100.8		%		90-110	04-OCT-21
WG3628017-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	04-OCT-21
Batch R5613440								
WG3628027-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			107.2		%		80-120	04-OCT-21
WG3628027-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			99.98		%		90-110	04-OCT-21
WG3628027-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	04-OCT-21
HG-200.2-CVAA-CL	**Soil**							
Batch R5611541								
WG3631632-19 CRM		**TILL-2**						
Mercury (Hg)			80.0		%		70-130	06-OCT-21
WG3631632-24 CRM		**TILL-2**						
Mercury (Hg)			117.6		%		70-130	06-OCT-21
WG3631632-20 DUP		**L2644311-3**						
Mercury (Hg)		0.0445	0.0447		mg/kg	0.4	40	06-OCT-21
WG3631632-17 LCS								
Mercury (Hg)			80.0		%		80-120	06-OCT-21
WG3631632-22 LCS								
Mercury (Hg)			92.6		%		80-120	06-OCT-21
WG3631632-16 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	06-OCT-21
WG3631632-21 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-CL	**Soil**							
Batch R5611541								
WG3631632-21 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	06-OCT-21
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-19 CRM		**TILL-2**						
Aluminum (Al)			92.7		%		70-130	07-OCT-21
Antimony (Sb)			98.7		%		70-130	07-OCT-21
Arsenic (As)			104.3		%		70-130	07-OCT-21
Barium (Ba)			97.1		%		70-130	07-OCT-21
Beryllium (Be)			94.3		%		70-130	07-OCT-21
Bismuth (Bi)			92.6		%		70-130	07-OCT-21
Cadmium (Cd)			100.7		%		70-130	07-OCT-21
Calcium (Ca)			103.1		%		70-130	07-OCT-21
Chromium (Cr)			101.8		%		70-130	07-OCT-21
Cobalt (Co)			99.7		%		70-130	07-OCT-21
Copper (Cu)			99.5		%		70-130	07-OCT-21
Iron (Fe)			99.2		%		70-130	07-OCT-21
Lead (Pb)			93.9		%		70-130	07-OCT-21
Lithium (Li)			98.4		%		70-130	07-OCT-21
Magnesium (Mg)			95.3		%		70-130	07-OCT-21
Manganese (Mn)			94.1		%		70-130	07-OCT-21
Molybdenum (Mo)			102.2		%		70-130	07-OCT-21
Nickel (Ni)			100.6		%		70-130	07-OCT-21
Phosphorus (P)			94.7		%		70-130	07-OCT-21
Potassium (K)			95.1		%		70-130	07-OCT-21
Selenium (Se)			0.37		mg/kg		0.15-0.55	07-OCT-21
Silver (Ag)			0.25		mg/kg		0.16-0.36	07-OCT-21
Sodium (Na)			90.6		%		70-130	07-OCT-21
Strontium (Sr)			92.6		%		70-130	07-OCT-21
Thallium (Tl)			93.9		%		70-130	07-OCT-21
Tin (Sn)			2.3		mg/kg		0.2-4.2	07-OCT-21
Titanium (Ti)			100.4		%		70-130	07-OCT-21
Tungsten (W)			1.20		mg/kg		1-2	07-OCT-21
Uranium (U)			94.0		%		70-130	07-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-19 CRM		**TILL-2**						
Vanadium (V)			100.3		%		70-130	07-OCT-21
Zinc (Zn)			99.6		%		70-130	07-OCT-21
Zirconium (Zr)			96.7		%		70-130	07-OCT-21
WG3631632-24 CRM		**TILL-2**						
Aluminum (Al)			90.7		%		70-130	07-OCT-21
Antimony (Sb)			95.9		%		70-130	07-OCT-21
Arsenic (As)			102.4		%		70-130	07-OCT-21
Barium (Ba)			95.7		%		70-130	07-OCT-21
Beryllium (Be)			84.2		%		70-130	07-OCT-21
Bismuth (Bi)			90.2		%		70-130	07-OCT-21
Cadmium (Cd)			95.4		%		70-130	07-OCT-21
Calcium (Ca)			98.9		%		70-130	07-OCT-21
Chromium (Cr)			97.6		%		70-130	07-OCT-21
Cobalt (Co)			97.7		%		70-130	07-OCT-21
Copper (Cu)			95.3		%		70-130	07-OCT-21
Iron (Fe)			97.3		%		70-130	07-OCT-21
Lead (Pb)			92.9		%		70-130	07-OCT-21
Lithium (Li)			94.1		%		70-130	07-OCT-21
Magnesium (Mg)			97.2		%		70-130	07-OCT-21
Manganese (Mn)			91.9		%		70-130	07-OCT-21
Molybdenum (Mo)			96.0		%		70-130	07-OCT-21
Nickel (Ni)			94.5		%		70-130	07-OCT-21
Phosphorus (P)			95.1		%		70-130	07-OCT-21
Potassium (K)			87.2		%		70-130	07-OCT-21
Selenium (Se)			0.32		mg/kg		0.15-0.55	07-OCT-21
Silver (Ag)			0.26		mg/kg		0.16-0.36	07-OCT-21
Sodium (Na)			85.1		%		70-130	07-OCT-21
Strontium (Sr)			86.6		%		70-130	07-OCT-21
Thallium (Tl)			90.7		%		70-130	07-OCT-21
Tin (Sn)			2.1		mg/kg		0.2-4.2	07-OCT-21
Titanium (Ti)			93.8		%		70-130	07-OCT-21
Tungsten (W)			1.30		mg/kg		1-2	07-OCT-21
Uranium (U)			90.9		%		70-130	07-OCT-21
Vanadium (V)			95.8		%		70-130	07-OCT-21

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-24 CRM		**TILL-2**						
Zinc (Zn)			96.7		%		70-130	07-OCT-21
Zirconium (Zr)			100.9		%		70-130	07-OCT-21
WG3631632-20 DUP		**L2644311-3**						
Aluminum (Al)		6010	6040		mg/kg	0.5	40	07-OCT-21
Antimony (Sb)		0.59	0.63		mg/kg	6.3	30	07-OCT-21
Arsenic (As)		5.82	5.91		mg/kg	1.5	30	07-OCT-21
Barium (Ba)		145	151		mg/kg	4.7	40	07-OCT-21
Beryllium (Be)		0.53	0.53		mg/kg	0.3	30	07-OCT-21
Bismuth (Bi)		<0.20	<0.20	RPD-NA	mg/kg	N/A	30	07-OCT-21
Boron (B)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	07-OCT-21
Cadmium (Cd)		0.819	0.849		mg/kg	3.6	30	07-OCT-21
Calcium (Ca)		51600	53900		mg/kg	4.4	30	07-OCT-21
Chromium (Cr)		11.0	11.4		mg/kg	3.7	30	07-OCT-21
Cobalt (Co)		6.04	6.07		mg/kg	0.5	30	07-OCT-21
Copper (Cu)		14.6	14.5		mg/kg	0.4	30	07-OCT-21
Iron (Fe)		15000	15400		mg/kg	2.7	30	07-OCT-21
Lead (Pb)		9.06	9.14		mg/kg	0.9	40	07-OCT-21
Lithium (Li)		10.6	10.6		mg/kg	0.1	30	07-OCT-21
Magnesium (Mg)		11600	12800		mg/kg	10	30	07-OCT-21
Manganese (Mn)		448	464		mg/kg	3.6	30	07-OCT-21
Molybdenum (Mo)		1.41	1.55		mg/kg	9.6	40	07-OCT-21
Nickel (Ni)		20.3	20.5		mg/kg	0.6	30	07-OCT-21
Phosphorus (P)		1340	1380		mg/kg	2.6	30	07-OCT-21
Potassium (K)		1300	1330		mg/kg	2.6	40	07-OCT-21
Selenium (Se)		0.93	0.96		mg/kg	3.0	30	07-OCT-21
Silver (Ag)		0.18	0.19		mg/kg	3.5	40	07-OCT-21
Sodium (Na)		85	84		mg/kg	0.6	40	07-OCT-21
Strontium (Sr)		57.3	62.2		mg/kg	8.1	40	07-OCT-21
Sulfur (S)		<1000	<1000	RPD-NA	mg/kg	N/A	30	07-OCT-21
Thallium (Tl)		0.188	0.182		mg/kg	3.1	30	07-OCT-21
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	07-OCT-21
Titanium (Ti)		6.5	8.2		mg/kg	24	40	07-OCT-21
Tungsten (W)		<0.50	<0.50	RPD-NA	mg/kg	N/A	30	07-OCT-21
Uranium (U)		0.814	0.831		mg/kg	2.0	30	07-OCT-21

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-20 DUP		**L2644311-3**						
Vanadium (V)		22.9	23.3		mg/kg	1.8	30	07-OCT-21
Zinc (Zn)		93.9	94.7		mg/kg	0.8	30	07-OCT-21
Zirconium (Zr)		<1.0	<1.0	RPD-NA	mg/kg	N/A	30	07-OCT-21
WG3631632-17 LCS								
Aluminum (Al)			95.2		%		80-120	07-OCT-21
Antimony (Sb)			101.6		%		80-120	07-OCT-21
Arsenic (As)			95.5		%		80-120	07-OCT-21
Barium (Ba)			96.6		%		80-120	07-OCT-21
Beryllium (Be)			92.6		%		80-120	07-OCT-21
Bismuth (Bi)			95.8		%		80-120	07-OCT-21
Boron (B)			87.3		%		80-120	07-OCT-21
Cadmium (Cd)			95.0		%		80-120	07-OCT-21
Calcium (Ca)			93.6		%		80-120	07-OCT-21
Chromium (Cr)			98.7		%		80-120	07-OCT-21
Cobalt (Co)			97.6		%		80-120	07-OCT-21
Copper (Cu)			96.6		%		80-120	07-OCT-21
Iron (Fe)			101.2		%		80-120	07-OCT-21
Lead (Pb)			96.5		%		80-120	07-OCT-21
Lithium (Li)			94.1		%		80-120	07-OCT-21
Magnesium (Mg)			97.0		%		80-120	07-OCT-21
Manganese (Mn)			97.8		%		80-120	07-OCT-21
Molybdenum (Mo)			98.4		%		80-120	07-OCT-21
Nickel (Ni)			95.9		%		80-120	07-OCT-21
Phosphorus (P)			110.8		%		80-120	07-OCT-21
Potassium (K)			97.2		%		80-120	07-OCT-21
Selenium (Se)			92.2		%		80-120	07-OCT-21
Silver (Ag)			89.8		%		80-120	07-OCT-21
Sodium (Na)			92.9		%		80-120	07-OCT-21
Strontium (Sr)			88.4		%		80-120	07-OCT-21
Sulfur (S)			103.1		%		80-120	07-OCT-21
Thallium (Tl)			94.7		%		80-120	07-OCT-21
Tin (Sn)			96.1		%		80-120	07-OCT-21
Titanium (Ti)			96.9		%		80-120	07-OCT-21
Tungsten (W)			91.7		%		80-120	07-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-17 LCS								
Uranium (U)			91.3		%		80-120	07-OCT-21
Vanadium (V)			99.1		%		80-120	07-OCT-21
Zinc (Zn)			94.1		%		80-120	07-OCT-21
Zirconium (Zr)			93.8		%		80-120	07-OCT-21
WG3631632-22 LCS								
Aluminum (Al)			95.7		%		80-120	07-OCT-21
Antimony (Sb)			103.4		%		80-120	07-OCT-21
Arsenic (As)			96.9		%		80-120	07-OCT-21
Barium (Ba)			96.8		%		80-120	07-OCT-21
Beryllium (Be)			93.5		%		80-120	07-OCT-21
Bismuth (Bi)			93.8		%		80-120	07-OCT-21
Boron (B)			90.0		%		80-120	07-OCT-21
Cadmium (Cd)			94.3		%		80-120	07-OCT-21
Calcium (Ca)			95.7		%		80-120	07-OCT-21
Chromium (Cr)			96.3		%		80-120	07-OCT-21
Cobalt (Co)			95.9		%		80-120	07-OCT-21
Copper (Cu)			94.3		%		80-120	07-OCT-21
Iron (Fe)			99.0		%		80-120	07-OCT-21
Lead (Pb)			95.7		%		80-120	07-OCT-21
Lithium (Li)			93.5		%		80-120	07-OCT-21
Magnesium (Mg)			99.8		%		80-120	07-OCT-21
Manganese (Mn)			95.2		%		80-120	07-OCT-21
Molybdenum (Mo)			101.1		%		80-120	07-OCT-21
Nickel (Ni)			91.9		%		80-120	07-OCT-21
Phosphorus (P)			110.6		%		80-120	07-OCT-21
Potassium (K)			95.2		%		80-120	07-OCT-21
Selenium (Se)			97.3		%		80-120	07-OCT-21
Silver (Ag)			92.7		%		80-120	07-OCT-21
Sodium (Na)			92.8		%		80-120	07-OCT-21
Strontium (Sr)			89.7		%		80-120	07-OCT-21
Sulfur (S)			99.2		%		80-120	07-OCT-21
Thallium (Tl)			93.7		%		80-120	07-OCT-21
Tin (Sn)			96.1		%		80-120	07-OCT-21
Titanium (Ti)			104.5		%		80-120	07-OCT-21

Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-22 LCS								
Tungsten (W)			92.6		%		80-120	07-OCT-21
Uranium (U)			90.4		%		80-120	07-OCT-21
Vanadium (V)			98.8		%		80-120	07-OCT-21
Zinc (Zn)			95.8		%		80-120	07-OCT-21
Zirconium (Zr)			96.4		%		80-120	07-OCT-21
WG3631632-16 MB								
Aluminum (Al)			<50		mg/kg		50	07-OCT-21
Antimony (Sb)			<0.10		mg/kg		0.1	07-OCT-21
Arsenic (As)			<0.10		mg/kg		0.1	07-OCT-21
Barium (Ba)			<0.50		mg/kg		0.5	07-OCT-21
Beryllium (Be)			<0.10		mg/kg		0.1	07-OCT-21
Bismuth (Bi)			<0.20		mg/kg		0.2	07-OCT-21
Boron (B)			<5.0		mg/kg		5	07-OCT-21
Cadmium (Cd)			<0.020		mg/kg		0.02	07-OCT-21
Calcium (Ca)			<50		mg/kg		50	07-OCT-21
Chromium (Cr)			<0.50		mg/kg		0.5	07-OCT-21
Cobalt (Co)			<0.10		mg/kg		0.1	07-OCT-21
Copper (Cu)			<0.50		mg/kg		0.5	07-OCT-21
Iron (Fe)			<50		mg/kg		50	07-OCT-21
Lead (Pb)			<0.50		mg/kg		0.5	07-OCT-21
Lithium (Li)			<2.0		mg/kg		2	07-OCT-21
Magnesium (Mg)			<20		mg/kg		20	07-OCT-21
Manganese (Mn)			<1.0		mg/kg		1	07-OCT-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	07-OCT-21
Nickel (Ni)			<0.50		mg/kg		0.5	07-OCT-21
Phosphorus (P)			<50		mg/kg		50	07-OCT-21
Potassium (K)			<100		mg/kg		100	07-OCT-21
Selenium (Se)			<0.20		mg/kg		0.2	07-OCT-21
Silver (Ag)			<0.10		mg/kg		0.1	07-OCT-21
Sodium (Na)			<50		mg/kg		50	07-OCT-21
Strontium (Sr)			<0.50		mg/kg		0.5	07-OCT-21
Sulfur (S)			<1000		mg/kg		1000	07-OCT-21
Thallium (Tl)			<0.050		mg/kg		0.05	07-OCT-21
Tin (Sn)			<2.0		mg/kg		2	07-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-16 MB								
Titanium (Ti)			<1.0		mg/kg		1	07-OCT-21
Tungsten (W)			<0.50		mg/kg		0.5	07-OCT-21
Uranium (U)			<0.050		mg/kg		0.05	07-OCT-21
Vanadium (V)			<0.20		mg/kg		0.2	07-OCT-21
Zinc (Zn)			<2.0		mg/kg		2	07-OCT-21
Zirconium (Zr)			<1.0		mg/kg		1	07-OCT-21
WG3631632-21 MB								
Aluminum (Al)			<50		mg/kg		50	07-OCT-21
Antimony (Sb)			<0.10		mg/kg		0.1	07-OCT-21
Arsenic (As)			<0.10		mg/kg		0.1	07-OCT-21
Barium (Ba)			<0.50		mg/kg		0.5	07-OCT-21
Beryllium (Be)			<0.10		mg/kg		0.1	07-OCT-21
Bismuth (Bi)			<0.20		mg/kg		0.2	07-OCT-21
Boron (B)			<5.0		mg/kg		5	07-OCT-21
Cadmium (Cd)			<0.020		mg/kg		0.02	07-OCT-21
Calcium (Ca)			<50		mg/kg		50	07-OCT-21
Chromium (Cr)			<0.50		mg/kg		0.5	07-OCT-21
Cobalt (Co)			<0.10		mg/kg		0.1	07-OCT-21
Copper (Cu)			<0.50		mg/kg		0.5	07-OCT-21
Iron (Fe)			<50		mg/kg		50	07-OCT-21
Lead (Pb)			<0.50		mg/kg		0.5	07-OCT-21
Lithium (Li)			<2.0		mg/kg		2	07-OCT-21
Magnesium (Mg)			<20		mg/kg		20	07-OCT-21
Manganese (Mn)			<1.0		mg/kg		1	07-OCT-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	07-OCT-21
Nickel (Ni)			<0.50		mg/kg		0.5	07-OCT-21
Phosphorus (P)			<50		mg/kg		50	07-OCT-21
Potassium (K)			<100		mg/kg		100	07-OCT-21
Selenium (Se)			<0.20		mg/kg		0.2	07-OCT-21
Silver (Ag)			<0.10		mg/kg		0.1	07-OCT-21
Sodium (Na)			<50		mg/kg		50	07-OCT-21
Strontium (Sr)			<0.50		mg/kg		0.5	07-OCT-21
Sulfur (S)			<1000		mg/kg		1000	07-OCT-21
Thallium (Tl)			<0.050		mg/kg		0.05	07-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5614497								
WG3631632-21 MB								
Tin (Sn)			<2.0		mg/kg		2	07-OCT-21
Titanium (Ti)			<1.0		mg/kg		1	07-OCT-21
Tungsten (W)			<0.50		mg/kg		0.5	07-OCT-21
Uranium (U)			<0.050		mg/kg		0.05	07-OCT-21
Vanadium (V)			<0.20		mg/kg		0.2	07-OCT-21
Zinc (Zn)			<2.0		mg/kg		2	07-OCT-21
Zirconium (Zr)			<1.0		mg/kg		1	07-OCT-21
MOISTURE-CL	**Soil**							
Batch R5605880								
WG3628730-2 LCS								
Moisture			99.8		%		90-110	01-OCT-21
WG3628730-1 MB								
Moisture			<0.25		%		0.25	01-OCT-21
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-10 IRM		**ALS PAH RM2**						
Acenaphthene			89.7		%		60-130	01-OCT-21
Acenaphthylene			98.2		%		60-130	01-OCT-21
Anthracene			101.9		%		60-130	01-OCT-21
Acridine			88.5		%		60-130	01-OCT-21
Benz(a)anthracene			92.7		%		60-130	01-OCT-21
Benzo(a)pyrene			85.1		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			85.0		%		60-130	01-OCT-21
Benzo(e)pyrene			94.7		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			89.0		%		60-130	01-OCT-21
Benzo(k)fluoranthene			73.9		%		60-130	01-OCT-21
Chrysene			91.0		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			88.3		%		60-130	01-OCT-21
Fluoranthene			86.8		%		60-130	01-OCT-21
Fluorene			91.2		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			112.3		%		60-130	01-OCT-21
2-Methylnaphthalene			84.1		%		60-130	01-OCT-21
Naphthalene			78.9		%		50-130	01-OCT-21
Perylene			90.4		%		60-130	01-OCT-21
Phenanthrene			88.5		%		60-130	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-10 IRM		**ALS PAH RM2**						
Pyrene			88.8		%		60-130	01-OCT-21
1-Methylnaphthalene			85.4		%		60-130	01-OCT-21
WG3629474-14 IRM		**ALS PAH RM2**						
Acenaphthene			76.8		%		60-130	01-OCT-21
Acenaphthylene			83.8		%		60-130	01-OCT-21
Anthracene			90.7		%		60-130	01-OCT-21
Acridine			86.7		%		60-130	01-OCT-21
Benz(a)anthracene			80.8		%		60-130	01-OCT-21
Benzo(a)pyrene			79.2		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			74.7		%		60-130	01-OCT-21
Benzo(e)pyrene			80.6		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			75.2		%		60-130	01-OCT-21
Benzo(k)fluoranthene			64.2		%		60-130	01-OCT-21
Chrysene			78.5		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			70.1		%		60-130	01-OCT-21
Fluoranthene			74.6		%		60-130	01-OCT-21
Fluorene			78.3		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			93.0		%		60-130	01-OCT-21
2-Methylnaphthalene			75.9		%		60-130	01-OCT-21
Naphthalene			68.9		%		50-130	01-OCT-21
Perylene			83.6		%		60-130	01-OCT-21
Phenanthrene			77.6		%		60-130	01-OCT-21
Pyrene			77.3		%		60-130	01-OCT-21
1-Methylnaphthalene			72.8		%		60-130	01-OCT-21
WG3629474-18 IRM		**ALS PAH RM2**						
Acenaphthene			101.0		%		60-130	02-OCT-21
Acenaphthylene			99.6		%		60-130	02-OCT-21
Anthracene			112.9		%		60-130	02-OCT-21
Acridine			99.7		%		60-130	02-OCT-21
Benz(a)anthracene			98.0		%		60-130	02-OCT-21
Benzo(a)pyrene			85.8		%		60-130	02-OCT-21
Benzo(b&j)fluoranthene			91.2		%		60-130	02-OCT-21
Benzo(e)pyrene			98.3		%		60-130	02-OCT-21
Benzo(g,h,i)perylene			96.4		%		60-130	02-OCT-21
Benzo(k)fluoranthene			76.5		%		60-130	02-OCT-21

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-18 IRM		**ALS PAH RM2**						
Chrysene			95.1		%		60-130	02-OCT-21
Dibenz(a,h)anthracene			87.7		%		60-130	02-OCT-21
Fluoranthene			92.1		%		60-130	02-OCT-21
Fluorene			101.0		%		60-130	02-OCT-21
Indeno(1,2,3-c,d)pyrene			105.8		%		60-130	02-OCT-21
2-Methylnaphthalene			95.8		%		60-130	02-OCT-21
Naphthalene			89.5		%		50-130	02-OCT-21
Perylene			91.8		%		60-130	02-OCT-21
Phenanthrene			97.6		%		60-130	02-OCT-21
Pyrene			94.9		%		60-130	02-OCT-21
1-Methylnaphthalene			93.4		%		60-130	02-OCT-21
WG3629474-3 IRM		**ALS PAH RM2**						
Acenaphthene			77.6		%		60-130	30-SEP-21
Acenaphthylene			86.8		%		60-130	30-SEP-21
Anthracene			92.5		%		60-130	30-SEP-21
Acridine			91.4		%		60-130	30-SEP-21
Benz(a)anthracene			86.0		%		60-130	30-SEP-21
Benzo(a)pyrene			82.8		%		60-130	30-SEP-21
Benzo(b&j)fluoranthene			82.9		%		60-130	30-SEP-21
Benzo(e)pyrene			87.5		%		60-130	30-SEP-21
Benzo(g,h,i)perylene			77.9		%		60-130	30-SEP-21
Benzo(k)fluoranthene			63.5		%		60-130	30-SEP-21
Chrysene			84.1		%		60-130	30-SEP-21
Dibenz(a,h)anthracene			76.5		%		60-130	30-SEP-21
Fluoranthene			77.8		%		60-130	30-SEP-21
Fluorene			81.0		%		60-130	30-SEP-21
Indeno(1,2,3-c,d)pyrene			116.5		%		60-130	30-SEP-21
2-Methylnaphthalene			79.0		%		60-130	30-SEP-21
Naphthalene			76.2		%		50-130	30-SEP-21
Perylene			85.9		%		60-130	30-SEP-21
Phenanthrene			80.9		%		60-130	30-SEP-21
Pyrene			80.3		%		60-130	30-SEP-21
1-Methylnaphthalene			77.4		%		60-130	30-SEP-21
WG3629474-6 IRM		**ALS PAH RM2**						
Acenaphthene			88.0		%		60-130	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-6 IRM		**ALS PAH RM2**						
Acenaphthylene			89.4		%		60-130	01-OCT-21
Anthracene			98.4		%		60-130	01-OCT-21
Acridine			80.9		%		60-130	01-OCT-21
Benz(a)anthracene			86.4		%		60-130	01-OCT-21
Benzo(a)pyrene			80.4		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			78.9		%		60-130	01-OCT-21
Benzo(e)pyrene			84.8		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			78.5		%		60-130	01-OCT-21
Benzo(k)fluoranthene			68.1		%		60-130	01-OCT-21
Chrysene			85.6		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			75.4		%		60-130	01-OCT-21
Fluoranthene			81.8		%		60-130	01-OCT-21
Fluorene			90.2		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			110.5		%		60-130	01-OCT-21
2-Methylnaphthalene			81.7		%		60-130	01-OCT-21
Naphthalene			75.2		%		50-130	01-OCT-21
Perylene			68.0		%		60-130	01-OCT-21
Phenanthrene			85.5		%		60-130	01-OCT-21
Pyrene			84.4		%		60-130	01-OCT-21
1-Methylnaphthalene			81.5		%		60-130	01-OCT-21
WG3629474-13 LCS								
Acenaphthene			88.2		%		60-130	01-OCT-21
Acenaphthylene			86.5		%		60-130	01-OCT-21
Anthracene			92.3		%		60-130	01-OCT-21
Acridine			89.4		%		60-130	01-OCT-21
Benz(a)anthracene			91.8		%		60-130	01-OCT-21
Benzo(a)pyrene			84.1		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			85.9		%		60-130	01-OCT-21
Benzo(e)pyrene			90.2		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			85.5		%		60-130	01-OCT-21
Benzo(k)fluoranthene			86.8		%		60-130	01-OCT-21
Chrysene			87.6		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			81.2		%		60-130	01-OCT-21
Fluoranthene			86.1		%		60-130	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-13 LCS								
Fluorene			91.0		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			81.5		%		60-130	01-OCT-21
2-Methylnaphthalene			91.3		%		60-130	01-OCT-21
Naphthalene			90.1		%		50-130	01-OCT-21
Perylene			83.9		%		60-130	01-OCT-21
Phenanthrene			93.3		%		60-130	01-OCT-21
Pyrene			88.3		%		60-130	01-OCT-21
1-Methylnaphthalene			90.1		%		60-130	01-OCT-21
Quinoline			82.6		%		60-130	01-OCT-21
WG3629474-17 LCS								
Acenaphthene			102.3		%		60-130	02-OCT-21
Acenaphthylene			98.2		%		60-130	02-OCT-21
Anthracene			102.3		%		60-130	02-OCT-21
Acridine			96.5		%		60-130	02-OCT-21
Benz(a)anthracene			101.9		%		60-130	02-OCT-21
Benzo(a)pyrene			90.0		%		60-130	02-OCT-21
Benzo(b&j)fluoranthene			96.3		%		60-130	02-OCT-21
Benzo(e)pyrene			99.9		%		60-130	02-OCT-21
Benzo(g,h,i)perylene			100.5		%		60-130	02-OCT-21
Benzo(k)fluoranthene			91.4		%		60-130	02-OCT-21
Chrysene			99.0		%		60-130	02-OCT-21
Dibenz(a,h)anthracene			91.3		%		60-130	02-OCT-21
Fluoranthene			100.6		%		60-130	02-OCT-21
Fluorene			100.3		%		60-130	02-OCT-21
Indeno(1,2,3-c,d)pyrene			82.0		%		60-130	02-OCT-21
2-Methylnaphthalene			101.4		%		60-130	02-OCT-21
Naphthalene			100.7		%		50-130	02-OCT-21
Perylene			92.7		%		60-130	02-OCT-21
Phenanthrene			103.0		%		60-130	02-OCT-21
Pyrene			101.9		%		60-130	02-OCT-21
1-Methylnaphthalene			100.7		%		60-130	02-OCT-21
Quinoline			91.8		%		60-130	02-OCT-21
COMMENTS: Watery Sample								
WG3629474-2 LCS								
Acenaphthene			106.1		%		60-130	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-2 LCS								
Acenaphthylene			102.8		%		60-130	30-SEP-21
Anthracene			109.4		%		60-130	30-SEP-21
Acridine			101.3		%		60-130	30-SEP-21
Benz(a)anthracene			113.1		%		60-130	30-SEP-21
Benzo(a)pyrene			105.6		%		60-130	30-SEP-21
Benzo(b&j)fluoranthene			107.8		%		60-130	30-SEP-21
Benzo(e)pyrene			111.7		%		60-130	30-SEP-21
Benzo(g,h,i)perylene			104.6		%		60-130	30-SEP-21
Benzo(k)fluoranthene			106.2		%		60-130	30-SEP-21
Chrysene			106.4		%		60-130	30-SEP-21
Dibenz(a,h)anthracene			99.9		%		60-130	30-SEP-21
Fluoranthene			104.3		%		60-130	30-SEP-21
Fluorene			105.2		%		60-130	30-SEP-21
Indeno(1,2,3-c,d)pyrene			105.8		%		60-130	30-SEP-21
2-Methylnaphthalene			106.2		%		60-130	30-SEP-21
Naphthalene			104.1		%		50-130	30-SEP-21
Perylene			103.6		%		60-130	30-SEP-21
Phenanthrene			109.9		%		60-130	30-SEP-21
Pyrene			107.9		%		60-130	30-SEP-21
1-Methylnaphthalene			104.3		%		60-130	30-SEP-21
Quinoline			97.2		%		60-130	30-SEP-21
WG3629474-5 LCS								
Acenaphthene			90.4		%		60-130	01-OCT-21
Acenaphthylene			86.8		%		60-130	01-OCT-21
Anthracene			91.2		%		60-130	01-OCT-21
Acridine			88.0		%		60-130	01-OCT-21
Benz(a)anthracene			92.4		%		60-130	01-OCT-21
Benzo(a)pyrene			86.5		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			87.4		%		60-130	01-OCT-21
Benzo(e)pyrene			92.7		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			86.3		%		60-130	01-OCT-21
Benzo(k)fluoranthene			87.5		%		60-130	01-OCT-21
Chrysene			90.4		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			81.5		%		60-130	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-5 LCS								
Fluoranthene			88.9		%		60-130	01-OCT-21
Fluorene			89.6		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			91.1		%		60-130	01-OCT-21
2-Methylnaphthalene			89.1		%		60-130	01-OCT-21
Naphthalene			90.1		%		50-130	01-OCT-21
Perylene			85.8		%		60-130	01-OCT-21
Phenanthrene			91.9		%		60-130	01-OCT-21
Pyrene			89.6		%		60-130	01-OCT-21
1-Methylnaphthalene			87.4		%		60-130	01-OCT-21
Quinoline			79.0		%		60-130	01-OCT-21
WG3629474-9 LCS								
Acenaphthene			102.9		%		60-130	01-OCT-21
Acenaphthylene			99.8		%		60-130	01-OCT-21
Anthracene			106.0		%		60-130	01-OCT-21
Acridine			99.6		%		60-130	01-OCT-21
Benz(a)anthracene			101.2		%		60-130	01-OCT-21
Benzo(a)pyrene			94.2		%		60-130	01-OCT-21
Benzo(b&j)fluoranthene			95.9		%		60-130	01-OCT-21
Benzo(e)pyrene			101.4		%		60-130	01-OCT-21
Benzo(g,h,i)perylene			100.0		%		60-130	01-OCT-21
Benzo(k)fluoranthene			99.6		%		60-130	01-OCT-21
Chrysene			102.0		%		60-130	01-OCT-21
Dibenz(a,h)anthracene			88.8		%		60-130	01-OCT-21
Fluoranthene			101.9		%		60-130	01-OCT-21
Fluorene			104.5		%		60-130	01-OCT-21
Indeno(1,2,3-c,d)pyrene			104.6		%		60-130	01-OCT-21
2-Methylnaphthalene			103.4		%		60-130	01-OCT-21
Naphthalene			101.8		%		50-130	01-OCT-21
Perylene			93.7		%		60-130	01-OCT-21
Phenanthrene			107.6		%		60-130	01-OCT-21
Pyrene			103.0		%		60-130	01-OCT-21
1-Methylnaphthalene			99.0		%		60-130	01-OCT-21
Quinoline			91.2		%		60-130	01-OCT-21
WG3629474-1 MB								
Acenaphthene			<0.0050		mg/kg		0.005	30-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-1 MB								
Acenaphthylene			<0.0050		mg/kg		0.005	30-SEP-21
Anthracene			<0.0040		mg/kg		0.004	30-SEP-21
Acridine			<0.010		mg/kg		0.01	30-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	30-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	30-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	30-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	30-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	30-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	30-SEP-21
Chrysene			<0.010		mg/kg		0.01	30-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	30-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	30-SEP-21
Fluorene			<0.010		mg/kg		0.01	30-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	30-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	30-SEP-21
Naphthalene			<0.010		mg/kg		0.01	30-SEP-21
Perylene			<0.010		mg/kg		0.01	30-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	30-SEP-21
Pyrene			<0.010		mg/kg		0.01	30-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	30-SEP-21
Quinoline			<0.050		mg/kg		0.05	30-SEP-21
Surrogate: d8-Naphthalene			80.6		%		50-130	30-SEP-21
Surrogate: d10-Acenaphthene			80.3		%		60-130	30-SEP-21
Surrogate: d10-Phenanthrene			87.6		%		60-130	30-SEP-21
Surrogate: d12-Chrysene			88.5		%		60-130	30-SEP-21
WG3629474-11 MB								
Acenaphthene			<0.0050		mg/kg		0.005	01-OCT-21
Acenaphthylene			<0.0050		mg/kg		0.005	01-OCT-21
Anthracene			<0.0040		mg/kg		0.004	01-OCT-21
Acridine			<0.010		mg/kg		0.01	01-OCT-21
Benz(a)anthracene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-11 MB								
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Chrysene			<0.010		mg/kg		0.01	01-OCT-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	01-OCT-21
Fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Fluorene			<0.010		mg/kg		0.01	01-OCT-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	01-OCT-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	01-OCT-21
Naphthalene			<0.010		mg/kg		0.01	01-OCT-21
Perylene			<0.010		mg/kg		0.01	01-OCT-21
Phenanthrene			<0.010		mg/kg		0.01	01-OCT-21
Pyrene			<0.010		mg/kg		0.01	01-OCT-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	01-OCT-21
Quinoline			<0.050		mg/kg		0.05	01-OCT-21
Surrogate: d8-Naphthalene			76.4		%		50-130	01-OCT-21
Surrogate: d10-Acenaphthene			78.0		%		60-130	01-OCT-21
Surrogate: d10-Phenanthrene			83.7		%		60-130	01-OCT-21
Surrogate: d12-Chrysene			82.1		%		60-130	01-OCT-21
WG3629474-15 MB								
Acenaphthene			<0.0050		mg/kg		0.005	01-OCT-21
Acenaphthylene			<0.0050		mg/kg		0.005	01-OCT-21
Anthracene			<0.0040		mg/kg		0.004	01-OCT-21
Acridine			<0.010		mg/kg		0.01	01-OCT-21
Benz(a)anthracene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Chrysene			<0.010		mg/kg		0.01	01-OCT-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	01-OCT-21
Fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Fluorene			<0.010		mg/kg		0.01	01-OCT-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-15 MB								
2-Methylnaphthalene			<0.010		mg/kg		0.01	01-OCT-21
Naphthalene			<0.010		mg/kg		0.01	01-OCT-21
Perylene			<0.010		mg/kg		0.01	01-OCT-21
Phenanthrene			<0.010		mg/kg		0.01	01-OCT-21
Pyrene			<0.010		mg/kg		0.01	01-OCT-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	01-OCT-21
Quinoline			<0.050		mg/kg		0.05	01-OCT-21
Surrogate: d8-Naphthalene			81.0		%		50-130	01-OCT-21
Surrogate: d10-Acenaphthene			84.4		%		60-130	01-OCT-21
Surrogate: d10-Phenanthrene			93.3		%		60-130	01-OCT-21
Surrogate: d12-Chrysene			96.2		%		60-130	01-OCT-21
WG3629474-7 MB								
Acenaphthene			<0.0050		mg/kg		0.005	01-OCT-21
Acenaphthylene			<0.0050		mg/kg		0.005	01-OCT-21
Anthracene			<0.0040		mg/kg		0.004	01-OCT-21
Acridine			<0.010		mg/kg		0.01	01-OCT-21
Benz(a)anthracene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	01-OCT-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Chrysene			<0.010		mg/kg		0.01	01-OCT-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	01-OCT-21
Fluoranthene			<0.010		mg/kg		0.01	01-OCT-21
Fluorene			<0.010		mg/kg		0.01	01-OCT-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	01-OCT-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	01-OCT-21
Naphthalene			<0.010		mg/kg		0.01	01-OCT-21
Perylene			<0.010		mg/kg		0.01	01-OCT-21
Phenanthrene			<0.010		mg/kg		0.01	01-OCT-21
Pyrene			<0.010		mg/kg		0.01	01-OCT-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	01-OCT-21
Quinoline			<0.050		mg/kg		0.05	01-OCT-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5606098								
WG3629474-7 MB								
Surrogate: d8-Naphthalene			76.0		%		50-130	01-OCT-21
Surrogate: d10-Acenaphthene			82.9		%		60-130	01-OCT-21
Surrogate: d10-Phenanthrene			93.2		%		60-130	01-OCT-21
Surrogate: d12-Chrysene			96.2		%		60-130	01-OCT-21
PH-1:2-CL	**Soil**							
Batch R5608982								
WG3631678-6 DUP		**L2644311-1**						
pH (1:2 soil:water)		7.67	7.72	J	pH	0.05	0.2	05-OCT-21
WG3631678-2 IRM		**SAL-STD11**						
pH (1:2 soil:water)			7.95		pH		7.7-8.3	05-OCT-21
WG3631678-5 IRM		**SAL-STD11**						
pH (1:2 soil:water)			7.96		pH		7.7-8.3	05-OCT-21
WG3631678-1 LCS								
pH (1:2 soil:water)			7.00		pH		6.8-7.2	05-OCT-21
WG3631678-4 LCS								
pH (1:2 soil:water)			7.02		pH		6.8-7.2	05-OCT-21
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5609936								
WG3628639-1 DUP		**L2644311-6**						
% Gravel (>2mm)		<1.0	<1.0	RPD-NA	%	N/A	25	05-OCT-21
% Sand (2.00mm - 1.00mm)		3.5	2.7	J	%	0.8	5	05-OCT-21
% Sand (1.00mm - 0.50mm)		13.0	12.2	J	%	0.8	5	05-OCT-21
% Sand (0.50mm - 0.25mm)		33.9	33.1	J	%	0.7	5	05-OCT-21
% Sand (0.25mm - 0.125mm)		26.0	26.6	J	%	0.7	5	05-OCT-21
% Sand (0.125mm - 0.063mm)		9.1	10.3	J	%	1.2	5	05-OCT-21
% Silt (0.063mm - 0.0312mm)		6.3	6.5	J	%	0.2	5	05-OCT-21
% Silt (0.0312mm - 0.004mm)		6.7	6.8	J	%	0.1	5	05-OCT-21
% Clay (<4um)		1.6	1.7	J	%	0.1	5	05-OCT-21
WG3628639-2 IRM		**2020-PSA_SOIL**						
% Sand (2.00mm - 1.00mm)			2.6		%		0-7.2	05-OCT-21
% Sand (1.00mm - 0.50mm)			3.9		%		0-8.7	05-OCT-21
% Sand (0.50mm - 0.25mm)			8.8		%		4-14	05-OCT-21
% Sand (0.25mm - 0.125mm)			16.2		%		11.7-21.7	05-OCT-21
% Sand (0.125mm - 0.063mm)			13.4		%		8.4-18.4	05-OCT-21
% Silt (0.063mm - 0.0312mm)			12.6		%		8.5-18.5	05-OCT-21

ALS Environmental

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5609936								
WG3628639-2 IRM		**2020-PSA_SOIL**						
% Silt (0.0312mm - 0.004mm)			20.9		%		15.1-25.1	05-OCT-21
% Clay (<4um)			21.5		%		16.5-26.5	05-OCT-21

Quality Control Report

Legend:

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

Sample Parameter Qualifier Definitions:

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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

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

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Mike Pope
Email	mike.pope@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
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Province	AB
Postal Code	T1Y 7B5
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	Excel	PDF	EDD
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teckcoal@equisonline.com			x
[illegible]@minnow.ca	x	x	x
[illegible]@teck.com	x	x	x
pschnurr@minnow.ca	x	x	x

L2644311-COFC

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	C-TOC-SK	MET-CCME+FULL-CL	MOISTURE-CL - % Moisture	PSA-PIPET-DETAIL-SK Particle Size	PAH-TMB-D/A-MS-CL-PAHs
Filt.								N	N	N	N	N
Preserv.								NONE	NONE	NONE	NONE	NONE
RG_FO26_SE-1_2021-09-16_0900	RG_FO26	SE	No	9/16/2021	900	G	2	X	X	X	X	X
RG_FO26_SE-2_2021-09-16_0930	RG_FO26	SE	No	9/16/2021	930	G	2	X	X	X	X	X
RG_FO26_SE-3_2021-09-16_1000	RG_FO26	SE	No	9/16/2021	1000	G	2	X	X	X	X	X
RG_HENUP_SE-1_2021-09-16_0930	RG_HENUP	SE	No	9/16/2021	930	G	2	X	X	X	X	X
RG_HENUP_SE-2_2021-09-16_1115	RG_HENUP	SE	No	9/16/2021	1115	G	2	X	X	X	X	X
RG_HENUP_SE-3_2021-09-16_1330	RG_HENUP	SE	No	9/16/2021	1330	G	2	X	X	X	X	X
RG_FRUPO_SE-1_2021-09-19_0915	RG_FRUPO	SE	No	9/19/2021	915	G	2	X	X	X	X	X
RG_FRUPO_SE-2_2021-09-19_1015	RG_FRUPO	SE	No	9/19/2021	1015	G	2	X	X	X	X	X
RG_FRUPO_SE-3_2021-09-19_1115	RG_FRUPO	SE	No	9/19/2021	1115	G	2	X	X	X	X	X
RG_FRUPO_SE-4_2021-09-19_1215	RG_FRUPO	SE	No	9/19/2021	1215	G	2	X	X	X	X	X
RG_FRUPO_SE-5_2021-09-19_1315	RG_FRUPO	SE	No	9/19/2021	1315	G	2	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
Jennifer Ings/Minnow	################	[signature]	9/21 [illegible]

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature	[signature]	Date/Time	September 20, 2021

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **CG2102041**	Page	: 1 of 12
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FRO	Date Samples Received	: 16-Jun-2021 08:30
PO	: VPO00748510	Date Analysis Commenced	: 16-Jun-2021
C-O-C number	: FRO LAEMP JUNE 2021	Issue Date	: 28-Jun-2021 08:57
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Clarie Tejano	Laboratory Assistant	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Sample Comments

Sample	*Client Id*	*Comment*
CG2102041-001	RG_FO26_WS_LAEMP_FRO_ 2021-06-14_1025	PLEASE RUN D-Hg FROM D-METALS BOTTLE
CG2102041-001	RG_FO26_WS_LAEMP_FRO_ 2021-06-14_1025	Sample 1: Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

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

HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246
				Client sampling date / time	14-Jun-2021 10:25	15-Jun-2021 08:05	14-Jun-2021 14:35	14-Jun-2021 13:20	15-Jun-2021 12:46
					CG2102041-001	CG2102041-002	CG2102041-003	CG2102041-004	CG2102041-005
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	111	108	114	106	111
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	2.8	4.0	4.8	4.2	4.4
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	113	112	119	110	115
conductivity	----	E100	2.0	µS/cm	234	225	305	273	326
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	128	126	168	152	179
oxidation-reduction potential [ORP]	----	E125	0.10	mV	411	410	401	400	463
pH	----	E108	0.10	pH units	8.32	8.35	8.37	8.37	8.37
solids, total dissolved [TDS]	----	E162	10	mg/L	144	249	208 HTD	183	221
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.8	4.0	2.2	2.1	7.1
turbidity	----	E121	0.10	NTU	0.54	0.99	1.17	1.34	2.06
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	135	132	140	129	135
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	1.7	2.4	2.9	2.5	2.6
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0067	0.0059	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0.11	0.11	0.16
fluoride	16984-48-8	E235.F	0.020	mg/L	0.136	0.136	0.200	0.191	0.181
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.132	0.135	0.294	0.246	0.347
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0442	0.0398	1.24	0.819	2.87
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	0.0017
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0038	0.0027	<0.0010	<0.0010	0.0011
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0070	0.0020	0.0029	0.0034
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.7	12.5	43.8	34.7	50.0
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.21	1.22	1.22	1.08	1.02

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246
				Client sampling date / time	14-Jun-2021 10:25	15-Jun-2021 08:05	14-Jun-2021 14:35	14-Jun-2021 13:20	15-Jun-2021 12:46
					CG2102041-001	CG2102041-002	CG2102041-003	CG2102041-004	CG2102041-005
					Result	Result	Result	Result	Result
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.39	1.29	1.36	1.13	1.03
Ion Balance									
anion sum	----	EC101	0.10	meq/L	2.55	2.51	3.39	2.99	3.56
cation sum	----	EC101	0.10	meq/L	2.59	2.55	3.40	3.07	3.61
ion balance (cations/anions ratio)	----	EC101	0.010	%	102	102	100	103	101
ion balance (cation-anion difference)	----	EC101	0.010	%	0.778	0.790	0.147	1.32	0.697
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0234	0.0546	0.0144	0.0148	0.0329
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	0.00020	0.00016	0.00017	0.00017
barium, total	7440-39-3	E420	0.00010	mg/L	0.0311	0.0393	0.0343	0.0258	0.0299
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0098	0.0300	0.0154	0.0159	0.0172
calcium, total	7440-70-2	E420	0.050	mg/L	33.1	35.1	43.8	40.7	46.6
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	0.00027	0.00016	0.00016	0.00016
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.025	0.119	0.014	0.016	0.036
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000170	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0012	0.0013	0.0048	0.0035	0.0115
magnesium, total	7439-95-4	E420	0.0050	mg/L	9.14	9.22	13.6	11.5	14.7
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00206	0.0126	0.00150	0.00219	0.00286
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00079	0.00092	0.00064	0.00073	0.00070
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000664	0.000566	0.000714	0.000591	0.000674
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00052	0.00054	<0.00050	0.00154
potassium, total	7440-09-7	E420	0.050	mg/L	0.379	0.361	0.516	0.440	0.627
selenium, total	7782-49-2	E420	0.050	µg/L	0.449	0.488	7.36	4.99	9.36

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246
				Client sampling date / time	14-Jun-2021 10:25	15-Jun-2021 08:05	14-Jun-2021 14:35	14-Jun-2021 13:20	15-Jun-2021 12:46
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**CG2102041-001**	**CG2102041-002**	**CG2102041-003**	**CG2102041-004**	**CG2102041-005**
					Result	Result	Result	Result	Result
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	1.93	1.93	1.56	1.49	1.53
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	0.627	0.572	0.542	0.489	0.674
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0703	0.0690	0.0774	0.0753	0.0775
sulfur, total	7704-34-9	E420	0.50	mg/L	4.75	4.32	14.8	12.1	17.1
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00060 DLM	<0.00030	<0.00030	0.00055
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000376	0.000356	0.000695	0.000603	0.000900
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0376	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0029	0.0025	0.0026	0.0031	0.0022
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00013	0.00010	0.00011	0.00012
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0317	0.0370	0.0351	0.0258	0.0309
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0072	0.0067	0.0141	0.0076	0.0154
calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.2	35.3	44.3	41.1	46.3
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00013	0.00010	0.00012	0.00011	<0.00010
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00023	0.00023	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0012	0.0013	0.0048	0.0036	0.0114
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.71	9.20	14.0	12.0	15.3
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00064	0.00022	0.00067	0.00100	0.00072

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246
				Client sampling date / time	14-Jun-2021 10:25	15-Jun-2021 08:05	14-Jun-2021 14:35	14-Jun-2021 13:20	15-Jun-2021 12:46
Analyte	CAS Number	Method	LOR	Unit	CG2102041-001	CG2102041-002	CG2102041-003	CG2102041-004	CG2102041-005
					Result	Result	Result	Result	Result
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050 DLM	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000587	0.000605	0.000665	0.000580	0.000671
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00123
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.361	0.344	0.521	0.437	0.618
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.464	0.513	7.36	4.92	9.20
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.85	1.83	1.48	1.38	1.44
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.550	0.537	0.505	0.453	0.631
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0732	0.0687	0.0765	0.0756	0.0798
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.59	4.38	14.8	11.4	17.1
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000371	0.000344	0.000691	0.000589	0.000899
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0017	<0.0010	0.0014	<0.0010
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	----	----	----
				Client sampling date / time	14-Jun-2021 15:30	15-Jun-2021 11:27	----	----	----
					CG2102041-006	CG2102041-007	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	118	120	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.6	6.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	123	126	----	----	----
conductivity	----	E100	2.0	µS/cm	396	373	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	219	205	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	383	442	----	----	----
pH	----	E108	0.10	pH units	8.36	8.41	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	265 HTD	251	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.6	7.9	----	----	----
turbidity	----	E121	0.10	NTU	1.54	1.98	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	144	146	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	2.8	3.6	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0092	0.0282	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.23	0.24	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.188	0.180	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.281	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	4.59	3.90	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0022	0.0034	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0030	0.0054	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	70.7	64.5	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.48	1.10	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.42	1.03	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	----	----	----
				Client sampling date / time	14-Jun-2021 15:30	15-Jun-2021 11:27	----	----	----
					CG2102041-006	CG2102041-007	--------	--------	--------
					Result	Result	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	4.27	4.16	----	----	----
cation sum	----	EC101	0.10	meq/L	4.43	4.15	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	104	99.8	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.84	0.120	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0281	0.0320	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	0.00014	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00020	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0352	0.0349	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0342	0.0385	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	53.6	50.8	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00016	0.00020	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.16	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.026	0.054	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	0.000055	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0151	0.0139	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	18.7	18.3	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00232	0.00847	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00069	0.00096	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000885	0.000870	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00227	0.00238	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.852	0.845	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	15.5	12.9	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	1.67	1.66	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	----	----	----
				Client sampling date / time	14-Jun-2021 15:30	15-Jun-2021 11:27	----	----	----
					CG2102041-006	CG2102041-007	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
sodium, total	17341-25-2	E420	0.050	mg/L	0.860	0.807	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0881	0.0850	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	24.9	22.7	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00060 DLM	0.00063	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00115	0.00108	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0025	0.0029	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00012	0.00013	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00012	0.00013	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0363	0.0353	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0221	0.0246	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	55.4	51.0	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	0.00011	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.11	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00024	0.00027	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0147	0.0136	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.6	18.8	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00101	0.00436	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000839	0.000871	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	----	----	----
				Client sampling date / time	14-Jun-2021 15:30	15-Jun-2021 11:27	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2102041-006	CG2102041-007	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00192	0.00194	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.810	0.840	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	15.2	12.6	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.50	1.47	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.786	0.748	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0882	0.0832	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.9	21.8	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00113	0.00107	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0020	0.0033	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2102041**	Page	: 1 of 30
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FRO	Date Samples Received	: 16-Jun-2021 08:30
PO	: VPO00748510	Issue Date	: 28-Jun-2021 08:57
C-O-C number	: FRO LAEMP JUNE 2021		
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Dissolved Metals	QC-MRG3-226498001	----	magnesium, dissolved	7439-95-4	E421	0.0050 B mg/L	0.005 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	*Description*
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E298	14-Jun-2021	25-Jun-2021	----	11 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E298	15-Jun-2021	25-Jun-2021	----	11 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E298	15-Jun-2021	25-Jun-2021	----	11 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E298	14-Jun-2021	25-Jun-2021	----	11 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E298	15-Jun-2021	25-Jun-2021	----	11 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E298	14-Jun-2021	25-Jun-2021	----	12 days	✓	25-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E298	14-Jun-2021	25-Jun-2021	----	12 days	✓	25-Jun-2021	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.Br-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.Br-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.Br-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.Br-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.Br-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.Br-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.Br-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.Cl-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.Cl-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.Cl-L	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.Cl-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.Cl-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.Cl-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.Cl-L	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E378-U	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E378-U	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E378-U	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E378-U	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E378-U	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E378-U	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E378-U	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.F	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.F	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.F	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.F	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.F	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.F	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.F	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.NO3-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.NO3-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.NO3-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.NO3-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.NO3-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.NO3-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.NO3-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.NO2-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.NO2-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.NO2-L	15-Jun-2021	----	----	----		16-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.NO2-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.NO2-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.NO2-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.NO2-L	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E235.SO4	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E235.SO4	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E235.SO4	15-Jun-2021	----	----	----		16-Jun-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E235.SO4	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E235.SO4	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E235.SO4	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E235.SO4	14-Jun-2021	----	----	----		16-Jun-2021	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E318	15-Jun-2021	21-Jun-2021	----	6 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E318	15-Jun-2021	21-Jun-2021	----	6 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E318	14-Jun-2021	21-Jun-2021	----	7 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E318	14-Jun-2021	21-Jun-2021	----	7 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E318	14-Jun-2021	21-Jun-2021	----	7 days	✓	21-Jun-2021	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E318	14-Jun-2021	21-Jun-2021	----	7 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E318	15-Jun-2021	21-Jun-2021	----	7 days	✓	21-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E372-U	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E372-U	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E372-U	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E372-U	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E372-U	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E372-U	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E372-U	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E421.Cr-L	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E421.Cr-L	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E421.Cr-L	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E421.Cr-L	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E421.Cr-L	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E421.Cr-L	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E421.Cr-L	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E509	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E509	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E509	15-Jun-2021	22-Jun-2021	----	7 days	✓	22-Jun-2021	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE dissolved (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E509	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	----	1 days	
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E509	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E509	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E509	14-Jun-2021	22-Jun-2021	----	8 days	✓	22-Jun-2021	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E421	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E421	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E421	15-Jun-2021	21-Jun-2021	----	7 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E421	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E421	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E421	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E421	14-Jun-2021	21-Jun-2021	----	8 days	✓	22-Jun-2021	180 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E358-L	14-Jun-2021	23-Jun-2021	----	10 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E358-L	14-Jun-2021	23-Jun-2021	----	10 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E358-L	14-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E358-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E358-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E358-L	14-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E358-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E355-L	14-Jun-2021	23-Jun-2021	----	10 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E355-L	14-Jun-2021	23-Jun-2021	----	10 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E355-L	14-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E355-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E355-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E355-L	14-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E355-L	15-Jun-2021	23-Jun-2021	----	9 days	✓	23-Jun-2021	28 days	1 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E283	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E283	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E283	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E283	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E283	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E283	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E283	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E290	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E290	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E290	15-Jun-2021	----	----	----		22-Jun-2021	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E290	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E290	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E290	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E290	14-Jun-2021	----	----	----		22-Jun-2021	14 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E100	15-Jun-2021	----	----	----		22-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E100	15-Jun-2021	----	----	----		22-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E100	15-Jun-2021	----	----	----		22-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E100	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E100	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE										
RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E100	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E100	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Physical Tests : ORP by Electrode										
HDPE										
RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E125	15-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	190 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E125	15-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	192 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E125	15-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	195 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E125	14-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	212 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E125	14-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	212 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E125	14-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	214 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE										
RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E125	14-Jun-2021	----	----	----		23-Jun-2021	0.34 hrs	217 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : pH by Meter										
HDPE										
RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E108	15-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	161 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E108	15-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	163 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E108	15-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E108	14-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	183 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E108	14-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	183 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E108	14-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	185 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE										
RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E108	14-Jun-2021	----	----	----		22-Jun-2021	0.25 hrs	188 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E162	14-Jun-2021	----	----	----		18-Jun-2021	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E162	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E162	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E162	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E162	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E162	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E162	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E160-L	14-Jun-2021	----	----	----		18-Jun-2021	7 days	4 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E160-L	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E160-L	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E160-L	14-Jun-2021	----	----	----		18-Jun-2021	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E160-L	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E160-L	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E160-L	15-Jun-2021	----	----	----		20-Jun-2021	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E121	15-Jun-2021	----	----	----		17-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E121	15-Jun-2021	----	----	----		17-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E121	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E121	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E121	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E121	14-Jun-2021	----	----	----		16-Jun-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
Container / Client Sample ID(s)			*Preparation Date*	*Holding Times Rec*	*Holding Times Actual*	*Eval*	*Analysis Date*	*Holding Times Rec*	*Holding Times Actual*	*Eval*
Physical Tests : Turbidity by Nephelometry										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E121	15-Jun-2021	----	----	----		17-Jun-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E420.Cr-L	15-Jun-2021	----	----	----		22-Jun-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E420.Cr-L	15-Jun-2021	----	----	----		22-Jun-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E420.Cr-L	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E420.Cr-L	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E420.Cr-L	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E420.Cr-L	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E420.Cr-L	15-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E508-L	15-Jun-2021	----	----	----		22-Jun-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E508-L	15-Jun-2021	----	----	----		22-Jun-2021	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E508-L	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E508-L	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E508-L	14-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E508-L	15-Jun-2021	----	----	----		22-Jun-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E508-L	14-Jun-2021	----	----	----		22-Jun-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	E420	15-Jun-2021	----	----	----		22-Jun-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-06-15_1127	E420	15-Jun-2021	----	----	----		22-Jun-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	E420	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	E420	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	E420	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	E420	14-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	E420	15-Jun-2021	----	----	----		22-Jun-2021	180 days	8 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	226774	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	226810	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	230141	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	222822	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	222823	2	29	6.9	5.0	✓
Conductivity in Water	E100	226809	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226499	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	226743	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226498	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	228113	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	222808	2	29	6.9	5.0	✓
Fluoride in Water by IC	E235.F	222820	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	222824	2	29	6.9	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	222825	2	29	6.9	5.0	✓
ORP by Electrode	E125	227015	1	20	5.0	5.0	✓
pH by Meter	E108	226808	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	222821	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	224262	2	34	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	225163	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	225691	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	227002	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	225162	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	228126	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	224497	1	15	6.6	5.0	✓
Turbidity by Nephelometry	E121	222814	2	32	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	226774	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	226810	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	230141	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	222822	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	222823	2	29	6.9	5.0	✓
Conductivity in Water	E100	226809	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226499	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	226743	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226498	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	228113	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	222808	2	29	6.9	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	222820	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	222824	2	29	6.9	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	222825	2	29	6.9	5.0	✓
ORP by Electrode	E125	227015	1	20	5.0	5.0	✓
pH by Meter	E108	226808	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	222821	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	224262	2	34	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	225163	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	225691	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	227002	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	225162	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	228126	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	224497	1	15	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	224257	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	222814	2	32	6.2	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	226774	1	12	8.3	5.0	✓
Alkalinity Species by Titration	E290	226810	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	230141	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	222822	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	222823	2	29	6.9	5.0	✓
Conductivity in Water	E100	226809	1	12	8.3	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226499	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	226743	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226498	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	228113	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	222808	2	29	6.9	5.0	✓
Fluoride in Water by IC	E235.F	222820	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	222824	2	29	6.9	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	222825	2	29	6.9	5.0	✓
Sulfate in Water by IC	E235.SO4	222821	2	29	6.9	5.0	✓
TDS by Gravimetry	E162	224262	2	34	5.8	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	225163	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	225691	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	227002	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	225162	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	228126	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	224497	1	15	6.6	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	224257	2	31	6.4	5.0	✓
Turbidity by Nephelometry	E121	222814	2	32	6.2	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	230141	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	222822	2	29	6.9	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	222823	2	29	6.9	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226499	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	226743	2	37	5.4	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226498	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	228113	1	18	5.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	222808	2	29	6.9	5.0	✓
Fluoride in Water by IC	E235.F	222820	2	29	6.9	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	222824	2	29	6.9	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	222825	2	29	6.9	5.0	✓
Sulfate in Water by IC	E235.SO4	222821	2	29	6.9	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	225163	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	225691	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	227002	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	225162	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	228126	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	224497	1	15	6.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	“Hardness (as CaCO3), dissolved” is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. “Total Hardness” refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Vancouver - Environmental			

QUALITY CONTROL REPORT

Work Order	: **CG2102041**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FRO	Date Samples Received	: 16-Jun-2021 08:30
PO	: VPO00748510	Date Analysis Commenced	: 16-Jun-2021
C-O-C number	: FRO LAEMP JUNE 2021	Issue Date	: 28-Jun-2021 08:57
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 7		
No. of samples analysed	: 7		

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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Dee Lee	Analyst	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 222814)											
CG2102012-008	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 223353)											
CG2102038-013	Anonymous	turbidity	----	E121	0.10	NTU	19.3	19.5	1.03%	15%	----
Physical Tests (QC Lot: 224262)											
CG2102024-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	888	908	2.17%	20%	----
Physical Tests (QC Lot: 225578)											
CG2102038-013	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	140	161	21	Diff <2x LOR	----
Physical Tests (QC Lot: 226774)											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 226808)											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	pH	----	E108	0.10	pH units	8.32	8.35	0.360%	4%	----
Physical Tests (QC Lot: 226809)											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	conductivity	----	E100	2.0	µS/cm	234	231	1.29%	10%	----
Physical Tests (QC Lot: 226810)											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	111	108	2.19%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	2.8	4.2	1.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	113	112	0.886%	20%	----
Physical Tests (QC Lot: 227015)											
CG2102038-014	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	459	463	0.781%	15%	----
Anions and Nutrients (QC Lot: 222808)											
CG2102038-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222809)											
CG2102041-004	RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222820)											
CG2102038-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.068	0.066	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222821)											
CG2102038-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	18.5	18.3	1.04%	20%	----
Anions and Nutrients (QC Lot: 222822)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 222822) - continued											
CG2102038-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222823)											
CG2102038-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.64	1.62	1.35%	20%	----
Anions and Nutrients (QC Lot: 222824)											
CG2102038-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.269	0.268	0.708%	20%	----
Anions and Nutrients (QC Lot: 222825)											
CG2102038-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222826)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	fluoride	16984-48-8	E235.F	0.020	mg/L	0.191	0.188	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222827)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	34.7	34.5	0.469%	20%	----
Anions and Nutrients (QC Lot: 222828)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222829)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.11	0.10	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 222830)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.819	0.816	0.404%	20%	----
Anions and Nutrients (QC Lot: 222831)											
CG2102041-004	RG_FOUCL_WS_LAEMP_ FRO_2021-06-14_1320	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 224497)											
CG2102040-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 225691)											
CG2102038-008	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.082	0.090	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 230141)											
CG2102041-001	RG_FO26_WS_LAEMP_F RO_2021-06-14_1025	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 228113)											
CG2102041-001	RG_FO26_WS_LAEMP_F RO_2021-06-14_1025	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.21	1.22	0.01	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 228126)											
CG2102041-001	RG_FO26_WS_LAEMP_F RO_2021-06-14_1025	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.39	1.23	0.16	Diff <2x LOR	----
Total Metals (QC Lot: 225162)											
CG2102041-001	RG_FO26_WS_LAEMP_F RO_2021-06-14_1025	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0234	0.0213	0.0021	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 225162) - continued											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	0.00017	0.000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0311	0.0303	2.68%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0098 µg/L	0.0000092	0.0000006	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	33.1	33.3	0.700%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.025	0.023	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0012	0.0011	0.00001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	9.14	9.04	1.09%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00206	0.00200	2.71%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000664	0.000626	5.86%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.379	0.374	0.005	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.449 µg/L	0.000493	0.000044	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.93	1.96	1.54%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	0.627	0.622	0.656%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0703	0.0708	0.765%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	4.75	5.18	0.43	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000376	0.000371	1.38%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0376	0.0372	1.12%	20%	----
Total Metals (QC Lot: 225163)											
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	0.00019	0.000007	Diff <2x LOR	----
Total Metals (QC Lot: 227002)											
CG2102033-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00219 µg/L	2.19	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Dissolved Metals (QC Lot: 226498)											
CG2102066-010	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0019	0.00003	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	0.00018	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0438	0.0444	1.42%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0115 µg/L	0.0000118	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.8	66.7	0.157%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0058	0.0057	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	32.0	32.4	1.44%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00032	0.00038	0.00006	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000743	0.000723	2.69%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.763	0.790	3.46%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	27.0 µg/L	0.0274	1.34%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.88	1.87	0.534%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.15	1.16	1.48%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0975	0.0998	2.39%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	41.5	39.9	3.84%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00187	0.00189	1.12%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 226499)											
CG2102066-010	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00019	0.00021	0.00002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 226743)											
CG2102038-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 226744)											
CG2102041-005	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 222814)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 223353)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 224257)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 224262)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 225571)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 225578)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 226774)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 226809)						
conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 226810)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 222808)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 222809)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 222820)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 222821)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 222822)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 222823)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 222824)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 222824) - continued						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 222825)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 222826)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 222827)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 222828)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 222829)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 222830)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 222831)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 224497)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 225691)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 230141)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 228113)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 228126)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 225162)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 225162) - continued						
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 225163)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 227002)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 226498)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 226498) - continued						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	# 0.0050	B
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 226499)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 226743)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 226744)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	*Description*
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 222814)									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Physical Tests (QCLot: 223353)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 224257)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	97.3	85.0	115	----
Physical Tests (QCLot: 224262)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.0	85.0	115	----
Physical Tests (QCLot: 225571)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.8	85.0	115	----
Physical Tests (QCLot: 225578)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.7	85.0	115	----
Physical Tests (QCLot: 226774)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
Physical Tests (QCLot: 226808)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 226809)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	104	90.0	110	----
Physical Tests (QCLot: 226810)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 227015)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	98.9	95.4	104	----
Anions and Nutrients (QCLot: 222808)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
Anions and Nutrients (QCLot: 222809)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	103	80.0	120	----
Anions and Nutrients (QCLot: 222820)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 222821)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222822)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 222823)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 222823) - continued									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222824)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222825)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222826)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 222827)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222828)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.4	85.0	115	----
Anions and Nutrients (QCLot: 222829)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222830)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 222831)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 224497)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	106	80.0	120	----
Anions and Nutrients (QCLot: 225691)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.4	75.0	125	----
Anions and Nutrients (QCLot: 230141)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Organic / Inorganic Carbon (QCLot: 228113)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	95.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 228126)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	96.7	80.0	120	----
Total Metals (QCLot: 225162)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 225162) - continued									
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Total Metals (QCLot: 225163)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Total Metals (QCLot: 227002)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	98.4	80.0	120	----
Dissolved Metals (QCLot: 226498)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 226498) - continued									
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
Dissolved Metals (QCLot: 226499)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.7	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.1	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 222808)										
CG2102038-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
Anions and Nutrients (QCLot: 222809)										
CG2102041-005	RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 222820)										
CG2102038-010	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 222821)										
CG2102038-010	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222822)										
CG2102038-010	Anonymous	bromide	24959-67-9	E235.Br-L	0.500 mg/L	0.5 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 222823)										
CG2102038-010	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222824)										
CG2102038-010	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222825)										
CG2102038-010	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.534 mg/L	0.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222826)										
CG2102042-005	Anonymous	fluoride	16984-48-8	E235.F	1.08 mg/L	1 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 222827)										
CG2102042-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 222828)										
CG2102042-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.512 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 222829)										
CG2102042-005	Anonymous	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222830)										
CG2102042-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 222831)										
CG2102042-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.536 mg/L	0.5 mg/L	107	75.0	125	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Anions and Nutrients (QCLot: 224497)										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	phosphorus, total	7723-14-0	E372-U	0.0596 mg/L	0.0676 mg/L	88.2	70.0	130	----
Anions and Nutrients (QCLot: 225691)										
CG2102038-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.86 mg/L	2.5 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 230141)										
CG2102042-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
Organic / Inorganic Carbon (QCLot: 228113)										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	carbon, dissolved organic [DOC]	----	E358-L	21.7 mg/L	23.9 mg/L	90.8	70.0	130	----
Organic / Inorganic Carbon (QCLot: 228126)										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	carbon, total organic [TOC]	----	E355-L	22.0 mg/L	23.9 mg/L	92.0	70.0	130	----
Total Metals (QCLot: 225162)										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	aluminum, total	7429-90-5	E420	0.186 mg/L	0.2 mg/L	92.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, total	7440-42-8	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0980 mg/L	0.1 mg/L	98.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		potassium, total	7440-09-7	E420	4.03 mg/L	4 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		silicon, total	7440-21-3	E420	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		sodium, total	17341-25-2	E420	2.04 mg/L	2 mg/L	102	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Total Metals (QCLot: 225162) - continued										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	sulfur, total	7704-34-9	E420	19.4 mg/L	20 mg/L	96.9	70.0	130	----
		thallium, total	7440-28-0	E420	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.388 mg/L	0.4 mg/L	97.0	70.0	130	----
Total Metals (QCLot: 225163)										
CG2102041-001	RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	chromium, total	7440-47-3	E420.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 227002)										
CG2102033-002	Anonymous	mercury, total	7439-97-6	E508-L	4.73 ng/L	5 ng/L	94.6	70.0	130	----
Dissolved Metals (QCLot: 226498)										
CG2102066-010	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.4	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00859 mg/L	0.01 mg/L	85.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	93.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00395 mg/L	0.004 mg/L	98.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.96 mg/L	4 mg/L	99.1	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.51 mg/L	10 mg/L	85.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.95 mg/L	2 mg/L	97.3	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	High	Qualifier
Dissolved Metals (QCLot: 226498) - continued										
CG2102066-010	Anonymous	strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.411 mg/L	0.4 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 226499)										
CG2102066-010	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
Dissolved Metals (QCLot: 226743)										
CG2102038-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000940 mg/L	0.0001 mg/L	94.0	70.0	130	----
Dissolved Metals (QCLot: 226744)										
CG2102041-006	RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	mercury, dissolved	7439-97-6	E509	0.0000953 mg/L	0.0001 mg/L	95.3	70.0	130	----

Teck

COC ID: FRO LAEMP June 2021 | **TURNAROUND TIME:**

PROJECT/CLIENT INFO				LABORATORY			
Facility Name / Job#	FRO			Lab Name	ALS Calgary		
Project Manager	Cait Good			Lab Contact	Lyudmyla Shvets		
Email	cait.good@teck.com			Email	lyudmyla.shvets@alsglobal.com		
Address	421 Pine Avenue			Address	2559 29 Street NE		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8202			Phone Number	1 403 407 1794		

Excel | PDF | EDD

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_FO26_WS_LAEMP_FRO_2021-06-14_1025	RG_FO26	WS	No	6/14/2021	1025	G	7	X	X	X	X	X	X	X
RG_UFR1_WS_LAEMP_FRO_2021-06-15_805	RG_UFR1	WS	No	6/15/2021	805	G	7	X	X	X	X	X	X	X
RG_FODHE_WS_LAEMP_FRO_2021-06-14_1435	RG_FODHE	WS	No	6/14/2021	1435	G	7	X	X	X	X	X	X	X
RG_FOUCL_WS_LAEMP_FRO_2021-06-14_1320	RG_FOUCL	WS	No	6/14/2021	1320	G	7	X	X	X	X	X	X	X
RG_FOUNGD_WS_LAEMP_FRO_2021-06-15_1246	RG_FOUNGD	WS	No	6/15/2021	1246	G	7	X	X	X	X	X	X	X
RG_MP1_WS_LAEMP_FRO_2021-06-14_1530	RG_MP1	WS	No	6/14/2021	1530	G	7	X	X	X	X	X	X	X
RG_FOUSH_WS_LAEMP_FRO_[illegible]	RG_FOUSH	WS	No	6/15/2021	1127	G	7	X	X	X	X	X	X	X

Environmental Division
Calgary
Work Order Reference
CG2102041

Telephone : +1 403 407 1800

...TRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION

ALS PO 748510

GT June 16 8:30

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schaurr	Mobile #	647-967-9403
Sampler's Signature	PS	Date/Time	June 15, 2021

2°C

CERTIFICATE OF ANALYSIS

Work Order	: **CG2102083**	Page	: 1 of 10
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 18-Jun-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 18-Jun-2021
C-O-C number	: JUNE FRO LAEMP 2021	Issue Date	: 05-Jul-2021 09:24
Sampler	: PETER SCHNURR		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

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

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000
Client sampling date / time					16-Jun-2021 08:30	16-Jun-2021 13:15	17-Jun-2021 08:06	16-Jun-2021 13:50	16-Jun-2021 10:00
					CG2102083-001	CG2102083-002	CG2102083-003	CG2102083-004	CG2102083-005
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	81.2	116	130	127	128
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	2.4	5.4	5.8	4.8
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	81.2	119	136	132	133
conductivity	----	E100	2.0	µS/cm	175	339	432	403	431
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	90.1	172	220	204	228
oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	490	249	429	460
pH	----	E108	0.10	pH units	8.19	8.32	8.36	8.36	8.35
solids, total dissolved [TDS]	----	E162	10	mg/L	113	226	260	267	295
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.0	4.2	2.7	8.7	7.6
turbidity	----	E121	0.10	NTU	1.46	1.78	1.12	2.92	2.75
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0053	0.0215	0.0179	0.0164
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.17	0.40	0.40	0.38
fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.185	0.192	0.180	0.182
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.274	0.224	0.156	0.187
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.149	3.45	5.18	4.55	4.53
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0030	0.0075	0.0072	0.0066
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0016	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0056	0.0077	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	10.8	55.6	83.4	75.2	90.7
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.29	1.64	1.78	1.87	1.99
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.16	1.86	1.78	1.78	2.05
Ion Balance									
anion sum	----	EC101	0.10	meq/L	1.87	3.80	4.84	4.55	4.89
cation sum	----	EC101	0.10	meq/L	1.81	3.49	4.47	4.13	4.62

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000
				Client sampling date / time	16-Jun-2021 08:30	16-Jun-2021 13:15	17-Jun-2021 08:06	16-Jun-2021 13:50	16-Jun-2021 10:00
					CG2102083-001	CG2102083-002	CG2102083-003	CG2102083-004	CG2102083-005
					Result	Result	Result	Result	Result
Ion Balance									
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.8	91.8	92.4	90.8	94.5
ion balance (cation-anion difference)	----	EC101	0.010	%	1.63	4.25	3.97	4.84	2.84
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0242	0.0347	0.0347	0.0234	0.0291
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00010	0.00016	0.00015	0.00012
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00012	0.00012	0.00012	0.00012	0.00015
barium, total	7440-39-3	E420	0.00010	mg/L	0.00636	0.0302	0.0383	0.0352	0.0341
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0065	0.0277	0.0325	0.0287	0.0446
calcium, total	7440-70-2	E420	0.050	mg/L	29.5	44.1	55.6	49.8	49.3
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00019	0.00014	0.00014	0.00014	0.00015
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.14	0.14	0.13
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.018	0.042	0.037	0.036	0.045
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0129	0.0188	0.0165	0.0146
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.20	15.5	22.2	19.9	20.8
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00089	0.00376	0.00691	0.00596	0.00599
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00073	0.00071	0.00067	0.00074
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000375	0.000735	0.00101	0.000959	0.00104
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00175	0.00272	0.00225	0.00269
potassium, total	7440-09-7	E420	0.050	mg/L	0.163	0.684	1.08	0.990	0.937
selenium, total	7782-49-2	E420	0.050	µg/L	0.403	10.9	16.2	14.2	18.7
silicon, total	7440-21-3	E420	0.10	mg/L	0.92	1.53	1.70	1.55	1.53
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	0.175	0.647	0.930	0.843	0.818
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0570	0.0774	0.0899	0.0842	0.0770

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000
				Client sampling date / time	16-Jun-2021 08:30	16-Jun-2021 13:15	17-Jun-2021 08:06	16-Jun-2021 13:50	16-Jun-2021 10:00
Analyte	CAS Number	Method	LOR	Unit	CG2102083-001	CG2102083-002	CG2102083-003	CG2102083-004	CG2102083-005
					Result	Result	Result	Result	Result
Total Metals									
sulfur, total	7704-34-9	E420	0.50	mg/L	3.70	19.4	29.3	25.9	29.2
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00040	0.00044	<0.00060 DLM	0.00039
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000377	0.000916	0.00126	0.00110	0.00113
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0032	0.0022	0.0024	0.0046	0.0024
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0.00013	0.00013	0.00013
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0.00010	0.00010	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00642	0.0306	0.0377	0.0354	0.0352
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0198	0.0283	0.0243	0.0309
calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.5	43.5	52.1	48.4	52.9
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00011	0.00011	0.00010
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	0.11	0.10	0.10
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00026	0.00022	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0124	0.0186	0.0170	0.0167
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.20	15.5	21.9	20.1	23.2
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	0.00070	0.00480	0.00394	0.00380
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000326	0.000698	0.000946	0.000910	0.00108
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00159	0.00249	0.00210	0.00252
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.161	0.685	1.10	1.02	1.07

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000
				Client sampling date / time	16-Jun-2021 08:30	16-Jun-2021 13:15	17-Jun-2021 08:06	16-Jun-2021 13:50	16-Jun-2021 10:00
					CG2102083-001	CG2102083-002	CG2102083-003	CG2102083-004	CG2102083-005
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.367	11.1	16.0	14.3	20.1
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.833	1.38	1.42	1.42	1.44
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.171	0.654	0.971	0.874	0.889
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0566	0.0745	0.0849	0.0817	0.0813
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.56	18.9	26.2	25.6	31.2
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000378	0.000930	0.00123	0.00115	0.00124
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	0.0013	0.0019	0.0018	0.0026
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	----
Client sampling date / time					17-Jun-2021 13:30	17-Jun-2021 09:45	17-Jun-2021 11:47	17-Jun-2021 14:58	----
					CG2102083-006	CG2102083-007	CG2102083-008	CG2102083-009	--------
					Result	Result	Result	Result	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	180	161	159	175	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	11.4	8.4	8.6	11.4	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	191	169	168	186	----
conductivity	----	E100	2.0	µS/cm	703	599	600	712	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	395	313	317	389	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	508	444	439	466	----
pH	----	E108	0.10	pH units	8.43	8.41	8.41	8.43	----
solids, total dissolved [TDS]	----	E162	10	mg/L	476	379	395	492	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	4.0	3.0	8.2	----
turbidity	----	E121	0.10	NTU	1.24	0.82	0.78	1.18	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0093	0.0136	0.0108	0.0097	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.64	0.52	0.53	0.80	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.194	0.152	0.190	0.180	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	<0.050	0.076	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	14.4	10.3	10.2	13.8	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0075	0.0068	0.0080	0.0085	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0023	<0.0010	0.0013	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0024	0.0038	0.0088	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	165	135	135	176	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.95	2.02	1.84	1.86	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.75	1.86	1.93	1.84	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	8.31	6.95	6.92	8.40	----
cation sum	----	EC101	0.10	meq/L	8.04	6.36	6.45	7.90	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	----
				Client sampling date / time	17-Jun-2021 13:30	17-Jun-2021 09:45	17-Jun-2021 11:47	17-Jun-2021 14:58	----
					CG2102083-006	CG2102083-007	CG2102083-008	CG2102083-009	--------
					Result	Result	Result	Result	----
Ion Balance									
ion balance (cations/anions ratio)	----	EC101	0.010	%	96.8	91.5	93.2	94.0	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.65	4.43	3.52	3.07	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0096	0.0122	0.0238	0.0716	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00024	0.00019	0.00020	0.00017	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00014	0.00016	0.00018	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0463	0.0447	0.0444	0.0580	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L	0.011	<0.010	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0559	0.0468	0.0502	0.0691	----
calcium, total	7440-70-2	E420	0.050	mg/L	85.0	70.5	71.3	82.7	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00012	0.00025	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.10	0.14	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.022	0.021	0.034	0.108	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000080	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0390	0.0291	0.0300	0.0301	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	38.1	31.7	31.5	41.8	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00342	0.00376	0.00518	0.00842	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00076	----	0.00075	0.00106	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00158	0.00148	0.00140	0.00130	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00335	0.00270	0.00290	0.00262	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.87	1.48	1.48	1.76	----
selenium, total	7782-49-2	E420	0.050	µg/L	52.2	38.4	38.7	52.0	----
silicon, total	7440-21-3	E420	0.10	mg/L	1.70	1.67	1.65	1.91	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	1.93	1.48	1.48	1.88	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.103	0.0949	0.0951	0.107	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	----
				Client sampling date / time	17-Jun-2021 13:30	17-Jun-2021 09:45	17-Jun-2021 11:47	17-Jun-2021 14:58	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	CG2102083-006	CG2102083-007	CG2102083-008	CG2102083-009	--------
					Result	Result	Result	Result	----
Total Metals									
sulfur, total	7704-34-9	E420	0.50	mg/L	54.5	44.6	43.9	59.6	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0.00037	<0.00120 DLM	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00250	0.00200	0.00198	0.00225	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	0.0039	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0020	0.0059	0.0026	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00025	0.00020	0.00029	0.00020	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0480	0.0447	0.0453	0.0558	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	<0.010	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0584	0.0392	0.0463	0.0363	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	88.5	70.2	70.7	87.7	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00026	0.00020	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0414	0.0310	0.0302	0.0330	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	42.3	33.4	34.2	41.4	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00261	0.00259	0.00294	0.00224	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00166	0.00141	0.00141	0.00136	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00326	0.00261	0.00270	0.00202	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.14	1.57	1.62	1.79	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	----
				Client sampling date / time	17-Jun-2021 13:30	17-Jun-2021 09:45	17-Jun-2021 11:47	17-Jun-2021 14:58	----
					CG2102083-006	**CG2102083-007**	**CG2102083-008**	**CG2102083-009**	--------
					Result	Result	Result	Result	----
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	56.7	41.0	41.8	56.5	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.55	1.52	1.51	1.58	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.07	1.55	1.56	1.79	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.112	0.0962	0.0973	0.111	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	55.6	46.8	46.6	58.3	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00280	0.00216	0.00218	0.00252	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0020	0.0032	0.0016	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----

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

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2102083**	Page	: 1 of 36
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 18-Jun-2021 08:50
PO	: VPO00748510	Issue Date	: 05-Jul-2021 09:24
C-O-C number	: JUNE FRO LAEMP 2021		
Sampler	: PETER SCHNURR		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Total Metals	QC-MRG3-227076002	----	aluminum, total	7429-90-5	E420	121 % MES	80.0-120%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E298	17-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E298	17-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E298	16-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E298	17-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E298	17-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E298	17-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E298	16-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E298	16-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E298	16-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	8 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.Br-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.Br-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.Br-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.Br-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.Br-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.Br-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.Br-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.Br-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.Br-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.Cl-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.Cl-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.Cl-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.Cl-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.Cl-L	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.Cl-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.Cl-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.Cl-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.Cl-L	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E378-U	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E378-U	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E378-U	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E378-U	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E378-U	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E378-U	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E378-U	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E378-U	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E378-U	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.F	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.F	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.F	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.F	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.F	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.F	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.F	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.F	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.F	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.NO3-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.NO3-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.NO3-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.NO3-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.NO3-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.NO3-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.NO3-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.NO3-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.NO3-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.NO2-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.NO2-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.NO2-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.NO2-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.NO2-L	17-Jun-2021	----	----	----		18-Jun-2021	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.NO2-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.NO2-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.NO2-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.NO2-L	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E235.SO4	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E235.SO4	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E235.SO4	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E235.SO4	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E235.SO4	17-Jun-2021	----	----	----		18-Jun-2021	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E235.SO4	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E235.SO4	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E235.SO4	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E235.SO4	16-Jun-2021	----	----	----		18-Jun-2021	28 days	2 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E318	17-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E318	17-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E318	17-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E318	17-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E318	17-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E318	16-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E318	16-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	6 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E318	16-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E318	16-Jun-2021	22-Jun-2021	----	----		22-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E372-U	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E372-U	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E372-U	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E372-U	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E372-U	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E372-U	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E372-U	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E372-U	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E372-U	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E421.Cr-L	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E421.Cr-L	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E421.Cr-L	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E421.Cr-L	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E421.Cr-L	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E421.Cr-L	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E421.Cr-L	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E421.Cr-L	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E421.Cr-L	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E509	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E509	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E509	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E509	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E509	17-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E509	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E509	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E509	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E509	16-Jun-2021	23-Jun-2021	----	----		23-Jun-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E421	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E421	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E421	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E421	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E421	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E421	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E421	17-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E421	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E421	16-Jun-2021	21-Jun-2021	----	----		23-Jun-2021	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E358-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E358-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E358-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E358-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E358-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E358-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E358-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E358-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E358-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E355-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E355-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E355-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E355-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E355-L	17-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E355-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E355-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E355-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E355-L	16-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	28 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E283	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E283	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E283	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E283	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E283	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E283	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E283	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : Acidity by Titration										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E283	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E283	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E290	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E290	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E290	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E290	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E290	17-Jun-2021	----	----	----		24-Jun-2021	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E290	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E290	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E290	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E290	16-Jun-2021	----	----	----		24-Jun-2021	14 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E100	17-Jun-2021	----	----	----		24-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E100	17-Jun-2021	----	----	----		24-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E100	17-Jun-2021	----	----	----		24-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E100	17-Jun-2021	----	----	----		24-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E100	17-Jun-2021	----	----	----		24-Jun-2021	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E100	16-Jun-2021	----	----	----		24-Jun-2021	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E100	16-Jun-2021	----	----	----		24-Jun-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E100	16-Jun-2021	----	----	----		24-Jun-2021	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E100	16-Jun-2021	----	----	----		24-Jun-2021	28 days	8 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E125	17-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	310 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E125	17-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	312 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E125	17-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	314 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E125	17-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	316 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E125	17-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	317 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E125	16-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	336 hrs	✗ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E125	16-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	336 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E125	16-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	339 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E125	16-Jun-2021	----	----	----		30-Jun-2021	0.34 hrs	341 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E108	17-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	159 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E108	17-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	160 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E108	17-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	162 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E108	17-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	164 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E108	17-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E108	16-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	184 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E108	16-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	184 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E108	16-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	188 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E108	16-Jun-2021	----	----	----		24-Jun-2021	0.25 hrs	189 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E162	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E162	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E162	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E162	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E162	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E162	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E162	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : TDS by Gravimetry										
HDPE										
RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E162	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E162	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E160-L	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E160-L	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E160-L	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E160-L	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E160-L	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E160-L	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB]										
RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E160-L	17-Jun-2021	----	----	----		22-Jun-2021	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E160-L	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E160-L	16-Jun-2021	----	----	----		21-Jun-2021	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E121	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E121	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E121	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E121	16-Jun-2021	----	----	----		18-Jun-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E121	17-Jun-2021	----	----	----		20-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E121	17-Jun-2021	----	----	----		20-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E121	17-Jun-2021	----	----	----		20-Jun-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E121	17-Jun-2021	----	----	----		20-Jun-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E121	17-Jun-2021	----	----	----		20-Jun-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E420.Cr-L	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E420.Cr-L	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E420.Cr-L	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E420.Cr-L	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E420.Cr-L	17-Jun-2021	----	----	----		24-Jun-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E420.Cr-L	16-Jun-2021	----	----	----		23-Jun-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E420.Cr-L	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E420.Cr-L	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E420.Cr-L	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E508-L	17-Jun-2021	----	----	----		23-Jun-2021	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E508-L	17-Jun-2021	----	----	----		23-Jun-2021	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E508-L	17-Jun-2021	----	----	----		23-Jun-2021	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E508-L	17-Jun-2021	----	----	----		23-Jun-2021	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E508-L	16-Jun-2021	----	----	----		23-Jun-2021	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E508-L	16-Jun-2021	----	----	----		23-Jun-2021	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E508-L	16-Jun-2021	----	----	----		23-Jun-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E508-L	16-Jun-2021	----	----	----		23-Jun-2021	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	E420	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	E420	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	E420	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	E420	17-Jun-2021	----	----	----		23-Jun-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	E420	17-Jun-2021	----	----	----		24-Jun-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	E420	16-Jun-2021	----	----	----		23-Jun-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	E420	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	E420	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	E420	16-Jun-2021	----	----	----		24-Jun-2021	180 days	8 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	228736	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	228746	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	228648	2	26	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	224717	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	224718	1	18	5.5	5.0	✓
Conductivity in Water	E100	228744	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226537	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	227771	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226538	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	232294	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	224772	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	224721	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	224719	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	224720	1	18	5.5	5.0	✓
ORP by Electrode	E125	233769	1	20	5.0	5.0	✓
pH by Meter	E108	228745	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	224716	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	225823	2	32	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	226556	2	28	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	226074	2	40	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	228118	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	226555	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	232297	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	226957	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	224840	3	45	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	228736	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	228746	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	228648	2	26	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	224717	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	224718	1	18	5.5	5.0	✓
Conductivity in Water	E100	228744	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226537	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	227771	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226538	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	232294	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	224772	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	224721	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	224719	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	224720	1	18	5.5	5.0	✓
ORP by Electrode	E125	233769	1	20	5.0	5.0	✓
pH by Meter	E108	228745	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	224716	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	225823	2	32	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	226556	2	28	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	226074	2	40	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	228118	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	226555	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	232297	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	226957	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	225816	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	224840	3	45	6.6	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	228736	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	228746	1	14	7.1	5.0	✓
Ammonia by Fluorescence	E298	228648	2	26	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	224717	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	224718	1	18	5.5	5.0	✓
Conductivity in Water	E100	228744	1	14	7.1	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226537	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	227771	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226538	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	232294	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	224772	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	224721	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	224719	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	224720	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	224716	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	225823	2	32	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	226556	2	28	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	226074	2	40	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	228118	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	226555	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	232297	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	226957	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	225816	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	224840	3	45	6.6	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	228648	2	26	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	224717	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	224718	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	226537	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	227771	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	226538	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	232294	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	224772	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	224721	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	224719	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	224720	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	224716	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	226556	2	28	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	226074	2	40	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	228118	1	14	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	226555	2	38	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	232297	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	226957	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2102083**	Page	: 1 of 22
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202	Telephone	: +1 403 407 1800
Project	: FORDING RIVER OPERATION	Date Samples Received	: 18-Jun-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 18-Jun-2021
C-O-C number	: JUNE FRO LAEMP 2021	Issue Date	: 05-Jul-2021 09:24
Sampler	: PETER SCHNURR		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Saron Kim	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	**Client sample ID**	**Analyte**	**CAS Number**	**Method**	**LOR**	**Unit**	**Original Result**	**Duplicate Result**	**RPD(%) or Difference**	**Duplicate Limits**	**Qualifier**
Physical Tests (QC Lot: 224840)											
CG2102065-003	Anonymous	turbidity	----	E121	0.10	NTU	1.37	1.39	1.45%	15%	----
Physical Tests (QC Lot: 224841)											
CG2102083-004	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	turbidity	----	E121	0.10	NTU	2.92	2.97	1.70%	15%	----
Physical Tests (QC Lot: 225558)											
CG2102083-003	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	turbidity	----	E121	0.10	NTU	1.12	1.08	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 225823)											
CG2102066-011	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	345	337	2.49%	20%	----
Physical Tests (QC Lot: 226819)											
CG2102083-003	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	solids, total dissolved [TDS]	----	E162	20	mg/L	260	258	0.771%	20%	----
Physical Tests (QC Lot: 228736)											
CG2102081-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 228744)											
CG2102079-026	Anonymous	conductivity	----	E100	2.0	µS/cm	2990	2990	0.00%	10%	----
Physical Tests (QC Lot: 228745)											
CG2102079-026	Anonymous	pH	----	E108	0.10	pH units	7.80	7.83	0.384%	4%	----
Physical Tests (QC Lot: 228746)											
CG2102079-026	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	672	655	2.61%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	672	655	2.61%	20%	----
Physical Tests (QC Lot: 233769)											
CG2102083-001	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	oxidation-reduction potential [ORP]	----	E125	0.10	mV	450	458	1.61%	15%	----
Anions and Nutrients (QC Lot: 224716)											
CG2102075-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	1730	1730	0.000722%	20%	----
Anions and Nutrients (QC Lot: 224717)											
CG2102075-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 224718)											
CG2102075-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	2.43	2.46	0.04	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 224719)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 224719) - continued											
CG2102075-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	18.9	18.9	0.00528%	20%	----
Anions and Nutrients (QC Lot: 224720)											
CG2102075-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0061	0.0078	0.0017	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 224721)											
CG2102075-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.218	0.217	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 224772)											
CG2102079-024	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 226074)											
CG2102070-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	6.57	6.71	2.08%	20%	----
Anions and Nutrients (QC Lot: 226075)											
CG2102083-002	RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.274	0.371	0.096	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 226957)											
CG2102079-025	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0037	0.0017	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 228648)											
CG2102081-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0089	0.0085	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 229470)											
CG2102083-004	RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0179	0.0181	0.0002	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 232294)											
CG2102083-001	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.29	1.15	0.14	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 232297)											
CG2102083-001	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.16	1.26	0.10	Diff <2x LOR	----
Total Metals (QC Lot: 226555)											
CG2102075-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0218	0.0177	0.0041	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00049	0.00048	0.000007	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00020	0.00021	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0157	0.0151	4.02%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.034	0.035	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	0.375 µg/L	0.000366	2.45%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	311	310	0.259%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 226555) - continued											
CG2102075-001	Anonymous	iron, total	7439-89-6	E420	0.020	mg/L	0.043	0.039	0.004	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.0997	0.100	0.471%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	300	286	4.87%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.0187	0.0178	5.25%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00288	0.00272	5.66%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.0562	0.0531	5.73%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	5.94	5.62	5.55%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	421 µg/L	0.410	2.82%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.49	2.41	3.42%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	3.55	3.44	3.13%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.246	0.237	3.80%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	572	555	2.99%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000028	0.000028	0.0000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0224	0.0217	3.20%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.0161	0.0154	0.0007	Diff <2x LOR	----
Total Metals (QC Lot: 226556)											
CG2102075-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 227076)											
YL2100547-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	1.44	1.44	0.214%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00122	0.00127	4.45%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.127	0.126	0.234%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000047	0.000050	0.000004	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.481	0.475	1.22%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000230	0.000245	6.35%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	42.8	42.6	0.392%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.0158	0.0158	0.0421%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00328	0.00337	0.00009	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.46	2.45	0.405%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 227076) - continued											
YL2100547-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000392	0.000397	0.000004	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0074	0.0075	0.00004	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	15.4	15.4	0.299%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.03	1.05	1.96%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00190	0.00193	1.86%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0304	0.0308	1.01%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	10.7	10.8	0.554%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000069	0.000104	0.000035	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.84	4.97	2.69%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	25.9	25.9	0.0131%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.428	0.429	0.174%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	16.6	16.9	1.91%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000086	0.000085	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0838	0.0857	2.27%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000250	0.000247	1.30%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00370	0.00370	0.000001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0436	0.0464	6.34%	20%	----
Total Metals (QC Lot: 227077)											
YL2100547-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00342	0.00343	0.480%	20%	----
Total Metals (QC Lot: 228118)											
CG2102072-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00200	ng/L	<0.00200 µg/L	<2.00	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 226537)											
CG2102061-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 226538)											
CG2102061-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	<0.0010	0.00008	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00032	0.00031	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00011	0.000010	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0414	0.0436	5.04%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.00003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.595 µg/L	0.000638	7.06%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	162	160	0.886%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Dissolved Metals (QC Lot: 226538) - continued											
CG2102061-001	Anonymous	cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00049	0.00052	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0309	0.0305	1.19%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	76.5	79.1	3.29%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00018	0.00019	0.00001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00670	0.00660	1.48%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00973	0.0103	6.06%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.67	2.76	3.24%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	55.0 µg/L	0.0574	4.41%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.32	3.38	1.94%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.41	5.72	5.61%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.250	0.253	1.21%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	134	132	2.00%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000150	0.000156	4.06%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00209	0.00210	0.167%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0259	0.0269	3.75%	20%	----
Dissolved Metals (QC Lot: 227771)											
CG2102061-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 224840)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 224841)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 225558)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 225816)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 225823)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 226813)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 226819)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 228736)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 228744)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 228746)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 224716)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 224717)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 224718)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 224719)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 224720)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 224721)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 224721) - continued						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 224772)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 226074)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 226075)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 226957)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 228648)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 229470)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 232294)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<50.0	----
Organic / Inorganic Carbon (QCLot: 232297)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<50.0	----
Total Metals (QCLot: 226555)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 226555) - continued						
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 226556)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 227076)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 227076) - continued						
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 227077)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 228118)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 226537)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 226538)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 226538) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 227771)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 224840)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 224841)									
turbidity	----	E121	0.1	NTU	200 NTU	100.0	85.0	115	----
Physical Tests (QCLot: 225558)									
turbidity	----	E121	0.1	NTU	200 NTU	99.4	85.0	115	----
Physical Tests (QCLot: 225816)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.8	85.0	115	----
Physical Tests (QCLot: 225823)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	104	85.0	115	----
Physical Tests (QCLot: 226813)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	91.4	85.0	115	----
Physical Tests (QCLot: 226819)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	101	85.0	115	----
Physical Tests (QCLot: 228736)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Physical Tests (QCLot: 228744)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	105	90.0	110	----
Physical Tests (QCLot: 228745)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 228746)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	100	85.0	115	----
Physical Tests (QCLot: 233769)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	97.0	95.4	104	----
Anions and Nutrients (QCLot: 224716)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 224717)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 224718)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 224719)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 224720)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 224720) - continued									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 224721)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 224772)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 226074)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	122	75.0	125	----
Anions and Nutrients (QCLot: 226075)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	114	75.0	125	----
Anions and Nutrients (QCLot: 226957)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.8	80.0	120	----
Anions and Nutrients (QCLot: 228648)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 229470)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Organic / Inorganic Carbon (QCLot: 232294)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	108	80.0	120	----
Organic / Inorganic Carbon (QCLot: 232297)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	110	80.0	120	----
Total Metals (QCLot: 226555)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.5	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 226555) - continued									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.4	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	93.8	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	95.9	80.0	120	----
Total Metals (QCLot: 226556)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Total Metals (QCLot: 227076)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	# 121	80.0	120	MES
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	119	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 227076) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
Total Metals (QCLot: 227077)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Total Metals (QCLot: 228118)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	99.6	80.0	120	----
Dissolved Metals (QCLot: 226537)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
Dissolved Metals (QCLot: 226538)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.7	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	89.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.5	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	87.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 226538) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.4	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.1	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	90.2	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.8	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.3	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	90.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.1	80.0	120	----

Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 224716)										
CG2102075-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 224717)										
CG2102075-006	Anonymous	bromide	24959-67-9	E235.Br-L	0.500 mg/L	0.5 mg/L	100.0	75.0	125	----
Anions and Nutrients (QCLot: 224718)										
CG2102075-006	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 224719)										
CG2102075-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 224720)										
CG2102075-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.526 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 224721)										
CG2102075-006	Anonymous	fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 224772)										
CG2102079-025	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0489 mg/L	0.05 mg/L	97.8	70.0	130	----
Anions and Nutrients (QCLot: 226074)										
CG2102072-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.41 mg/L	2.5 mg/L	96.4	70.0	130	----
Anions and Nutrients (QCLot: 226075)										
CG2102083-003	RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	Kjeldahl nitrogen, total [TKN]	----	E318	2.53 mg/L	2.5 mg/L	101	70.0	130	----
Anions and Nutrients (QCLot: 226957)										
CG2102079-026	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0630 mg/L	0.0676 mg/L	93.1	70.0	130	----
Anions and Nutrients (QCLot: 228648)										
CG2102081-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 229470)										
CG2102083-005	RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
Organic / Inorganic Carbon (QCLot: 232294)										
CG2102083-001	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	carbon, dissolved organic [DOC]	----	E358-L	28.3 mg/L	23.9 mg/L	118	70.0	130	----
Organic / Inorganic Carbon (QCLot: 232297)										

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
					Concentration	Target	MS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 232297) - continued										
CG2102083-001	RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	carbon, total organic [TOC]	----	E355-L	26.7 mg/L	23.9 mg/L	112	70.0	130	----
Total Metals (QCLot: 226555)										
CG2102075-001	Anonymous	aluminum, total	7429-90-5	E420	0.397 mg/L	0.4 mg/L	99.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0359 mg/L	0.04 mg/L	89.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		barium, total	7440-39-3	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0763 mg/L	0.08 mg/L	95.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0171 mg/L	0.02 mg/L	85.6	70.0	130	----
		boron, total	7440-42-8	E420	0.164 mg/L	0.2 mg/L	81.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00794 mg/L	0.008 mg/L	99.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		iron, total	7439-89-6	E420	3.89 mg/L	4 mg/L	97.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0344 mg/L	0.04 mg/L	85.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.178 mg/L	0.2 mg/L	89.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.0766 mg/L	0.08 mg/L	95.8	70.0	130	----
		potassium, total	7440-09-7	E420	7.82 mg/L	8 mg/L	97.7	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	18.0 mg/L	20 mg/L	89.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00739 mg/L	0.008 mg/L	92.4	70.0	130	----
		sodium, total	17341-25-2	E420	3.85 mg/L	4 mg/L	96.3	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00696 mg/L	0.008 mg/L	87.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0773 mg/L	0.08 mg/L	96.6	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.199 mg/L	0.2 mg/L	99.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.718 mg/L	0.8 mg/L	89.7	70.0	130	----
Total Metals (QCLot: 226556)										
CG2102075-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0819 mg/L	0.08 mg/L	102	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
					Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 227076)										
YL2100547-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		copper, total	7440-50-8	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0962 mg/L	0.1 mg/L	96.2	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	21.0 mg/L	20 mg/L	105	70.0	130	----
		thallium, total	7440-28-0	E420	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		titanium, total	7440-32-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		uranium, total	7440-61-1	E420	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		vanadium, total	7440-62-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, total	7440-66-6	E420	0.393 mg/L	0.4 mg/L	98.3	70.0	130	----
Total Metals (QCLot: 227077)										
YL2100547-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
Total Metals (QCLot: 228118)										
CG2102072-002	Anonymous	mercury, total	7439-97-6	E508-L	16.7 ng/L	20 ng/L	83.6	70.0	130	----
Dissolved Metals (QCLot: 226537)										

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 226537) - continued										
CG2102061-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
Dissolved Metals (QCLot: 226538)										
CG2102061-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0347 mg/L	0.04 mg/L	86.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00826 mg/L	0.01 mg/L	82.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.088 mg/L	0.1 mg/L	87.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0176 mg/L	0.02 mg/L	88.0	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	96.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0852 mg/L	0.1 mg/L	85.2	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.06 mg/L	4 mg/L	101	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.19 mg/L	10 mg/L	81.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00357 mg/L	0.004 mg/L	89.2	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.370 mg/L	0.4 mg/L	92.5	70.0	130	----
Dissolved Metals (QCLot: 227771)										
CG2102061-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----

Teck

COC ID:	June FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	FRO
Project Manager	Cait Good
Email	cait.good@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
City	Calgary
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Country	Canada
Phone Number	1 403 407 1794

Email	Excel	PDF	EDD
[illegible]	x	x	x
[illegible]			x
[illegible]	x	x	x
[illegible]	x	x	x
[illegible]	x		

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

									TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
								Filtered	N	F	N	N	F	N	F
								Preservative		H2SO4	H2SO4		HCL	HNO3	HNO3
Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.								
RG_HENUP_WS_LAEMP_FRO_2021-06-16_0830	RG_HENUP	WS	No	6/16/2021	830	G	7		X	X	X	X	X	X	X
RG_FODNGD_WS_LAEMP_FRO_2021-06-16_1315	RG_FODNGD	WS	No	6/16/2021	1315	G	7		X	X	X	X	X	X	X
RG_FOUKI_WS_LAEMP_FRO_2021-06-17_0806	RG_FOUKI	WS	No	6/17/2021	806	G	7		X	X	X	X	X	X	X
RG_FOBKS_WS_LAEMP_FRO_2021-06-16_1350	RG_FOBKS	WS	No	6/16/2021	1350	G	7		X	X	X	X	X	X	X
RG_SCOUTDS_WS_LAEMP_FRO_2021-06-16_1000	RG_SCOUTDS	WS	No	6/16/2021	1000	G	7		X	X	X	X	X	X	X
RG_FOBSC_WS_LAEMP_FRO_2021-06-17_1330	RG_FOBSC	WS	No	6/17/2021	1330	G	7		X	X	X	X	X	X	X
RG_FOBCP_WS_LAEMP_FRO_2021-06-17_0945	RG_FOBCP	WS	No	6/17/2021	945	G	7		X	X	X	X	X	X	X
RG_FRCP1SW_WS_LAEMP_FRO_2021-06-17_1147	RG_FRCP1SW	WS	No	6/17/2021	1147	G	7		X	X	X	X	X	X	X
RG_FODPO_WS_LAEMP_FRO_2021-06-17_1458	RG_FODPO	WS	No	6/17/2021	1458	G	7		X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
ALS PO 748510			[signature]	6/18 [illegible]

NB OF BOTTLES RETURNED/DESCRIPTION	
Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature	PS	Date/Time	June 17, 2021

Environmental Division
Calgary
Work Order Reference
CG2102083

Telephone : +1 403 407 1800

5

CERTIFICATE OF ANALYSIS

Work Order	: **CG2102104**	Page	: 1 of 11
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECT PROGRAM	Date Samples Received	: 19-Jun-2021 09:40
PO	: VPO00748510	Date Analysis Commenced	: 19-Jun-2021
C-O-C number	: JUNE FRO LAEMP 2021	Issue Date	: 29-Jul-2021 16:17
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
James Diacon	Laboratory Analyst	Metals, Calgary, Alberta
Jorden Fanson	Analyst	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Naeun Kim	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_TRIP_WS_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RG_FBLANK_WS_2021-06-18_1300	RG_TRIP_WS_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330
Client sampling date / time					18-Jun-2021 13:00	18-Jun-2021 13:00	18-Jun-2021 13:00	17-Jun-2021 13:30	17-Jun-2021 13:30
					CG2102104-001	CG2102104-002	CG2102104-003	CG2102104-004	CG2102104-005
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	191	<1.0	<1.0	194
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	191	<1.0	<1.0	194
conductivity	----	E100	2.0	µS/cm	<2.0	783	<2.0	<2.0	708
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	425	<0.50	<0.50	393
oxidation-reduction potential [ORP]	----	E125	0.10	mV	418	432	445	546	426
pH	----	E108	0.10	pH units	5.19	8.28	5.41	5.22	8.28
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	554	<10	<10	496
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	28.0	<1.0	<1.0	1.4
turbidity	----	E121	0.10	NTU	<0.10	2.08	<0.10	<0.10	0.42
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	234	<1.0	<1.0	236
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0508	0.0076	<0.0050	0.0769 RRV	0.0103 RRV
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.90	<0.10	<0.10	0.62
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.185	<0.020	<0.020	0.200
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.052 RRV	<0.050	<0.050	0.102 RRV	0.059
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	16.0	<0.0050	<0.0050	13.8
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0067	<0.0010	<0.0010	0.0074
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	175	<0.30	<0.30	155
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	----	1.60	<0.50	----	1.84
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.51	<0.50	<0.50	1.55

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_TRIP_WS_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RG_FBLANK_WS_2021-06-18_1300	RG_TRIP_WS_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330
				Client sampling date / time	18-Jun-2021 13:00	18-Jun-2021 13:00	18-Jun-2021 13:00	17-Jun-2021 13:30	17-Jun-2021 13:30
					CG2102104-001	CG2102104-002	CG2102104-003	CG2102104-004	CG2102104-005
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	<0.10	8.64	<0.10	<0.10	8.12
cation sum	----	EC101	0.10	meq/L	<0.10	8.62	<0.10	<0.10	7.98
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	99.8	100	100	98.3
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	0.116	<0.010	<0.010	0.870
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0102	<0.0030	<0.0030	0.0101
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00020	<0.00010	<0.00010	0.00028
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00012	<0.00010	<0.00010	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	0.0544	<0.00010	<0.00010	0.0452
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.011	<0.010	<0.010	0.012
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0489	<0.0050	<0.0050	0.0645
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	103	<0.050	<0.050	87.7
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00018	<0.00010	<0.00010	0.00039
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	0.10
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00178
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.016	<0.010	<0.010	0.016
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0368	<0.0010	<0.0010	0.0383
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	44.8	<0.0050	<0.0050	39.5
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	0.00324	<0.00010	<0.00010	0.00340
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00123	0.00308 RRV	<0.00050	0.00058
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	0.00141	<0.000050	<0.000050	0.00172
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00214	<0.00050	<0.00050	0.00381
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	1.77	<0.050	<0.050	1.85
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	58.3	<0.050	<0.050	52.1
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	1.85	<0.10	<0.10	1.67
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	2.12	<0.050	<0.050	1.95

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_TRIP_WS_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RG_FBLANK_WS_2021-06-18_1300	RG_TRIP_WS_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330
				Client sampling date / time	18-Jun-2021 13:00	18-Jun-2021 13:00	18-Jun-2021 13:00	17-Jun-2021 13:30	17-Jun-2021 13:30
					CG2102104-001	CG2102104-002	CG2102104-003	CG2102104-004	CG2102104-005
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	0.133	<0.00020	<0.00020	0.115
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	70.3	<0.50	<0.50	59.3
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.00031
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	0.00298	<0.000010	<0.000010	0.00277
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0042 RRV	<0.0030	<0.0030	0.0164 RRV	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	----	0.0016	<0.0010	----	0.0016
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	----	0.00019	<0.00010	----	0.00028
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	----	0.00013	<0.00010	----	0.00013
barium, dissolved	7440-39-3	E421	0.00010	mg/L	----	0.0584	<0.00010	----	0.0483
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	----	<0.020	<0.020	----	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	----	<0.000050	<0.000050	----	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	----	0.011	<0.010	----	0.012
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	----	0.0451	<0.0050	----	0.0616
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	96.7	<0.050	<0.050	91.5
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	----	0.00010	<0.00010	----	<0.00010
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	----	<0.10	<0.10	----	<0.10
copper, dissolved	7440-50-8	E421	0.00020	mg/L	----	<0.00020	<0.00020	----	0.00023
iron, dissolved	7439-89-6	E421	0.010	mg/L	----	<0.010	<0.010	----	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	----	<0.000050	<0.000050	----	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	----	0.0362	<0.0010	----	0.0404
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	44.5	<0.0050	<0.0050	39.9
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	----	0.00196	<0.00010	----	0.00258
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	----	<0.0000050	<0.0000050	----	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	----	0.00132	<0.000050	----	0.00174
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	----	0.00186	<0.00050	----	0.00315
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	1.76	<0.050	<0.050	1.87

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	RG_TRIP_WS_2021-06-18_1300	RG_RIVER_WS_2021-06-18_1300	RG_FBLANK_WS_2021-06-18_1300	RG_TRIP_WS_2021-06-17_1330	RG_RIVER_WS_2021-06-17_1330
				Client sampling date / time	18-Jun-2021 13:00	18-Jun-2021 13:00	18-Jun-2021 13:00	17-Jun-2021 13:30	17-Jun-2021 13:30
Analyte	CAS Number	Method	LOR	Unit	CG2102104-001	CG2102104-002	CG2102104-003	CG2102104-004	CG2102104-005
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	----	63.6	<0.050	----	55.7
silicon, dissolved	7440-21-3	E421	0.050	mg/L	----	1.75	<0.050	----	1.68
silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	<0.000010	----	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	1.96	<0.050	<0.050	1.89
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	----	0.122	<0.00020	----	0.113
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	----	64.7	<0.50	----	56.2
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	----	<0.000010	<0.000010	----	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	<0.00010	<0.00010	----	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	<0.00030	<0.00030	----	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	0.00286	<0.000010	----	0.00289
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	<0.00050	<0.00050	----	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	0.0014	<0.0010	----	0.0023
dissolved mercury filtration location	----	EP509	-	-	----	Field	Field	----	Field
dissolved metals filtration location	----	EP421	-	-	Laboratory	Field	Field	Laboratory	Field

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

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

				Client sample ID	RG_FBLANK_WS_2021-06-17_1330	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_FO22_WS_LAEMP_FRO_2021-06-18_0843	RG_FOUEW_WS_LAEMP_FRO_2021-06-18_1100	----
				Client sampling date / time	17-Jun-2021 13:30	18-Jun-2021 13:00	18-Jun-2021 08:43	18-Jun-2021 11:00	----
Analyte	CAS Number	Method	LOR	Unit	CG2102104-006	CG2102104-007	CG2102104-008	CG2102104-009	--------
					Result	Result	Result	Result	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.3	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	1.4 RRV	197	184	177	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	1.4 RRV	197	184	177	----
conductivity	----	E100	2.0	µS/cm	2.4 RRV	764	705	651	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	0.52	428	386	350	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	456	469	475	479	----
pH	----	E108	0.10	pH units	6.19 RRV	8.21	8.28	8.26	----
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	534	512	446	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	5.1	5.6	6.2	----
turbidity	----	E121	0.10	NTU	<0.10	0.53	1.60	1.06	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	1.7 RRV	240	224	216	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.0129	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.91	0.80	0.73	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.184	0.187	0.186	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.050 RRV	<0.050	0.099	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	16.1	13.2	11.7	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0073	0.0045	0.0049	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0.0129	0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	177	162	144	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	1.63	1.59	1.60	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	1.68	1.76	1.69	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FBLANK_WS_2021-06-17_1330	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_FO22_WS_LAEMP_FRO_2021-06-18_0843	RG_FOUEW_WS_LAEMP_FRO_2021-06-18_1100	----
Client sampling date / time					17-Jun-2021 13:30	18-Jun-2021 13:00	18-Jun-2021 08:43	18-Jun-2021 11:00	----
					CG2102104-006	CG2102104-007	CG2102104-008	CG2102104-009	--------
					Result	Result	Result	Result	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	<0.10	8.81	8.02	7.40	----
cation sum	----	EC101	0.10	meq/L	<0.10	8.69	7.82	7.11	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	98.6	97.5	96.1	----
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	0.686	1.26	2.00	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0267 RRV	0.0074	0.0511	0.0235	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00020 RRV	0.00020	0.00018	0.00016	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016 RRV	0.00010	0.00014	0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.00287 RRV	0.0550	0.0545	0.0508	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.011	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0454	0.0474	0.0362	----
calcium, total	7440-70-2	E420	0.050	mg/L	0.166 RRV	98.6	90.0	77.7	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00031 RRV	<0.00010	0.00023	0.00015	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.11	<0.10	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00151 RRV	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.013	0.079	0.035	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000121 RRV	<0.000050	0.000079	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0370	0.0303	0.0267	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0295 RRV	44.8	41.0	36.1	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00018 RRV	0.00295	0.00731	0.00420	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	0.00111	0.00068	0.00067	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	0.00140	0.00128	0.00116	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00217	0.00223	0.00191	----
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	1.77	1.59	1.40	----
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	59.4	50.0	43.2	----
silicon, total	7440-21-3	E420	0.10	mg/L	0.92 RRV	1.78	1.80	1.77	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FBLANK_WS_2021-06-17_1330	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_FO22_WS_LAEMP_FRO_2021-06-18_0843	RG_FOUEW_WS_LAEMP_FRO_2021-06-18_1100	----
Client sampling date / time					17-Jun-2021 13:30	18-Jun-2021 13:00	18-Jun-2021 08:43	18-Jun-2021 11:00	----
					CG2102104-006	CG2102104-007	CG2102104-008	CG2102104-009	--------
					Result	Result	Result	Result	----
Total Metals									
sodium, total	17341-25-2	E420	0.050	mg/L	0.417 RRV	2.17	1.85	1.66	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.00139 RRV	0.127	0.121	0.109	----
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	69.1	62.0	53.9	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L	0.00043 RRV	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0.00099	0.00046	----
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	0.00297	0.00261	0.00216	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0256 RRV	0.0023	0.0024	0.0016	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00020 RRV	0.00019	0.00017	0.00024	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017 RRV	0.00013	0.00014	0.00014	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00282 RRV	0.0584	0.0546	0.0527	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.011	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	<0.0050	0.0406	0.0399	0.0299	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	0.162 RRV	99.7	89.5	81.2	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00031 RRV	<0.00010	0.00010	0.00011	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00085 RRV	0.00020	<0.00020	<0.00020	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000081 RRV	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0362	0.0312	0.0276	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0287 RRV	43.6	39.4	35.9	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00019 RRV	0.00208	0.00243	0.00202	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	0.00129	0.00123	0.00120	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FBLANK_WS_2021-06-17_1330	RG_FRUPO_WS_LAEMP_FRO_2021-06-18_1300	RG_FO22_WS_LAEMP_FRO_2021-06-18_0843	RG_FOUEW_WS_LAEMP_FRO_2021-06-18_1100	----
Client sampling date / time					17-Jun-2021 13:30	18-Jun-2021 13:00	18-Jun-2021 08:43	18-Jun-2021 11:00	----
					CG2102104-006	CG2102104-007	CG2102104-008	CG2102104-009	--------
					Result	Result	Result	Result	----
Dissolved Metals									
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00184	0.00172	0.00142	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	1.74	1.52	1.37	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	<0.050	58.8	53.1	43.9	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.789 RRV	1.73	1.67	1.74	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.396 RRV	1.94	1.70	1.56	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00136 RRV	0.119	0.115	0.109	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	64.8	58.3	50.8	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00034 RRV	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.00290	0.00255	0.00236	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0022	0.0017	0.0016	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----

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

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104008**	Page	: 1 of 7
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 11-Sep-2021 10:15
PO	: VPO00748510	Date Analysis Commenced	: 12-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 30-Oct-2021 12:18
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	----	----	----	----
				Client sampling date / time	09-Sep-2021 10:15	----	----	----	----
					CG2104008-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	184	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.6	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	191	----	----	----	----
conductivity	----	E100	2.0	µS/cm	846	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	486	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	487	----	----	----	----
pH	----	E108	0.10	pH units	8.32	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	623	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.6	----	----	----	----
turbidity	----	E121	0.10	NTU	0.40	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	224	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	4.0	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0141	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.19	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.163	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	14.2	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0116	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	228	----	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.55	----	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.72	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	----	----	----	----
				Client sampling date / time	09-Sep-2021 10:15	----	----	----	----
					CG2104008-001	--------	--------	--------	--------
					Result	----	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	9.62	----	----	----	----
cation sum	----	EC101	0.10	meq/L	9.88	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	103	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	1.33	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0064	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00027	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0699	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.015	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0292	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	104	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.28	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.036	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0479	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	51.5	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0137	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00145	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00595	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.11	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	45.5	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	1.92	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	2.10	----	----	----	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	----	----	----	----
				Client sampling date / time	09-Sep-2021 10:15	----	----	----	----
					CG2104008-001	--------	--------	--------	--------
					Result	----	----	----	----
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.176	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	78.7	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00299	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0014	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0760	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0284	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	111	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.25	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.016	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0522	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	50.8	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0125	----	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00142	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00569	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.34	----	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	----	----	----	----
				Client sampling date / time	09-Sep-2021 10:15	----	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**CG2104008-001**	--------	--------	--------	--------
					Result	----	----	----	----
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	47.9	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.91	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.32	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.177	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	81.5	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00290	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104008**	Page	: 1 of 13
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 11-Sep-2021 10:15
PO	: VPO00748510	Issue Date	: 30-Oct-2021 12:18
C-O-C number	: September FRO LAEMP 2021		
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Duplicate outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Anions and Nutrients	Anonymous	Anonymous	chloride	16887-00-6	E235.Cl-L	2.77 %	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Anions and Nutrients	Anonymous	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	137 %	20%	Duplicate RPD does not meet the DQO for this test.
Anions and Nutrients	Anonymous	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	136 %	20%	Duplicate RPD does not meet the DQO for this test.
Matrix Spike (MS) Recoveries								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	36.0 % MSTN	70.0-130%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	*Description*
MSTN	*TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E298	09-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	14 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.Br-L	09-Sep-2021	----	----	----		12-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.Cl-L	09-Sep-2021	----	----	----		12-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E378-U	09-Sep-2021	----	----	----		12-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.F	09-Sep-2021	----	----	----		12-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.NO3-L	09-Sep-2021	----	----	----		12-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.NO2-L	09-Sep-2021	----	----	----		12-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E235.SO4	09-Sep-2021	----	----	----		12-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E318	09-Sep-2021	16-Sep-2021	----	----		20-Sep-2021	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E372-U	09-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	28 days	6 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E421.Cr-L	09-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E509	09-Sep-2021	16-Sep-2021	----	----		16-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E421	09-Sep-2021	15-Sep-2021	----	----		15-Sep-2021	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E358-L	09-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	28 days	11 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E355-L	09-Sep-2021	20-Sep-2021	----	----		20-Sep-2021	28 days	11 days	✓
Physical Tests : Acidity by Titration										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E283	09-Sep-2021	----	----	----		20-Sep-2021	14 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E290	09-Sep-2021	----	----	----		21-Sep-2021	14 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E100	09-Sep-2021	----	----	----		21-Sep-2021	28 days	12 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E125	09-Sep-2021	----	----	----		20-Sep-2021	0.25 hrs	266 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E108	09-Sep-2021	----	----	----		21-Sep-2021	0.25 hrs	288 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E162	09-Sep-2021	----	----	----		14-Sep-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E160-L	09-Sep-2021	----	----	----		14-Sep-2021	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E121	09-Sep-2021	----	----	----		12-Sep-2021	3 days	3 days	× EHT
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E420.Cr-L	09-Sep-2021	----	----	----		16-Sep-2021	180 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E508-L	09-Sep-2021	----	----	----		18-Sep-2021	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	E420	09-Sep-2021	----	----	----		16-Sep-2021	180 days	8 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	297438	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	298096	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	300319	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	290236	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	290237	1	2	50.0	5.0	✓
Conductivity in Water	E100	298095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	292385	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	293479	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	292384	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	297482	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	290200	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	290240	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	290238	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	290239	1	2	50.0	5.0	✓
ORP by Electrode	E125	296880	1	20	5.0	5.0	✓
pH by Meter	E108	298094	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	290235	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	291257	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	292724	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	294397	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	296188	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	292723	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	297485	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	291325	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	290263	1	11	9.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	297438	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	298096	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	300319	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	290236	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	290237	1	2	50.0	5.0	✓
Conductivity in Water	E100	298095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	292385	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	293479	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	292384	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	297482	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	290200	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	290240	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	290238	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	290239	1	2	50.0	5.0	✓
ORP by Electrode	E125	296880	1	20	5.0	5.0	✓
pH by Meter	E108	298094	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	290235	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	291257	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	292724	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	294397	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	296188	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	292723	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	297485	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	291325	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	291251	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	290263	1	11	9.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	297438	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	298096	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	300319	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	290236	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	290237	1	2	50.0	5.0	✓
Conductivity in Water	E100	298095	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	292385	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	293479	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	292384	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	297482	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	290200	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	290240	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	290238	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	290239	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	290235	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	291257	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	292724	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	294397	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	296188	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	292723	2	19	10.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	297485	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	291325	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	291251	1	13	7.6	5.0	✓
Turbidity by Nephelometry	E121	290263	1	11	9.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	300319	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	290236	1	2	50.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	290237	1	2	50.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	292385	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	293479	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	292384	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	297482	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	290200	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	290240	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	290238	1	2	50.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	290239	1	2	50.0	5.0	✓
Sulfate in Water by IC	E235.SO4	290235	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	292724	1	8	12.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	294397	1	16	6.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	296188	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	292723	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	297485	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	291325	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	*Method / Lab*	*Matrix*	*Method Reference*	*Method Descriptions*
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	*Method / Lab*	*Matrix*	*Method Reference*	*Method Descriptions*
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2104008**		
Amendment	: **1**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 11-Sep-2021 10:15
PO	: VPO00748510	Date Analysis Commenced	: 12-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 30-Oct-2021 12:18
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Physical Tests (QC Lot: 290263)											
CG2104004-001	Anonymous	turbidity	----	E121	0.10	NTU	1.71	1.60	6.40%	15%	----
Physical Tests (QC Lot: 291257)											
CG2104004-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	327	323	1.23%	20%	----
Physical Tests (QC Lot: 296880)											
CG2104006-003	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	480	491	2.29%	15%	----
Physical Tests (QC Lot: 297438)											
CG2104005-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 298094)											
CG2104004-010	Anonymous	pH	----	E108	0.10	pH units	5.01	5.03	0.398%	4%	----
Physical Tests (QC Lot: 298095)											
CG2104004-010	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 298096)											
CG2104004-010	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 290200)											
CG2104005-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0030	0.0029	0.00008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 290235)											
CG2104007-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	837	159	136%	20%	----
Anions and Nutrients (QC Lot: 290236)											
CG2104007-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.050	0.200	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 290237)											
CG2104007-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	3.35	# 0.58	2.77	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 290238)											
CG2104007-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.81	0.525	137%	20%	----
Anions and Nutrients (QC Lot: 290239)											
CG2104007-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0050	<0.0010	0.0040	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 290240)											
CG2104007-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.020	0.080	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 291325)											

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 291325) - continued											
CG2104005-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0048	0.0050	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 294397)											
CG2104001-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	TKND
Anions and Nutrients (QC Lot: 300319)											
CG2104007-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 297482)											
CG2104007-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.28	2.14	0.14	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 297485)											
CG2104006-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.36	1.39	0.02	Diff <2x LOR	----
Total Metals (QC Lot: 292723)											
CG2103999-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00230	0.00214	6.83%	20%	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00024	0.00022	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0167	0.0172	2.75%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.108	0.105	0.003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	2.62 µg/L	0.00275	4.86%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	623	606	2.88%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	87.6 µg/L	0.0899	2.55%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.144	0.145	0.002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.000177	0.000163	0.000014	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.938	0.894	4.74%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	292	293	0.383%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.751	0.751	0.0845%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00466	0.00453	2.87%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.453	0.474	4.60%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	16.8	17.4	3.12%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	98.9 µg/L	0.100	1.51%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	2.90	2.93	1.14%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.100	mg/L	15.6	16.2	3.70%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	1.11	1.04	6.87%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	435	434	0.285%	20%	----

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 292723) - continued											
CG2103999-001	Anonymous	thallium, total	7440-28-0	E420	0.000020	mg/L	0.000398	0.000370	7.45%	20%	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0428	0.0390	9.41%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.191	0.193	1.09%	20%	----
Total Metals (QC Lot: 292724)											
CG2103999-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 296188)											
CG2104006-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 292384)											
CG2103975-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00043	0.00045	0.00003	Diff <2x LOR	----
CG2103975-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0029	0.0028	0.00006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00231	0.00236	2.26%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0232	0.0239	2.65%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.061	0.062	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.307 µg/L	0.000325	5.45%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	257	263	2.43%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	31.0 µg/L	0.0312	0.760%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.055	0.054	0.001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.716	0.717	0.122%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	103	101	1.52%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.213	0.215	1.30%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00600	0.00624	3.84%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.142	0.143	0.758%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	13.5	13.5	0.538%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.67 µg/L	0.00363	1.12%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.69	2.65	1.70%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	11.3	11.4	1.15%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.613	0.634	3.39%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 292384) - continued											
CG2103975-001	Anonymous	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	154	154	0.584%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000148	0.000155	5.24%	20%	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0157	0.0160	2.18%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.216	0.219	1.06%	20%	----
Dissolved Metals (QC Lot: 292385)											
CG2103975-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 293479)											
CG2104001-011	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
TKND	*TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 290263)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 291251)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 291257)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 297438)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 298095)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 298096)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 290200)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 290235)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 290236)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 290237)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 290238)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 290239)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 290240)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 291325)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 294397)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 300319)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 300319) - continued						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 297482)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 297485)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 292723)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	MBRR
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 292723) - continued						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 292724)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 296188)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 292384)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	MBRR
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 292384) - continued						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 292385)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 293479)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 290263)									
turbidity	----	E121	0.1	NTU	200 NTU	99.6	85.0	115	----
Physical Tests (QCLot: 291251)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	100	85.0	115	----
Physical Tests (QCLot: 291257)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.9	85.0	115	----
Physical Tests (QCLot: 296880)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
Physical Tests (QCLot: 297438)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	110	85.0	115	----
Physical Tests (QCLot: 298094)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 298095)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.1	90.0	110	----
Physical Tests (QCLot: 298096)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 290200)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.1 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 290235)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	95.0	90.0	110	----
Anions and Nutrients (QCLot: 290236)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 290237)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 290238)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	97.5	90.0	110	----
Anions and Nutrients (QCLot: 290239)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 290240)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.5	90.0	110	----
Anions and Nutrients (QCLot: 291325)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	102	80.0	120	----
Anions and Nutrients (QCLot: 294397)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 294397) - continued									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 300319)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Organic / Inorganic Carbon (QCLot: 297482)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	93.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 297485)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	99.8	80.0	120	----
Total Metals (QCLot: 292723)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.4	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.0	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 292723) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.7	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Total Metals (QCLot: 292724)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
Total Metals (QCLot: 296188)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	92.8	80.0	120	----
Dissolved Metals (QCLot: 292384)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.7	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.7	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.1	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.0	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.7	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	88.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	95.1	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 292384) - continued									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	----
Dissolved Metals (QCLot: 292385)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 290200)										
CG2104005-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0571 mg/L	0.05 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 290235)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 290236)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	bromide	24959-67-9	E235.Br-L	0.609 mg/L	0.5 mg/L	122	75.0	125	----
Anions and Nutrients (QCLot: 290237)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	chloride	16887-00-6	E235.Cl-L	121 mg/L	100 mg/L	121	75.0	125	----
Anions and Nutrients (QCLot: 290238)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 290239)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.616 mg/L	0.5 mg/L	123	75.0	125	----
Anions and Nutrients (QCLot: 290240)										
CG2104008-001	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	fluoride	16984-48-8	E235.F	1.10 mg/L	1 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 291325)										
CG2104005-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0593 mg/L	0.0676 mg/L	87.7	70.0	130	----
Anions and Nutrients (QCLot: 294397)										
CG2104001-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.901 mg/L	2.5 mg/L	36.0	70.0	130	MSTN
Anions and Nutrients (QCLot: 300319)										
CG2104023-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.108 mg/L	0.1 mg/L	108	75.0	125	----
Organic / Inorganic Carbon (QCLot: 297482)										
CG2104007-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	26.5 mg/L	23.9 mg/L	111	70.0	130	----
Organic / Inorganic Carbon (QCLot: 297485)										
CG2104006-002	Anonymous	carbon, total organic [TOC]	----	E355-L	25.0 mg/L	23.9 mg/L	105	70.0	130	----
Total Metals (QCLot: 292723)										
CG2103999-002	Anonymous	aluminum, total	7429-90-5	E420	0.402 mg/L	0.4 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 292723) - continued										
CG2103999-002	Anonymous	antimony, total	7440-36-0	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0766 mg/L	0.08 mg/L	95.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0172 mg/L	0.02 mg/L	86.2	70.0	130	----
		boron, total	7440-42-8	E420	0.205 mg/L	0.2 mg/L	103	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00717 mg/L	0.008 mg/L	89.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		iron, total	7439-89-6	E420	3.83 mg/L	4 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0350 mg/L	0.04 mg/L	87.6	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0835 mg/L	0.08 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	19.1 mg/L	20 mg/L	95.7	70.0	130	----
		silver, total	7440-22-4	E420	0.00730 mg/L	0.008 mg/L	91.2	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00705 mg/L	0.008 mg/L	88.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0823 mg/L	0.08 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.207 mg/L	0.2 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.734 mg/L	0.8 mg/L	91.8	70.0	130	----
Total Metals (QCLot: 292724)										
CG2103999-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0772 mg/L	0.08 mg/L	96.5	70.0	130	----
Total Metals (QCLot: 296188)										
CG2104006-002	Anonymous	mercury, total	7439-97-6	E508-L	4.68 ng/L	5 ng/L	93.6	70.0	130	----
Dissolved Metals (QCLot: 292384)										
CG2103975-002	Anonymous	copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 292384) - continued										
CG2103975-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0367 mg/L	0.04 mg/L	91.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00842 mg/L	0.01 mg/L	84.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	88.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.86 mg/L	10 mg/L	88.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00360 mg/L	0.004 mg/L	90.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.356 mg/L	0.4 mg/L	89.0	70.0	130	----
Dissolved Metals (QCLot: 292385)										
CG2103975-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
Dissolved Metals (QCLot: 293479)										
CG2104005-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----

Qualifiers

Qualifier	*Description*
MSTN	*TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.*

Teck

Page 1 of 1

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO				LABORATORY			
Facility Name / Job#	REP			Lab Name	ALS Calgary		
Project Manager	Mike Pope			Lab Contact	Lyudmyla Shvets		
Email				Email	lyudmyla.shvets@alsglobal.com		
Address	421 Pine Avenue			Address	2559 29 Street NE		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8202			Phone Number	1 403 407 1794		

Excel	PDF	EDD

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
Filtered								N	F	N	N	F	N	F
Preservative									H2SO4	H2SO4		HCL	HNO3	HNO3
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_NP	RG_FOBKS	WS	No	9/9/2021	1015	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510				9/11 1015

NB OF BOTTLES RETURNED/DESCRIPTION				
Regular (default) x	Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time	September 10, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

Environmental Division
Calgary
Work Order Reference
CG2104008

Telephone: +1 403 407 1800

8

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104067**	Page	: 1 of 7
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 14-Sep-2021 10:30
PO	: VPO00748510	Date Analysis Commenced	: 15-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 04-Jan-2022 16:25
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
HTA	*Analytical holding time was exceeded.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	RG_FO22_WS_LAEMP_FRO_2021-09-12_NP	----	----
				Client sampling date / time	11-Sep-2021 13:22	11-Sep-2021 08:15	12-Sep-2021 08:45	----	----
					CG2104067-001	CG2104067-002	CG2104067-003	--------	--------
					Result	Result	Result	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	241	244	247	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	241	244	247	----	----
conductivity	----	E100	2.0	µS/cm	1110	1030	1110	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	617	572	614	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	435	452	474	----	----
pH	----	E108	0.10	pH units	8.19	8.24	8.25	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	844	769	857	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.0	2.2	1.7	----	----
turbidity	----	E121	0.10	NTU	0.20 HTA	0.28 HTA	0.34	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	294	297	302	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0086	0.0178	0.0522	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.63	1.59	1.70	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.173	0.154	0.154	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	<0.050 TKNI	<0.050 TKNI	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	20.9 HTA	20.7 HTA	22.7	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0092 HTA	0.0054 HTA	0.0095	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010 HTA	<0.0010 HTA	<0.0010	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0024	0.0025	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	335	291	322	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.16	1.17	1.10	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	RG_FO22_WS_LAEMP_FRO_2021-09-12_NP	----	----
				Client sampling date / time	11-Sep-2021 13:22	11-Sep-2021 08:15	12-Sep-2021 08:45	----	----
					CG2104067-001	CG2104067-002	CG2104067-003	--------	--------
					Result	Result	Result	----	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.56	1.39	1.57	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	13.3	12.5	13.3	----	----
cation sum	----	EC101	0.10	meq/L	12.5	11.6	12.4	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.0	92.8	93.2	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.10	3.73	3.50	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0042	0.0330	0.0059	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00021	0.00014	0.00016	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00016	0.00011	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0830	0.0902	0.0945	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.014	0.015	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0593	0.0427	0.0449	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	136	127	136	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00015	0.00014	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.13	<0.10	<0.10	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.011	0.048	0.019	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0485	0.0445	0.0491	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	67.8	60.9	65.2	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00310	0.00543	0.00486	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00183	0.00112	0.00140	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00339	0.00180	0.00203	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.22	2.02	2.18	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	82.7	76.5	85.0	----	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	RG_FO22_WS_LAEMP_FRO_2021-09-12_NP	----	----
				Client sampling date / time	11-Sep-2021 13:22	11-Sep-2021 08:15	12-Sep-2021 08:45	----	----
					CG2104067-001	CG2104067-002	CG2104067-003	--------	--------
					Result	Result	Result	----	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	2.20	2.20	2.17	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	2.55	2.70	2.74	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.179	0.165	0.176	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	112	96.8	109	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00066	<0.00030	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00403	0.00354	0.00392	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0024	<0.0010	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00014	0.00014	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0816	0.0899	0.0913	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.013	0.014	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0431	0.0384	0.0395	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	135	127	137	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00013	0.00014	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.12	<0.10	<0.10	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0484	0.0437	0.0479	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	68.0	61.8	66.1	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00266	0.00332	0.00428	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	RG_FO22_WS_LAEMP_FRO_2021-09-12_NP	----	----
				Client sampling date / time	11-Sep-2021 13:22	11-Sep-2021 08:15	12-Sep-2021 08:45	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104067-001	CG2104067-002	CG2104067-003	--------	--------
					Result	Result	Result	----	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00165	0.00100	0.00121	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00324	0.00176	0.00217	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.19	2.04	2.19	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	89.9	80.9	89.6	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.18	2.08	2.13	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.51	2.77	2.83	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.176	0.163	0.173	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	114	97.5	107	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00371	0.00335	0.00358	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0024	0.0018	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	----	----

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

QUALITY CONTROL REPORT

Work Order	: **CG2104067**	Page	: 1 of 19
Amendment	: **1**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 14-Sep-2021 10:30
PO	: VPO00748510	Date Analysis Commenced	: 15-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 04-Jan-2022 16:25
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 292416)											
CG2104065-001	Anonymous	turbidity	----	E121	0.10	NTU	0.36	0.37	0.005	Diff <2x LOR	----
Physical Tests (QC Lot: 294151)											
CG2104062-008	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 297941)											
CG2104065-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	442	1.88%	15%	----
Physical Tests (QC Lot: 298053)											
CG2104062-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	18.1	16.0	2.1	Diff <2x LOR	----
Physical Tests (QC Lot: 299356)											
CG2104065-001	Anonymous	conductivity	----	E100	2.0	µS/cm	280	281	0.356%	10%	----
Physical Tests (QC Lot: 299357)											
CG2104065-001	Anonymous	pH	----	E108	0.10	pH units	8.17	8.20	0.366%	4%	----
Physical Tests (QC Lot: 299358)											
CG2104065-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	143	133	7.83%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	143	133	7.83%	20%	----
Anions and Nutrients (QC Lot: 292429)											
CG2104063-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0083	0.0079	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 292598)											
CG2104065-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 292674)											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.173	0.170	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 292675)											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	335	335	0.0609%	20%	----
Anions and Nutrients (QC Lot: 292676)											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 292677)											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.63	1.60	1.75%	20%	----
Anions and Nutrients (QC Lot: 292678)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 292678) - continued											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	20.9	20.9	0.198%	20%	----
Anions and Nutrients (QC Lot: 292679)											
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0092	0.0104	0.0012	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296970)											
CG2104048-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.292	0.270	0.022	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 301690)											
CG2104066-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0096	0.0097	0.0001	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 298734)											
CG2104064-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.45	1.72	0.27	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 298741)											
CG2104062-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.74	0.80	0.06	Diff <2x LOR	----
Total Metals (QC Lot: 295735)											
CG2104062-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0114	0.0114	0.00002	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00148	0.00148	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.0152	0.0148	2.34%	20%	----
		beryllium, total	7440-41-7	E420	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.107	0.108	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0100	mg/L	1.68 µg/L	0.00164	2.31%	20%	----
		calcium, total	7440-70-2	E420	0.100	mg/L	510	515	0.936%	20%	----
		cobalt, total	7440-48-4	E420	0.20	mg/L	30.9 µg/L	0.0303	1.80%	20%	----
		copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	0.00101	0.00001	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	0.115	0.134	0.018	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	0.000111	0.000107	0.000004	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.738	0.720	2.45%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	217	214	1.23%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	0.726	0.719	1.02%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00250	0.00251	0.428%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	0.228	0.226	0.477%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	8.39	8.43	0.511%	20%	----
		selenium, total	7782-49-2	E420	0.100	mg/L	4.36 µg/L	0.00448	2.58%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	3.01	2.98	0.956%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 295735) - continued											
CG2104062-001	Anonymous	sodium, total	7440-23-5	E420	0.100	mg/L	14.6	14.5	0.723%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	0.420	0.414	1.44%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	424	427	0.600%	20%	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	0.000161	0.000150	0.000011	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.0392	0.0377	3.94%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	0.109	0.107	1.37%	20%	----
Total Metals (QC Lot: 295736)											
CG2104062-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00020	mg/L	0.00039	0.00031	0.00008	Diff <2x LOR	----
Total Metals (QC Lot: 298052)											
CG2104048-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 297293)											
CG2104064-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 297294)											
CG2104064-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
CG2104064-001	Anonymous	antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00205	0.00211	3.18%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0166	0.0169	1.53%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.096	0.097	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	2.69 µg/L	0.00273	1.47%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	580	598	3.06%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	83.8 µg/L	0.0838	0.0551%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.216	0.213	1.21%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.868	0.884	1.88%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	273	271	0.672%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.710	0.705	0.742%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00425	0.00425	0.0486%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.432	0.432	0.225%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	16.8	16.5	1.91%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 297294) - continued											
CG2104064-001	Anonymous	selenium, dissolved	7782-49-2	E421	0.100	mg/L	92.3 µg/L	0.0899	2.63%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.86	2.77	3.19%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	16.7	16.7	0.151%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	1.02	1.05	2.90%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	445	430	3.51%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000377	0.000372	1.23%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0378	0.0378	0.0967%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.182	0.178	1.88%	20%	----
Dissolved Metals (QC Lot: 297697)											
CG2104060-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 292416)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 292789)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 294151)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 298053)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 299356)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 299358)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 292429)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 292598)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 292674)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 292675)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 292676)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 292677)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 292678)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 292679)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 296970)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 301690)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 301690) - continued						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 298734)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 298741)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 295735)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 295735) - continued						
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 295736)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 298052)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 297293)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 297294)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 297294) - continued						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 297697)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 292416)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 292789)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	97.1	85.0	115	----
Physical Tests (QCLot: 294151)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Physical Tests (QCLot: 297941)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
Physical Tests (QCLot: 298053)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	111	85.0	115	----
Physical Tests (QCLot: 299356)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	----
Physical Tests (QCLot: 299357)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 299358)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 292429)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 292598)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	97.3	80.0	120	----
Anions and Nutrients (QCLot: 292674)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 292675)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 292676)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.2	85.0	115	----
Anions and Nutrients (QCLot: 292677)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 292678)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 292679)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 296970)									

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 296970) - continued									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	94.7	75.0	125	----
Anions and Nutrients (QCLot: 301690)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Organic / Inorganic Carbon (QCLot: 298734)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	99.6	80.0	120	----
Organic / Inorganic Carbon (QCLot: 298741)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	105	80.0	120	----
Total Metals (QCLot: 295735)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.5	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	112	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 295735) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Total Metals (QCLot: 295736)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Total Metals (QCLot: 298052)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	94.4	80.0	120	----
Dissolved Metals (QCLot: 297293)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
Dissolved Metals (QCLot: 297294)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	92.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
					Laboratory Control Sample (LCS) Report				
Dissolved Metals (QCLot: 297294) - continued									
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.3	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.4	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 292429)										
CG2104063-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 292598)										
CG2104065-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0573 mg/L	0.05 mg/L	115	70.0	130	----
Anions and Nutrients (QCLot: 292674)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	fluoride	16984-48-8	E235.F	0.902 mg/L	1 mg/L	90.2	75.0	125	----
Anions and Nutrients (QCLot: 292675)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 292676)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	bromide	24959-67-9	E235.Br-L	0.470 mg/L	0.5 mg/L	93.9	75.0	125	----
Anions and Nutrients (QCLot: 292677)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 292678)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 292679)										
CG2104067-002	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.541 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 296970)										
CG2104048-011	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.51 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 301690)										
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	ammonia, total (as N)	7664-41-7	E298	0.0988 mg/L	0.1 mg/L	98.8	75.0	125	----
Organic / Inorganic Carbon (QCLot: 298734)										
CG2104064-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	24.8 mg/L	23.9 mg/L	104	70.0	130	----
Organic / Inorganic Carbon (QCLot: 298741)										
CG2104062-002	Anonymous	carbon, total organic [TOC]	----	E355-L	22.3 mg/L	23.9 mg/L	93.3	70.0	130	----
Total Metals (QCLot: 295735)										
CG2104062-002	Anonymous	aluminum, total	7429-90-5	E420	0.384 mg/L	0.4 mg/L	95.9	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 295735) - continued										
CG2104062-002	Anonymous	antimony, total	7440-36-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		barium, total	7440-39-3	E420	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0756 mg/L	0.08 mg/L	94.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0179 mg/L	0.02 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00746 mg/L	0.008 mg/L	93.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0349 mg/L	0.04 mg/L	87.3	70.0	130	----
		iron, total	7439-89-6	E420	3.70 mg/L	4 mg/L	92.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0357 mg/L	0.04 mg/L	89.2	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0833 mg/L	0.08 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	18.8 mg/L	20 mg/L	94.0	70.0	130	----
		silver, total	7440-22-4	E420	0.00771 mg/L	0.008 mg/L	96.4	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00725 mg/L	0.008 mg/L	90.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.0789 mg/L	0.08 mg/L	98.6	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.710 mg/L	0.8 mg/L	88.8	70.0	130	----
Total Metals (QCLot: 295736)										
CG2104062-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0781 mg/L	0.08 mg/L	97.6	70.0	130	----
Total Metals (QCLot: 298052)										
CG2104048-009	Anonymous	mercury, total	7439-97-6	E508-L	4.29 ng/L	5 ng/L	85.8	70.0	130	----
Dissolved Metals (QCLot: 297293)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 297293) - continued										
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
Dissolved Metals (QCLot: 297294)										
CG2104067-001	RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.097 mg/L	0.1 mg/L	96.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0180 mg/L	0.02 mg/L	90.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.84 mg/L	2 mg/L	91.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0890 mg/L	0.1 mg/L	89.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0354 mg/L	0.04 mg/L	88.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.91 mg/L	4 mg/L	97.7	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.06 mg/L	10 mg/L	90.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00365 mg/L	0.004 mg/L	91.3	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00371 mg/L	0.004 mg/L	92.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.4	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.372 mg/L	0.4 mg/L	93.1	70.0	130	----
Dissolved Metals (QCLot: 297697)										
CG2104060-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000959 mg/L	0.0001 mg/L	95.9	70.0	130	----

Teck

Page 1 of 1

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Mike Pope
Email	[illegible]
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
City	Calgary
Province	AB
Postal Code	T1Y 7B5
Country	Canada
Phone Number	1 403 407 1794

Excel	PDF	EDD

Environmental Division
Calgary
Work Order Reference
CG2104067

Telephone : + 1 403 407 1800

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N, HCL)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_FODPO_WS_LAEMP_FRO_2021-09-11_NP	RG_FODPO	WS	No	9/11/2021	1322	G	7	X	X	X	X	X	X	X
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_NP	RG_FOUEW	WS	No	9/11/2021	815	G	7	X	X	X	X	X	X	X
RG_FO22_WS_LAEMP_FRO-2021_09-12_NP	RG_FO22	WS	No	9/12/2021	845	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510	Jennifer Ings/Minnow	################	[signature]	9/14 1030

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature	[signature]	Date/Time	September 13, 2021

4

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104110**	Page	: 1 of 7
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Sep-2021 08:50
PO	: VPO00750546	Date Analysis Commenced	: 16-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 30-Sep-2021 13:04
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_FOBSC_WS _LAEMP_FRO_ 2021-09-13_NP	RG_FOUCL_WS _LAEMP_FRO_ 2021-09-13_NP	RG_FODHE_WS _LAEMP_FRO_ 2021-09-13_NP	RG_FOBCP_WS _LAEMP_FRO_ 2021-09-13_NP	----
				Client sampling date / time	13-Sep-2021 08:30	13-Sep-2021 12:00	13-Sep-2021 08:35	13-Sep-2021 12:30	----
Analyte	CAS Number	Method	LOR	Unit	CG2104110-001	CG2104110-002	CG2104110-003	CG2104110-004	--------
					Result	Result	Result	Result	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.6	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	231	139	134	227	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	17.6	5.6	7.8	18.6	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	248	144	142	246	----
conductivity	----	E100	2.0	µS/cm	1130	478	470	1120	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	653	257	240	651	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	447	464	439	468	----
pH	----	E108	0.10	pH units	8.44	8.32	8.39	8.45	----
solids, total dissolved [TDS]	----	E162	10	mg/L	865	310	290	847	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.1	<1.0	<1.0	<1.0	----
turbidity	----	E121	0.10	NTU	0.44	0.22	0.17	0.28	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	282	169	163	277	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	10.6	3.4	4.7	11.2	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0914	0.0075	0.0071	0.0237	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.050	<0.050	<0.250 DLDS	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.87	0.25	0.35	1.85	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.221	0.222	0.274	0.220	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.432 TKNI	0.291	0.186 TKNI	<0.050 TKNI	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	15.4 HTD	2.76 HTD	2.07 HTD	15.4 HTD	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0311 HTD	0.0050 HTD	0.0050 HTD	0.0280 HTD	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0021	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	376	108	102	371	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.24	0.82	0.95	1.36	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	<0.50	0.90	1.40	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	----
Client sampling date / time					13-Sep-2021 08:30	13-Sep-2021 12:00	13-Sep-2021 08:35	13-Sep-2021 12:30	----
					CG2104110-001	CG2104110-002	CG2104110-003	CG2104110-004	--------
					Result	Result	Result	Result	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	14.0	5.34	5.13	13.8	----
cation sum	----	EC101	0.10	meq/L	13.2	5.18	4.83	13.2	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	94.3	97.0	94.2	95.6	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.94	1.52	3.01	2.22	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0050	<0.0030	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00036	<0.00010	<0.00010	0.00036	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	<0.00010	0.00011	0.00014	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0660	0.0678	0.0422	0.0718	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L	0.018	<0.010	<0.010	0.018	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.139	0.0098	0.0133	0.104	----
calcium, total	7440-70-2	E420	0.050	mg/L	135	64.8	61.4	137	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00014	0.00012	<0.00010	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.64	<0.10	<0.10	0.44	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.052	<0.010	<0.010	0.035	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0611	0.0076	0.0064	0.0623	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	72.7	21.2	21.1	73.4	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0226	0.00069	0.00128	0.0134	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00301	0.000831	0.000854	0.00276	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0118	<0.00050	<0.00050	0.00976	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.71	0.787	0.700	2.72	----
selenium, total	7782-49-2	E420	0.050	µg/L	74.4	15.3	12.4	75.4	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.03	1.75	1.61	2.09	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	2.29	0.616	0.616	2.33	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	----
Client sampling date / time					13-Sep-2021 08:30	13-Sep-2021 12:00	13-Sep-2021 08:35	13-Sep-2021 12:30	----
					CG2104110-001	CG2104110-002	CG2104110-003	CG2104110-004	--------
					Result	Result	Result	Result	----
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.191	0.110	0.111	0.190	----
sulfur, total	7704-34-9	E420	0.50	mg/L	122	34.4	33.0	122	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000013	<0.000010	<0.000010	0.000011	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00475	0.00104	0.00101	0.00466	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0076	<0.0030	<0.0030	0.0057	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00035	<0.00010	<0.00010	0.00035	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	<0.00010	<0.00010	0.00012	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0655	0.0669	0.0420	0.0706	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	<0.010	<0.010	0.017	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.132	0.0105	0.0139	0.106	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	139	66.5	61.3	140	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	<0.00010	<0.00010	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.60	<0.10	<0.10	0.41	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	0.00023	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	<0.010	<0.010	<0.010	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0654	0.0076	0.0063	0.0635	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.2	22.0	21.0	73.2	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0215	0.00052	0.00085	0.0126	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00296	0.000806	0.000781	0.00271	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0116	<0.00050	0.00052	0.00950	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	0.804	0.709	2.65	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	----
				Client sampling date / time	13-Sep-2021 08:30	13-Sep-2021 12:00	13-Sep-2021 08:35	13-Sep-2021 12:30	----
Analyte	CAS Number	Method	LOR	Unit	CG2104110-001	CG2104110-002	CG2104110-003	CG2104110-004	--------
					Result	Result	Result	Result	----
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	81.5	16.4	13.3	82.7	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.06	1.69	1.50	2.00	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.32	0.617	0.620	2.32	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.195	0.107	0.110	0.191	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	120	33.1	31.1	118	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000015	<0.000010	<0.000010	0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00431	0.00102	0.000944	0.00451	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0068	<0.0010	0.0011	0.0052	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104110**	Page	: 1 of 20
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Sep-2021 08:50
PO	: VPO00750546	Issue Date	: 30-Sep-2021 13:04
C-O-C number	: September FRO LAEMP 2021		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E298	13-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E298	13-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E298	13-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E298	13-Sep-2021	25-Sep-2021	----	----		25-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.Br-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.Br-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.Br-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.Br-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.Cl-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.Cl-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.Cl-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.Cl-L	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E378-U	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E378-U	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E378-U	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E378-U	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.F	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.F	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.F	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.F	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.NO3-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	✘ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.NO3-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	✘ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.NO3-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	✘ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.NO3-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.NO2-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	✘ EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.NO2-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	× EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.NO2-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	× EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.NO2-L	13-Sep-2021	----	----	----		19-Sep-2021	3 days	6 days	× EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E235.SO4	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E235.SO4	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E235.SO4	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E235.SO4	13-Sep-2021	----	----	----		19-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E318	13-Sep-2021	21-Sep-2021	----	----		23-Sep-2021	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E318	13-Sep-2021	21-Sep-2021	----	----		23-Sep-2021	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E318	13-Sep-2021	21-Sep-2021	----	----		23-Sep-2021	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E318	13-Sep-2021	21-Sep-2021	----	----		23-Sep-2021	28 days	10 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E372-U	13-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E372-U	13-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E372-U	13-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E372-U	13-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E421.Cr-L	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	5 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E421.Cr-L	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	5 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E421.Cr-L	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E421.Cr-L	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E509	13-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E509	13-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E509	13-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E509	13-Sep-2021	18-Sep-2021	----	----		18-Sep-2021	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E421	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E421	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E421	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E421	13-Sep-2021	17-Sep-2021	----	----		18-Sep-2021	180 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E358-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E358-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E358-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E358-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E355-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E355-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E355-L	13-Sep-2021	22-Sep-2021	----	----		26-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E355-L	13-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	9 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E283	13-Sep-2021	----	----	----		16-Sep-2021	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E283	13-Sep-2021	----	----	----		16-Sep-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E283	13-Sep-2021	----	----	----		16-Sep-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E283	13-Sep-2021	----	----	----		16-Sep-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E290	13-Sep-2021	----	----	----		24-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E290	13-Sep-2021	----	----	----		24-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E290	13-Sep-2021	----	----	----		24-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E290	13-Sep-2021	----	----	----		24-Sep-2021	14 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E100	13-Sep-2021	----	----	----		24-Sep-2021	28 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E100	13-Sep-2021	----	----	----		24-Sep-2021	28 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E100	13-Sep-2021	----	----	----		24-Sep-2021	28 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E100	13-Sep-2021	----	----	----		24-Sep-2021	28 days	11 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E125	13-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	265 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E125	13-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	265 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E125	13-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	268 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E125	13-Sep-2021	----	----	----		24-Sep-2021	0.34 hrs	269 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E108	13-Sep-2021	----	----	----		24-Sep-2021	0.25 hrs	263 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E108	13-Sep-2021	----	----	----		24-Sep-2021	0.25 hrs	263 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E108	13-Sep-2021	----	----	----		24-Sep-2021	0.25 hrs	267 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : pH by Meter										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E108	13-Sep-2021	----	----	----		24-Sep-2021	0.25 hrs	267 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E162	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E162	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E162	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E162	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E160-L	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E160-L	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E160-L	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E160-L	13-Sep-2021	----	----	----		20-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E121	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E121	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E121	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E121	13-Sep-2021	----	----	----		16-Sep-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E420.Cr-L	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E420.Cr-L	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E420.Cr-L	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E420.Cr-L	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E508-L	13-Sep-2021	----	----	----		22-Sep-2021	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E508-L	13-Sep-2021	----	----	----		22-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E508-L	13-Sep-2021	----	----	----		22-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E508-L	13-Sep-2021	----	----	----		22-Sep-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	E420	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	E420	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	E420	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	E420	13-Sep-2021	----	----	----		20-Sep-2021	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	294409	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	301625	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	302671	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	293813	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	293814	1	18	5.5	5.0	✓
Conductivity in Water	E100	301624	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	295659	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	295812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	295658	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	299650	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	293963	1	39	2.5	5.0	×
Fluoride in Water by IC	E235.F	293811	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	293815	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	293816	1	18	5.5	5.0	✓
ORP by Electrode	E125	299552	1	20	5.0	5.0	✓
pH by Meter	E108	301623	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	293812	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	296874	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	295657	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	298289	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	299580	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	295656	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	299659	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	298650	1	9	11.1	5.0	✓
Turbidity by Nephelometry	E121	293633	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	294409	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	301625	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	302671	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	293813	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	293814	1	18	5.5	5.0	✓
Conductivity in Water	E100	301624	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	295659	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	295812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	295658	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	299650	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	293963	2	39	5.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	293811	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	293815	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	293816	1	18	5.5	5.0	✓
ORP by Electrode	E125	299552	1	20	5.0	5.0	✓
pH by Meter	E108	301623	2	30	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	293812	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	296874	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	295657	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	298289	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	299580	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	295656	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	299659	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	298650	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	296869	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	293633	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	294409	1	9	11.1	5.0	✓
Alkalinity Species by Titration	E290	301625	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	302671	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	293813	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	293814	1	18	5.5	5.0	✓
Conductivity in Water	E100	301624	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	295659	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	295812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	295658	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	299650	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	293963	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	293811	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	293815	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	293816	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	293812	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	296874	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	295657	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	298289	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	299580	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	295656	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	299659	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	298650	1	9	11.1	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	296869	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	293633	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	302671	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	293813	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	293814	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	295659	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	295812	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	295658	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	299650	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	293963	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	293811	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	293815	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	293816	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	293812	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	295657	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	298289	1	17	5.8	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	299580	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	295656	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	299659	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	298650	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as $CaCO_3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO_3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2104110**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Sep-2021 08:50
PO	: VPO00750546	Date Analysis Commenced	: 16-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 30-Sep-2021 13:04
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
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Elke Tabora		Inorganics, Calgary, Alberta
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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	**Client sample ID**	**Analyte**	**CAS Number**	**Method**	**LOR**	**Unit**	**Original Result**	**Duplicate Result**	**RPD(%) or Difference**	**Duplicate Limits**	**Qualifier**
Physical Tests (QC Lot: 293633)											
CG2104105-001	Anonymous	turbidity	----	E121	0.10	NTU	1.04	0.99	0.05	Diff <2x LOR	----
Physical Tests (QC Lot: 294409)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 296874)											
CG2104061-007	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	290	289	0.346%	20%	----
Physical Tests (QC Lot: 299552)											
CG2104099-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	437	445	1.77%	15%	----
Physical Tests (QC Lot: 301623)											
CG2104089-001	Anonymous	pH	----	E108	0.10	pH units	8.33	8.34	0.120%	4%	----
Physical Tests (QC Lot: 301624)											
CG2104090-002	Anonymous	conductivity	----	E100	2.0	µS/cm	1900	1880	1.22%	10%	----
Physical Tests (QC Lot: 301625)											
CG2104090-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	444	459	3.21%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	444	459	3.21%	20%	----
Physical Tests (QC Lot: 301626)											
CG2104110-003	RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	pH	----	E108	0.10	pH units	8.39	8.39	0.00%	4%	----
Anions and Nutrients (QC Lot: 293811)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.221	0.218	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 293812)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	376	373	0.636%	20%	----
Anions and Nutrients (QC Lot: 293813)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 293814)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.87	1.82	0.05	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 293815)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	15.4	15.3	0.398%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 293816)											
CG2104110-001	RG_FOBSC_WS_LAEMP_ FRO_2021-09-13_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0311	0.0304	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 293964)											
CG2104110-004	RG_FOBCP_WS_LAEMP_ FRO_2021-09-13_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 298289)											
CG2104108-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 298650)											
CG2104110-001	RG_FOBSC_WS_LAEMP_ FRO_2021-09-13_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 302671)											
CG2104088-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0447	0.0541	0.0094	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 299650)											
CG2104099-009	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.77	2.90	0.13	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 299659)											
CG2104108-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.60	0.58	0.02	Diff <2x LOR	----
Total Metals (QC Lot: 295656)											
CG2104071-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0162	0.0157	0.0004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00019	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0583	0.0586	0.375%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0178 µg/L	0.0000173	0.0000005	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	78.7	80.8	2.54%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.020	0.021	0.0006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0067	0.0068	0.00009	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	43.9	44.8	2.00%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00159	0.00148	7.50%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000831	0.000902	8.22%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00073	0.00074	0.000009	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.935	0.944	0.930%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	35.1 µg/L	0.0353	0.658%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 295656) - continued											
CG2104071-001	Anonymous	silicon, total	7440-21-3	E420	0.10	mg/L	2.12	2.15	1.42%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.48	1.49	0.956%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.118	0.122	3.12%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	68.1	67.3	1.11%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00242	0.00254	4.43%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 295657)											
CG2104071-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00017	0.00017	0.000005	Diff <2x LOR	----
Total Metals (QC Lot: 299580)											
CG2104099-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00092 µg/L	0.88	0.04	Diff <2x LOR	----
Dissolved Metals (QC Lot: 295658)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00035	0.00035	0.000003	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00014	0.000005	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0655	0.0671	2.48%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.132 µg/L	0.000117	12.5%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	139	140	0.733%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.60 µg/L	0.00063	0.00002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00021	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	0.012	0.0001	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0654	0.0648	0.970%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.2	76.9	3.53%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0215	0.0217	1.22%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00296	0.00278	6.22%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0116	0.0119	3.02%	20%	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.70	2.78	2.86%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Dissolved Metals (QC Lot: 295658) - continued											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	selenium, dissolved	7782-49-2	E421	0.050	mg/L	81.5 µg/L	0.0816	0.0936%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.06	2.02	2.03%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.32	2.31	0.241%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.195	0.191	2.40%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	120	114	4.86%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000015	0.000014	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00431	0.00441	2.28%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0068	0.0068	0.00003	Diff <2x LOR	----
Dissolved Metals (QC Lot: 295659)											
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 295812)											
CG2104086-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 293633)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 294409)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 296869)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 296874)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 301624)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 301625)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 293811)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 293812)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 293813)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 293814)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 293815)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 293816)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 293963)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 293964)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 298289)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 298650)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 298650) - continued						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 302671)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 299650)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 299659)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 295656)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 295656) - continued						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 295657)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 299580)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 295658)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 295658) - continued						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 295659)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 295812)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 293633)									
turbidity	----	E121	0.1	NTU	200 NTU	98.8	85.0	115	----
Physical Tests (QCLot: 294409)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	98.0	85.0	115	----
Physical Tests (QCLot: 296869)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.4	85.0	115	----
Physical Tests (QCLot: 296874)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	94.0	85.0	115	----
Physical Tests (QCLot: 299552)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
Physical Tests (QCLot: 301623)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 301624)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.8	90.0	110	----
Physical Tests (QCLot: 301625)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.0	85.0	115	----
Physical Tests (QCLot: 301626)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Anions and Nutrients (QCLot: 293811)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	108	90.0	110	----
Anions and Nutrients (QCLot: 293812)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 293813)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	----
Anions and Nutrients (QCLot: 293814)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 293815)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 293816)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 293963)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120	----
Anions and Nutrients (QCLot: 293964)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 293964) - continued									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	103	80.0	120	----
Anions and Nutrients (QCLot: 298289)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 298650)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	100	80.0	120	----
Anions and Nutrients (QCLot: 302671)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	109	85.0	115	----
Organic / Inorganic Carbon (QCLot: 299650)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.0	80.0	120	----
Organic / Inorganic Carbon (QCLot: 299659)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	93.7	80.0	120	----
Total Metals (QCLot: 295656)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.1	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.0	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 295656) - continued									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.1	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.5	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.9	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
Total Metals (QCLot: 295657)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Total Metals (QCLot: 299580)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	92.2	80.0	120	----
Dissolved Metals (QCLot: 295658)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.5	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	99.3	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.0	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 295658) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	93.0	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
Dissolved Metals (QCLot: 295659)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 293811)										
CG2104113-005	Anonymous	fluoride	16984-48-8	E235.F	1.04 mg/L	1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 293812)										
CG2104113-005	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	113 mg/L	100 mg/L	113	75.0	125	----
Anions and Nutrients (QCLot: 293813)										
CG2104113-005	Anonymous	bromide	24959-67-9	E235.Br-L	0.534 mg/L	0.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 293814)										
CG2104113-005	Anonymous	chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 293815)										
CG2104113-005	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.56 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 293816)										
CG2104113-005	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.510 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 293963)										
CG2104108-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0589 mg/L	0.05 mg/L	118	70.0	130	----
Anions and Nutrients (QCLot: 293964)										
CG2104111-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0567 mg/L	0.05 mg/L	113	70.0	130	----
Anions and Nutrients (QCLot: 298289)										
CG2104110-001	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.83 mg/L	2.5 mg/L	113	70.0	130	----
Anions and Nutrients (QCLot: 298650)										
CG2104110-002	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	phosphorus, total	7723-14-0	E372-U	0.0540 mg/L	0.0676 mg/L	79.8	70.0	130	----
Anions and Nutrients (QCLot: 302671)										
CG2104088-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0971 mg/L	0.1 mg/L	97.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 299650)										
CG2104099-009	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	27.4 mg/L	23.9 mg/L	114	70.0	130	----
Organic / Inorganic Carbon (QCLot: 299659)										
CG2104108-001	Anonymous	carbon, total organic [TOC]	----	E355-L	24.7 mg/L	23.9 mg/L	103	70.0	130	----
Total Metals (QCLot: 295656)										
CG2104071-002	Anonymous	aluminum, total	7429-90-5	E420	0.191 mg/L	0.2 mg/L	95.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 295656) - continued										
CG2104071-002	Anonymous	antimony, total	7440-36-0	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00912 mg/L	0.01 mg/L	91.2	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.0968 mg/L	0.1 mg/L	96.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, total	7440-21-3	E420	9.02 mg/L	10 mg/L	90.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		sodium, total	17341-25-2	E420	1.90 mg/L	2 mg/L	95.0	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00364 mg/L	0.004 mg/L	91.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00398 mg/L	0.004 mg/L	99.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0991 mg/L	0.1 mg/L	99.1	70.0	130	----
		zinc, total	7440-66-6	E420	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
Total Metals (QCLot: 295657)										
CG2104071-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
Total Metals (QCLot: 299580)										
CG2104099-002	Anonymous	mercury, total	7439-97-6	E508-L	4.82 ng/L	5 ng/L	96.4	70.0	130	----
Dissolved Metals (QCLot: 295658)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 295658) - continued										
CG2104110-002	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00376 mg/L	0.004 mg/L	93.9	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.85 mg/L	2 mg/L	92.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.83 mg/L	4 mg/L	95.7	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.66 mg/L	10 mg/L	86.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00368 mg/L	0.004 mg/L	91.9	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.389 mg/L	0.4 mg/L	97.2	70.0	130	----
Dissolved Metals (QCLot: 295659)										
CG2104110-002	RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
Dissolved Metals (QCLot: 295812)										
CG2104086-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000978 mg/L	0.0001 mg/L	97.8	70.0	130	----

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO / **LABORATORY**

Facility Name / Job#	REP			Lab Name	ALS Calgary		
Project Manager	Mike Pope			Lab Contact	Lyudmyla Shvets		
Email				Email	lyudmyla.shvets@alsglobal.com		
Address	421 Pine Avenue			Address	2559 29 Street NE		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8202			Phone Number	1 403 407 1794		

Excel	PDF	EDD

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_NP	RG_FOBSC	WS	No	9/13/2021	830	G	7	X	X	X	X	X	X	X
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_NP	RG_FOUCL	WS	No	9/13/2021	1200	G	7	X	X	X	X	X	X	X
RG_FODHE_WS_LAEMP_FRO_2021-09-13_NP	RG_FODHE	WS	No	9/13/2021	835	G	7	X	X	X	X	X	X	X
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NP	RG_FOBCP	WS	No	9/13/2021	1230	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510	Jennifer Ings/Minnow	################	DK	9/15 0850

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x	Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	September 14, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

6°C

Environmental Division
Calgary
Work Order Reference
CG2104110

Telephone: +1 403 407 1800

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104149**	Page	: 1 of 7
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAMS	Date Samples Received	: 16-Sep-2021 10:40
PO	: VPO00748510	Date Analysis Commenced	: 17-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 01-Oct-2021 13:02
Sampler	: JI		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
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Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
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Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	----	----	----	----
				Client sampling date / time	14-Sep-2021 08:00	----	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	CG2104149-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	----	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	241	----	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	20.8	----	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	262	----	----	----	----
conductivity	----	E100	2.0	μS/cm	1130	----	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	633	----	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	445	----	----	----	----
pH	----	E108	0.10	pH units	8.45	----	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	917	----	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	----	----	----	----
turbidity	----	E121	0.10	NTU	0.44	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	294	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	12.5	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0398	----	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	----	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.34	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.189	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.170 TKNI	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	16.1	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0222	----	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	370	----	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	----	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	----	----	----	----
				Client sampling date / time	14-Sep-2021 08:00	----	----	----	----
					CG2104149-001	--------	--------	--------	--------
					Result	----	----	----	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.88	----	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	14.1	----	----	----	----
cation sum	----	EC101	0.10	meq/L	12.8	----	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	90.8	----	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.83	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00037	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0634	----	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.016	----	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.132	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	136	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.54	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.047	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0559	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	71.5	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0229	----	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00322	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0126	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.62	----	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	77.8	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	----	----	----	----
				Client sampling date / time	14-Sep-2021 08:00	----	----	----	----
					CG2104149-001	--------	--------	--------	--------
					Result	----	----	----	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	2.06	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	2.29	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.190	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	127	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000015	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00462	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0081	----	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00038	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00013	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0659	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.015	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.134	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	131	----	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00010	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.53	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00045	----	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.016	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0557	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	74.3	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0196	----	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	----	----	----	----
				Client sampling date / time	14-Sep-2021 08:00	----	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**CG2104149-001**	--------	--------	--------	--------
					Result	----	----	----	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00312	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0113	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.75	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	82.5	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.02	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.35	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.194	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	122	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00471	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0074	----	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----

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

QUALITY CONTROL REPORT

Work Order	: **CG2104149**	Page	: 1 of 19
Amendment	: **1**		

Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAMS	Date Samples Received	: 16-Sep-2021 10:40
PO	: VPO00748510	Date Analysis Commenced	: 17-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 01-Oct-2021 13:03
Sampler	: JI		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 1		
No. of samples analysed	: 1		

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 295090)											
CG2104099-010	Anonymous	turbidity	----	E121	0.10	NTU	0.48	0.45	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 297777)											
CG2104099-011	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	2670	2710	1.26%	20%	----
Physical Tests (QC Lot: 300486)											
CG2104148-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	446	455	2.15%	15%	----
Physical Tests (QC Lot: 303164)											
CG2104146-004	Anonymous	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 303165)											
CG2104146-004	Anonymous	pH	----	E108	0.10	pH units	5.31	5.36	0.937%	4%	----
Physical Tests (QC Lot: 303166)											
CG2104146-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 303171)											
CG2104135-003	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 294998)											
CG2104140-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0010	0.000004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 295582)											
CG2104148-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.201	0.197	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 295583)											
CG2104148-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	18.6	18.4	0.884%	20%	----
Anions and Nutrients (QC Lot: 295584)											
CG2104148-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 295585)											
CG2104148-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.46	0.43	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 295586)											
CG2104148-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0260	0.0257	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 295587)											
CG2104148-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0014	0.0012	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296033)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 296033) - continued											
CG2104146-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 298865)											
CG2104123-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.140	0.150	0.011	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 304917)											
CG2104146-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0292	0.0299	0.0007	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303783)											
CG2104149-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	0.90	0.09	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303784)											
CG2104149-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.88	0.81	0.07	Diff <2x LOR	----
Total Metals (QC Lot: 297687)											
CG2104134-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00014	0.00004	Diff <2x LOR	----
Total Metals (QC Lot: 297688)											
CG2104134-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0104	0.0106	1.36%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0434	0.0434	0.142%	20%	----
CG2104134-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0299	0.0274	0.0025	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00030	0.00029	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00025	0.00022	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0265	0.0258	2.84%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.100	0.097	0.002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.423 µg/L	0.000432	2.02%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	231	225	2.40%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	1.16 µg/L	0.00115	1.02%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.080	0.078	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0494	0.0482	2.38%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	123	122	0.329%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000744	0.000713	4.19%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.56	3.55	0.335%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	25.8 µg/L	0.0258	0.191%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.99	1.99	0.0646%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 297688) - continued											
CG2104134-001	Anonymous	sodium, total	17341-25-2	E420	0.050	mg/L	38.9	39.1	0.469%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.931	0.911	2.23%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	282	282	0.0771%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000049	0.000049	0.0000003	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00137	0.00098	0.00039	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00719	0.00708	1.52%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0361	0.0357	1.23%	20%	----
Total Metals (QC Lot: 300456)											
CG2104149-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 298593)											
CG2104138-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00027	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00018	0.000003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0508	0.0505	0.705%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.013	0.00002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0748 µg/L	0.0000725	3.13%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	177	180	1.52%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00131	0.00129	0.00002	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0230	0.0226	1.68%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	136	135	1.15%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00092	0.00091	0.000007	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00128	0.00123	3.89%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00089	0.00086	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.80	2.75	1.75%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	142 µg/L	0.129	10.3%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.96	2.68	10.1%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.80	3.81	0.250%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 298593) - continued											
CG2104138-001	Anonymous	strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.202	0.201	0.588%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	269	246	8.90%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00766	0.00764	0.269%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0032	0.0032	0.00006	Diff <2x LOR	----
Dissolved Metals (QC Lot: 298594)											
CG2104138-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 300042)											
CG2104148-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 295090)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 297310)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 297777)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 303164)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 303166)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 303171)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 294998)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 295582)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 295583)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 295584)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 295585)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 295586)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 295587)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 296033)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 298865)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 304917)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 304917) - continued						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 303783)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 303784)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 297687)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	MBRR
Total Metals (QCLot: 297688)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	MBRR
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	MBRR
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 297688) - continued						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 300456)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 298593)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 298593) - continued						
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 298594)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 300042)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
MBRR	*Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 295090)									
turbidity	----	E121	0.1	NTU	200 NTU	97.8	85.0	115	----
Physical Tests (QCLot: 297310)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.3	85.0	115	----
Physical Tests (QCLot: 297777)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.2	85.0	115	----
Physical Tests (QCLot: 300486)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
Physical Tests (QCLot: 303164)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 303165)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 303166)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 303171)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 294998)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 295582)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	110	90.0	110	----
Anions and Nutrients (QCLot: 295583)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 295584)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 295585)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 295586)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 295587)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 296033)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	90.5	80.0	120	----
Anions and Nutrients (QCLot: 298865)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 298865) - continued									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 304917)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	91.2	85.0	115	----
Organic / Inorganic Carbon (QCLot: 303783)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	94.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 303784)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	102	80.0	120	----
Total Metals (QCLot: 297687)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
Total Metals (QCLot: 297688)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.7	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.7	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	93.5	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.5	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.2	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	95.5	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 297688) - continued									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.2	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.2	80.0	120	----
Total Metals (QCLot: 300456)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	99.4	80.0	120	----
Dissolved Metals (QCLot: 298593)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.5	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.3	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.7	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.9	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.4	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 298593) - continued									
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.5	80.0	120	----
Dissolved Metals (QCLot: 298594)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.0	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 294998)										
CG2104146-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0569 mg/L	0.05 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 295582)										
CG2104148-002	Anonymous	fluoride	16984-48-8	E235.F	1.15 mg/L	1 mg/L	115	75.0	125	----
Anions and Nutrients (QCLot: 295583)										
CG2104148-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 295584)										
CG2104148-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.495 mg/L	0.5 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 295585)										
CG2104148-002	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 295586)										
CG2104148-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.64 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 295587)										
CG2104148-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.515 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 296033)										
CG2104146-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0646 mg/L	0.0676 mg/L	95.6	70.0	130	----
Anions and Nutrients (QCLot: 298865)										
CG2104123-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.4	70.0	130	----
Anions and Nutrients (QCLot: 304917)										
CG2104148-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0992 mg/L	0.1 mg/L	99.2	75.0	125	----
Organic / Inorganic Carbon (QCLot: 303783)										
CG2104149-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	carbon, dissolved organic [DOC]	----	E358-L	23.9 mg/L	23.9 mg/L	100	70.0	130	----
Organic / Inorganic Carbon (QCLot: 303784)										
CG2104149-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	carbon, total organic [TOC]	----	E355-L	24.9 mg/L	23.9 mg/L	104	70.0	130	----
Total Metals (QCLot: 297687)										
CG2104134-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
Total Metals (QCLot: 297688)										
CG2104134-002	Anonymous	copper, total	7440-50-8	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Total Metals (QCLot: 297688) - continued										
CG2104134-002	Anonymous	manganese, total	7439-96-5	E420	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
CG2104134-002	Anonymous	aluminum, total	7429-90-5	E420	0.188 mg/L	0.2 mg/L	94.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	86.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00356 mg/L	0.004 mg/L	88.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		iron, total	7439-89-6	E420	1.82 mg/L	2 mg/L	91.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	86.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0884 mg/L	0.1 mg/L	88.4	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		potassium, total	7440-09-7	E420	3.54 mg/L	4 mg/L	88.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, total	7440-21-3	E420	9.28 mg/L	10 mg/L	92.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
Total Metals (QCLot: 300456)										
CG2104150-001	Anonymous	mercury, total	7439-97-6	E508-L	4.50 ng/L	5 ng/L	89.9	70.0	130	----
Dissolved Metals (QCLot: 298593)										
CG2104138-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 298593) - continued										
CG2104138-002	Anonymous	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0352 mg/L	0.04 mg/L	88.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00834 mg/L	0.01 mg/L	83.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.083 mg/L	0.1 mg/L	83.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00365 mg/L	0.004 mg/L	91.2	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0174 mg/L	0.02 mg/L	86.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0174 mg/L	0.02 mg/L	87.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.80 mg/L	2 mg/L	90.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0174 mg/L	0.02 mg/L	87.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0867 mg/L	0.1 mg/L	86.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0347 mg/L	0.04 mg/L	86.7	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.62 mg/L	4 mg/L	90.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.49 mg/L	10 mg/L	84.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00364 mg/L	0.004 mg/L	91.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.352 mg/L	0.4 mg/L	88.1	70.0	130	----
Dissolved Metals (QCLot: 298594)										
CG2104138-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 300042)										
CG2104148-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000930 mg/L	0.0001 mg/L	93.0	70.0	130	----

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	[illegible]		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8202		

LABORATORY

Lab Name	ALS Calgary		
Lab Contact	Lyudmyla Shvets		
Email	lyudmyla.shvets@alsglobal.com		
Address	2559 29 Street NE		
City	Calgary	Province	AB
Postal Code	T1Y 7B5	Country	Canada
Phone Number	1 403 407 1794		

	Excel	PDF	EDD

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
Filtered								N	F	N	N	F	N	F
Preserved									H2SO4	H2SO4		HCL	HNO3	HNO3
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_NP	RG_SCOUTDS	WS	No	9/14/2021	800	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
Jennifer Ings/Minnow	################	[signature]	9/16/21 1930

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature	[signature]	Date/Time	September 15, 2021

Environmental Division
Calgary
Work Order Reference
CG2104149

Telephone : +1 403 407 1800

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104189**	Page	: 1 of 7
Amendment	: **1**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Sep-2021 10:00
PO	: VPO00748510	Date Analysis Commenced	: 18-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 09-Dec-2021 16:17
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLB	*Detection Limit Raised. Analyte detected at comparable level in Method Blank.*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	----
				Client sampling date / time	15-Sep-2021 14:30	15-Sep-2021 11:00	15-Sep-2021 08:00	15-Sep-2021 10:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2104189-001	CG2104189-002	CG2104189-003	CG2104189-004	--------
					Result	Result	Result	Result	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	166	219	240	136	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	10.2	25.4	16.8	9.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	176	244	257	145	----
conductivity	----	E100	2.0	µS/cm	835	1150	1160	347	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	428	636	629	172	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	427	466	445	451	----
pH	----	E108	0.10	pH units	8.47	8.55	8.44	8.48	----
solids, total dissolved [TDS]	----	E162	10	mg/L	589	818	854	218	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	1.4	<1.0	----
turbidity	----	E121	0.10	NTU	0.45	0.46	0.18	0.20	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	202	267	293	166	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	6.1	15.2	10.1	5.4	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0258	0.0162	0.0095	0.0112	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.250 DLDS	<0.250 DLDS	<0.050	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.90	2.37	1.94	0.17	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.196	0.245	0.176	0.186	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	<0.050 TKNI	<0.050 TKNI	<0.050	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	17.1	16.3	22.5	0.0180	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0256	0.0302	0.0090	<0.0010	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	224	379	351	47.1	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.34	1.42	1.30	1.50	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

				Client sample ID	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	----
				Client sampling date / time	15-Sep-2021 14:30	15-Sep-2021 11:00	15-Sep-2021 08:00	15-Sep-2021 10:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2104189-001	CG2104189-002	CG2104189-003	CG2104189-004	--------
					Result	Result	Result	Result	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.31	1.54	1.53	1.55	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	9.44	14.0	14.1	3.89	----
cation sum	----	EC101	0.10	meq/L	8.67	12.9	12.7	3.47	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	91.8	92.1	90.1	89.2	----
ion balance (cation-anion difference)	----	EC101	0.010	%	4.25	4.09	5.22	5.71	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0052	0.0034	0.0031	0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00037	0.00038	0.00026	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00030 DLB	<0.00030 DLB	<0.00030 DLB	<0.00020 DLB	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0839	0.0745	0.0806	0.0472	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L	0.011	0.016	0.014	<0.010	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0310	0.102	0.0545	0.0074	----
calcium, total	7440-70-2	E420	0.050	mg/L	112	136	142	52.1	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00014	0.00013	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.12	0.37	0.16	<0.10	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.032	0.016	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0482	0.0582	0.0504	0.0014	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	49.4	78.0	72.5	14.4	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00210	0.0103	0.00368	0.00042	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00192	0.00296	0.00190	0.000724	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00628	0.0100	0.00447	<0.00050	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.85	2.66	2.29	0.389	----
selenium, total	7782-49-2	E420	0.050	µg/L	54.6	78.9	85.5	0.799	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	----
				Client sampling date / time	15-Sep-2021 14:30	15-Sep-2021 11:00	15-Sep-2021 08:00	15-Sep-2021 10:15	----
Analyte	CAS Number	Method	LOR	Unit	CG2104189-001	CG2104189-002	CG2104189-003	CG2104189-004	--------
					Result	Result	Result	Result	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	2.01	2.01	2.13	1.99	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	1.88	2.34	2.52	0.629	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.163	0.188	0.180	0.108	----
sulfur, total	7704-34-9	E420	0.50	mg/L	76.2	119	109	15.2	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000010	0.000014	<0.000010	<0.000010	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00302	0.00425	0.00387	0.000488	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	0.0053	0.0058	0.0126	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0012	<0.0010	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00032	0.00035	0.00018	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	<0.00010	<0.00010	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0782	0.0734	0.0764	0.0466	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.010	0.017	0.014	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0300	0.103	0.0493	0.0085	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	97.0	128	135	46.5	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0.00011	<0.00010	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.33	0.13	<0.10	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00157 DTC	<0.00020	<0.00020	<0.00020	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.013	<0.010	<0.010	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0430	0.0586	0.0480	0.0013	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	45.1	76.8	70.9	13.6	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00175	0.00970	0.00269	0.00012	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	----
				Client sampling date / time	15-Sep-2021 14:30	15-Sep-2021 11:00	15-Sep-2021 08:00	15-Sep-2021 10:15	----
					CG2104189-001	CG2104189-002	CG2104189-003	CG2104189-004	--------
					Result	Result	Result	Result	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00172	0.00290	0.00146	0.000678	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00561	0.00946	0.00356	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.76	2.71	2.29	0.367	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	51.6	83.3	96.2	0.721	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.94	2.08	2.23	2.02	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.75	2.32	2.64	0.585	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.143	0.181	0.173	0.102	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	78.1	128	116	16.1	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000014	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00284	0.00429	0.00382	0.000480	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0052	0.0019	<0.0010	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104189**		
Amendment	: 1		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Sep-2021 10:00
PO	: VPO00748510	Issue Date	: 09-Dec-2021 16:17
C-O-C number	: September FRO LAEMP 2021		
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Total Metals	QC-MRG2-298903001	----	arsenic, total	7440-38-2	E420	0.00010 mg/L MB-LOR	0.0001 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	*Description*
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E298	15-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E298	15-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E298	15-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E298	15-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.Br-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.Br-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.Br-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.Br-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.Cl-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.Cl-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.Cl-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.Cl-L	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E378-U	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E378-U	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E378-U	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E378-U	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.F	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.F	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.F	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.F	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.NO3-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.NO3-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.NO3-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.NO3-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.NO2-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.NO2-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.NO2-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.NO2-L	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E235.SO4	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E235.SO4	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E235.SO4	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E235.SO4	15-Sep-2021	----	----	----		18-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E318	15-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E318	15-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E318	15-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E318	15-Sep-2021	23-Sep-2021	----	----		27-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E372-U	15-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E372-U	15-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E372-U	15-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E372-U	15-Sep-2021	22-Sep-2021	----	----		22-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E421.Cr-L	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E421.Cr-L	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E421.Cr-L	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E421.Cr-L	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E509	15-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E421	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E421	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E421	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E421	15-Sep-2021	23-Sep-2021	----	----		24-Sep-2021	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E358-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E358-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E358-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E358-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E355-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E355-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E355-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E355-L	15-Sep-2021	27-Sep-2021	----	----		29-Sep-2021	28 days	14 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E283	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E283	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E283	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E283	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E290	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E290	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E290	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E290	15-Sep-2021	----	----	----		28-Sep-2021	14 days	13 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E100	15-Sep-2021	----	----	----		28-Sep-2021	28 days	13 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E100	15-Sep-2021	----	----	----		28-Sep-2021	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E100	15-Sep-2021	----	----	----		28-Sep-2021	28 days	13 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E100	15-Sep-2021	----	----	----		28-Sep-2021	28 days	13 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E125	15-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	240 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E125	15-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	243 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E125	15-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	244 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E125	15-Sep-2021	----	----	----		25-Sep-2021	0.25 hrs	246 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E108	15-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	308 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E108	15-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	312 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E108	15-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	313 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E108	15-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	315 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E162	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E160-L	15-Sep-2021	----	----	----		22-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E121	15-Sep-2021	----	----	----		18-Sep-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E420.Cr-L	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E420.Cr-L	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E420.Cr-L	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E420.Cr-L	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E508-L	15-Sep-2021	----	----	----		24-Sep-2021	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E508-L	15-Sep-2021	----	----	----		24-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E508-L	15-Sep-2021	----	----	----		24-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E508-L	15-Sep-2021	----	----	----		24-Sep-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	E420	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	E420	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	E420	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	E420	15-Sep-2021	----	----	----		22-Sep-2021	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	304859	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304723	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296270	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296271	1	16	6.2	5.0	✓
Conductivity in Water	E100	304722	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	299021	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300043	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	299020	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303820	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296209	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	296268	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296272	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296273	1	16	6.2	5.0	✓
ORP by Electrode	E125	302475	1	20	5.0	5.0	✓
pH by Meter	E108	304721	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	296269	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	298977	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	298903	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	301411	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	298904	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303828	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297809	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296170	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	304859	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304723	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296270	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296271	1	16	6.2	5.0	✓
Conductivity in Water	E100	304722	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	299021	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300043	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	299020	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303820	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296209	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	296268	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296272	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296273	1	16	6.2	5.0	✓
ORP by Electrode	E125	302475	1	20	5.0	5.0	✓
pH by Meter	E108	304721	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	296269	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	298977	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	298903	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	301411	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	298904	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303828	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297809	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	298275	2	33	6.0	5.0	✓
Turbidity by Nephelometry	E121	296170	1	20	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	304859	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	304723	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296270	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296271	1	16	6.2	5.0	✓
Conductivity in Water	E100	304722	1	15	6.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	299021	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300043	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	299020	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303820	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296209	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	296268	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296272	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296273	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296269	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	298977	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	298903	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	301411	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	298904	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303828	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297809	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	298275	2	33	6.0	5.0	✓
Turbidity by Nephelometry	E121	296170	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	305706	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296270	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296271	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	299021	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	300043	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	299020	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303820	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	296209	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	296268	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296272	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296273	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296269	1	16	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	298903	1	11	9.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	300307	1	11	9.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	301411	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	298904	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303828	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	297809	2	40	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as $CaCO_3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO_3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **CG2104189**	Page	: 1 of 18
Amendment	: **1**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Sep-2021 10:00
PO	: VPO00748510	Date Analysis Commenced	: 18-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 09-Dec-2021 16:17
Sampler	: Jennifer Ings		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 4		
No. of samples analysed	: 4		

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
\# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 296170)											
CG2104162-002	Anonymous	turbidity	----	E121	0.10	NTU	0.28	0.26	0.01	Diff <2x LOR	----
Physical Tests (QC Lot: 298977)											
CG2104186-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	248	252	1.80%	20%	----
Physical Tests (QC Lot: 302475)											
CG2104181-010	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	464	462	0.518%	15%	----
Physical Tests (QC Lot: 304721)											
CG2104186-002	Anonymous	pH	----	E108	0.10	pH units	8.48	8.53	0.588%	4%	----
Physical Tests (QC Lot: 304722)											
CG2104186-005	Anonymous	conductivity	----	E100	2.0	μS/cm	454	457	0.659%	10%	----
Physical Tests (QC Lot: 304723)											
CG2104186-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	136	136	0.0737%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	7.8	7.4	0.4	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	144	143	0.349%	20%	----
Physical Tests (QC Lot: 304859)											
CG2104186-005	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296209)											
CG2104188-018	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0019	0.0024	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296268)											
CG2104186-007	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296269)											
CG2104186-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296270)											
CG2104186-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296271)											
CG2104186-007	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296272)											
CG2104186-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0061	0.0011	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296273)											
CG2104186-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 297809)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 297809) - continued											
CG2104181-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 297810)											
CG2104189-003	RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 300307)											
CG2104185-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.063	0.080	0.017	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 305706)											
CG2104183-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0167	0.0149	0.0018	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303820)											
CG2104186-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.23	1.35	0.12	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303828)											
CG2104186-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.45	1.30	0.14	Diff <2x LOR	----
Total Metals (QC Lot: 298903)											
CG2104189-001	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00010	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 298904)											
CG2104189-001	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0052	0.0076	0.0024	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00037	0.00038	0.0000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0839	0.0832	0.849%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.011	0.011	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0310 µg/L	0.0000299	0.0000011	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	112	111	1.27%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	0.12 µg/L	0.00012	0.000006	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0482	0.0462	4.32%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	49.4	47.5	3.74%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00210	0.00201	4.55%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00192	0.00198	2.96%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00628	0.00603	4.00%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.85	1.79	3.13%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	54.6 µg/L	0.0526	3.80%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 298904) - continued											
CG2104189-001	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	silicon, total	7440-21-3	E420	0.10	mg/L	2.01	1.99	0.889%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	1.88	1.81	3.95%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.163	0.164	0.509%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	76.2	76.5	0.364%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000010	<0.000010	0.0000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00302	0.00305	1.02%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	<0.0030	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 301411)											
CG2104186-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 299020)											
CG2104131-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 299020) - continued											
CG2104131-001	Anonymous	silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 299021)											
CG2104131-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 300043)											
CG2104189-001	RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 296170)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 298275)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 298276)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 298977)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 304722)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 304723)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 304859)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 296209)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 296268)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 296269)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 296270)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 296271)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 296272)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 296273)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 297809)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 297810)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 297810) - continued						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 300307)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 305706)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 303820)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 303828)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 298903)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 298904)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	# 0.00010	MB-LOR
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 298904) - continued						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 301411)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 299020)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 299020) - continued						
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 299021)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 300043)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	*Description*
MB-LOR	*Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 296170)									
turbidity	----	E121	0.1	NTU	200 NTU	97.8	85.0	115	----
Physical Tests (QCLot: 298275)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	90.2	85.0	115	----
Physical Tests (QCLot: 298276)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.8	85.0	115	----
Physical Tests (QCLot: 298977)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.4	85.0	115	----
Physical Tests (QCLot: 302475)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
Physical Tests (QCLot: 304721)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 304722)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 304723)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.6	85.0	115	----
Physical Tests (QCLot: 304859)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 296209)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.6	80.0	120	----
Anions and Nutrients (QCLot: 296268)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 296269)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 296270)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	107	85.0	115	----
Anions and Nutrients (QCLot: 296271)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 296272)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 296273)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 297809)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
					Laboratory Control Sample (LCS) Report				
Anions and Nutrients (QCLot: 297809) - continued									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.7	80.0	120	----
Anions and Nutrients (QCLot: 297810)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	98.8	80.0	120	----
Anions and Nutrients (QCLot: 300307)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 305706)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	108	85.0	115	----
Organic / Inorganic Carbon (QCLot: 303820)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 303828)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	106	80.0	120	----
Total Metals (QCLot: 298903)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
Total Metals (QCLot: 298904)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	97.9	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.4	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.7	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.1	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 298904) - continued									
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.3	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.6	80.0	120	----
Total Metals (QCLot: 301411)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	97.6	80.0	120	----
Dissolved Metals (QCLot: 299020)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.9	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	90.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.5	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 299020) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	94.8	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.8	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.9	80.0	120	----
Dissolved Metals (QCLot: 299021)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	92.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 296209)										
CG2104188-019	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0557 mg/L	0.05 mg/L	111	70.0	130	----
Anions and Nutrients (QCLot: 296268)										
CG2104186-007	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 296269)										
CG2104186-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 296270)										
CG2104186-007	Anonymous	bromide	24959-67-9	E235.Br-L	0.544 mg/L	0.5 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 296271)										
CG2104186-007	Anonymous	chloride	16887-00-6	E235.Cl-L	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 296272)										
CG2104186-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 296273)										
CG2104186-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.538 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 297809)										
CG2104181-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0596 mg/L	0.0676 mg/L	88.2	70.0	130	----
Anions and Nutrients (QCLot: 297810)										
CG2104189-004	RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	phosphorus, total	7723-14-0	E372-U	0.0520 mg/L	0.0676 mg/L	76.9	70.0	130	----
Anions and Nutrients (QCLot: 300307)										
CG2104185-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.65 mg/L	2.5 mg/L	106	70.0	130	----
Anions and Nutrients (QCLot: 305706)										
CG2104186-007	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
Organic / Inorganic Carbon (QCLot: 303820)										
CG2104186-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	28.4 mg/L	23.9 mg/L	119	70.0	130	----
Organic / Inorganic Carbon (QCLot: 303828)										
CG2104186-001	Anonymous	carbon, total organic [TOC]	----	E355-L	27.8 mg/L	23.9 mg/L	116	70.0	130	----
Total Metals (QCLot: 298903)										
CG2104189-002	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	chromium, total	7440-47-3	E420.Cr-L	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 298904)										
CG2104189-002	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00898 mg/L	0.01 mg/L	89.8	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	86.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00389 mg/L	0.004 mg/L	97.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	95.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.0908 mg/L	0.1 mg/L	90.8	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.49 mg/L	4 mg/L	87.2	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.78 mg/L	10 mg/L	87.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.7	70.0	130	----
Total Metals (QCLot: 301411)										
CG2104186-002	Anonymous	mercury, total	7439-97-6	E508-L	4.83 ng/L	5 ng/L	96.6	70.0	130	----
Dissolved Metals (QCLot: 299020)										
CG2104131-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 299020) - continued										
CG2104131-002	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00907 mg/L	0.01 mg/L	90.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	95.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0959 mg/L	0.1 mg/L	95.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.81 mg/L	10 mg/L	98.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00384 mg/L	0.004 mg/L	96.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.383 mg/L	0.4 mg/L	95.7	70.0	130	----
Dissolved Metals (QCLot: 299021)										
CG2104131-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 300043)										
CG2104189-002	RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	mercury, dissolved	7439-97-6	E509	0.0000971 mg/L	0.0001 mg/L	97.1	70.0	130	----

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	mike.pope@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8202		

LABORATORY

Lab Name	ALS Calgary		
Lab Contact	Lyudmyla Shvets		
Email	lyudmyla.shvets@alsglobal.com		
Address	2559 29 Street NE		
City	Calgary	Province	AB
Postal Code	T1Y 7B5	Country	Canada
Phone Number	1 403 407 1794		

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lbowron@minnow.ca			
jessica.ritz@teck.com			
pschmit@minnow.ca			

SAMPLE DETAILS / ANALYSIS REQUESTED

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

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_MP1_WS_LAEMP_FRO_2021-09-15_NP	RG_MP1	WS	No	9/15/2021	1430	G	7	X	X	X	X	X	X	X
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_NP	RG_FRCP1SW	WS	No	9/15/2021	1100	G	7	X	X	X	X	X	X	X
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_NP	RG_FRSCH2	WS	No	9/15/2021	800	G	7	X	X	X	X	X	X	X
RG_FO26_WS_LAEMP_FRO_2021-09-15_NP	RG_FO26	WS	No	9/15/2021	1015	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Jennifer Ings/Minnow	################		9/17 10:00

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default) x
Priority (2-3 business days) - 50% surcharge
Emergency (1 Business Day) - 100% surcharge
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature		Date/Time	September 16, 2021

Environmental Division
Calgary
Work Order Reference
CG2104189

Telephone : + 1 403 407 1800

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104213**	Page	: 1 of 16
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 18-Sep-2021 09:05
PO	: VPO00748510	Date Analysis Commenced	: 19-Sep-2021
C-O-C number	: SEPTEMBER FRO LAEMP 2021	Issue Date	: 10-Oct-2021 15:03
Sampler	: JI		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Anthony Calero	Team Leader - Inorganics	Metals, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Sample Comments

Sample	*Client Id*	*Comment*
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	DID NOT RECEIVE DOC BOTTLE, D-METALS BOTTLE OR D-HG VIAL FOR THIS FRACTION

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*
RRV	*Reported result verified by repeat analysis.*

TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_TRIP_WS_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-1_2021-09-16_NP	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP
				Client sampling date / time	16-Sep-2021 13:30	16-Sep-2021 14:10	16-Sep-2021 14:10	16-Sep-2021 13:00	16-Sep-2021 09:15
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**CG2104213-001**	**CG2104213-002**	**CG2104213-003**	**CG2104213-004**	**CG2104213-005**
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	180	180	<1.0	103
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	9.2	7.8	<1.0	5.4
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	190	187	<1.0	108
conductivity	----	E100	2.0	µS/cm	<2.0	855	857	<2.0	327
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	<0.50	452	458	<0.50	158
oxidation-reduction potential [ORP]	----	E125	0.10	mV	506	437	468	479	481
pH	----	E108	0.10	pH units	4.91	8.39	8.38	5.73	8.33
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	644	616	<10	205
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.0	21.6	<1.0	<1.0
turbidity	----	E121	0.10	NTU	<0.10	0.31	0.38	<0.10	0.23
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	<1.0	220	219	<1.0	126
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	5.5	4.7	<1.0	3.2
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0234	0.0180	<0.0050	0.0163
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	0.76	0.81	<0.10	0.20
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.159	0.156	<0.020	0.302
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.071 TKNI	<0.050 TKNI	<0.050	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	16.1	16.0	<0.0050 HTD	0.223
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0224	0.0219	<0.0010	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	233	230	<0.30	60.7
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	----	0.89	0.89	<0.50	0.91
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	0.80	1.18	<0.50	0.72

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_TRIP_WS_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-1_2021-09-16_NP	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP
				Client sampling date / time	16-Sep-2021 13:30	16-Sep-2021 14:10	16-Sep-2021 14:10	16-Sep-2021 13:00	16-Sep-2021 09:15
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	CG2104213-001	CG2104213-002	CG2104213-003	CG2104213-004	CG2104213-005
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	<0.10	9.83	9.70	<0.10	3.46
cation sum	----	EC101	0.10	meq/L	<0.10	9.16	9.28	<0.10	3.19
ion balance (cations/anions ratio)	----	EC101	0.010	%	100	93.2	95.7	100	92.2
ion balance (cation-anion difference)	----	EC101	0.010	%	<0.010	3.53	2.21	<0.010	4.06
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0045	0.0034	<0.0030	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00033	0.00032	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00013	0.00012	<0.00010	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	0.0786	0.0766	<0.00010	0.0127
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.013	0.013	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	<0.0050	0.0311	0.0264	<0.0050	<0.0050
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	108	106	<0.050	45.2
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00011	0.00011	<0.00010	0.00012
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.20	0.19	<0.10	<0.10
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.050	0.047	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0499	0.0497	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	46.6	44.6	<0.0050	10.6
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	0.0145	0.0143	<0.00010	<0.00010
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	0.00180	0.00176	<0.000050	0.000590
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00545	0.00534	<0.00050	<0.00050
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	1.91	1.87	<0.050	0.192
selenium, total	7782-49-2	E420	0.050	µg/L	<0.050	48.1	47.6	<0.050	1.16
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	1.82	1.86	<0.10	1.16
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	<0.050	1.91	1.85	<0.050	0.320

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_TRIP_WS_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-1_2021-09-16_NP	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP
				Client sampling date / time	16-Sep-2021 13:30	16-Sep-2021 14:10	16-Sep-2021 14:10	16-Sep-2021 13:00	16-Sep-2021 09:15
					CG2104213-001	CG2104213-002	CG2104213-003	CG2104213-004	CG2104213-005
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	0.167	0.161	<0.00020	0.140
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	76.4	77.2	<0.50	19.8
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	0.00305	0.00296	<0.000010	0.000847
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	----	<0.0010	<0.0010	<0.0010	0.0015
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	----	0.00032	0.00032	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	----	0.0786	0.0796	<0.00010	0.0130
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	----	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	----	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	----	0.012	0.012	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	----	0.0258	0.0302	<0.0050	<0.0050
calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	103	103	<0.050	45.0
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	0.00012
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	----	0.18	0.19	<0.10	<0.10
copper, dissolved	7440-50-8	E421	0.00020	mg/L	----	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L	----	0.031	0.030	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	----	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	----	0.0477	0.0489	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	47.2	48.7	<0.0050	11.2
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	----	0.0144	0.0145	<0.00010	<0.00010
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	----	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	----	0.00178	0.00178	<0.000050	0.000621
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	----	0.00561	0.00563	<0.00050	<0.00050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	1.92	1.96	<0.050	0.197

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_TRIP_WS_2021-09-16_NP	RG_RIVER_WS-1_2021-09-16_NP	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-1_2021-09-16_NP	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP
				Client sampling date / time	16-Sep-2021 13:30	16-Sep-2021 14:10	16-Sep-2021 14:10	16-Sep-2021 13:00	16-Sep-2021 09:15
					CG2104213-001	CG2104213-002	CG2104213-003	CG2104213-004	CG2104213-005
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	----	50.7	52.7	<0.050	1.20
silicon, dissolved	7440-21-3	E421	0.050	mg/L	----	2.01	2.03	<0.050	1.23
silver, dissolved	7440-22-4	E421	0.000010	mg/L	----	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	1.95	2.00	<0.050	0.341
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	----	0.166	0.161	<0.00020	0.145
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	----	84.3	85.9	<0.50	21.4
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	----	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	----	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	----	0.00305	0.00295	<0.000010	0.000896
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	----	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	----	0.0011	0.0013	<0.0010	0.0018
dissolved mercury filtration location	----	EP509	-	-	----	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Laboratory	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-2_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP
				Client sampling date / time	16-Sep-2021 16:00	16-Sep-2021 15:35	16-Sep-2021 15:35	16-Sep-2021 15:35	17-Sep-2021 09:00
					CG2104213-006	CG2104213-007	CG2104213-008	CG2104213-009	CG2104213-010
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	<2.0	<2.0	5.3
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	162	162	<1.0	158	234
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	10.2	8.8	<1.0	10.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	172	171	<1.0	168	234
conductivity	----	E100	2.0	µS/cm	760	715	<2.0	732	2010
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	402	374	<0.50	381	1200
oxidation-reduction potential [ORP]	----	E125	0.10	mV	465	461	470	481	479
pH	----	E108	0.10	pH units	8.40	8.37	5.76	8.40	8.23
solids, total dissolved [TDS]	----	E162	10	mg/L	559	507	<10	495	1710
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.3	<1.0	<1.0	<1.0	<1.0
turbidity	----	E121	0.10	NTU	0.27	0.18	<0.10	0.15	0.32
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	198	198	<1.0	193	285
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	6.1	5.3	<1.0	6.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0071	0.0132	0.0052 RRV	<0.0050	0.0087
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.250 DLDS
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.59	0.47	<0.10	0.51	3.34
fluoride	16984-48-8	E235.F	0.020	mg/L	0.156	0.154	<0.020	0.153	0.160
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.285 TKNI	0.178 TKNI	<0.050	0.103 TKNI	<0.050 TKNI
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	13.5	11.8	<0.0050 HTD	11.8	82.6
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0100	0.0055	<0.0010	0.0057	0.0705
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD	<0.0010 HTD
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0020	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	196	180	<0.30	180	679
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.29	0.97	<0.50	1.15	1.03
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.55	1.04	<0.50	1.07	1.08

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-2_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP
				Client sampling date / time	16-Sep-2021 16:00	16-Sep-2021 15:35	16-Sep-2021 15:35	16-Sep-2021 15:35	17-Sep-2021 09:00
					CG2104213-006	CG2104213-007	CG2104213-008	CG2104213-009	CG2104213-010
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	8.51	8.03	<0.10	7.97	24.8
cation sum	----	EC101	0.10	meq/L	8.15	7.58	<0.10	7.72	24.6
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.8	94.4	100	96.9	99.2
ion balance (cation-anion difference)	----	EC101	0.010	%	2.16	2.88	<0.010	1.59	0.405
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0088	<0.0030	<0.0030	0.0032	0.0039
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00020	0.00018	<0.00010	0.00017	0.00077
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	0.00011
barium, total	7440-39-3	E420	0.00010	mg/L	0.0739	0.0821	<0.00010	0.0827	0.0272
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.010	<0.010	<0.010	<0.010	0.033
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0370	0.0299	<0.0050	0.0272	0.216
calcium, total	7440-70-2	E420	0.050	mg/L	98.3	92.6	<0.050	92.3	254
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00010	<0.00010	0.00011	<0.00010
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	0.16
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.016	<0.010	<0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0499	0.0435	<0.0010	0.0417	0.341
magnesium, total	7439-95-4	E420	0.0050	mg/L	38.2	35.0	<0.0050	33.9	130
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00118	0.00058	<0.00010	0.00064	0.00125
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00107	0.000971	<0.000050	0.000988	0.00313
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00479	0.00299	<0.00050	0.00298	0.0515
potassium, total	7440-09-7	E420	0.050	mg/L	1.48	1.35	<0.050	1.33	6.05
selenium, total	7782-49-2	E420	0.050	µg/L	41.0	36.5	<0.050	35.7	168
silicon, total	7440-21-3	E420	0.10	mg/L	1.85	1.86	<0.10	1.89	1.35
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-2_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP
				Client sampling date / time	16-Sep-2021 16:00	16-Sep-2021 15:35	16-Sep-2021 15:35	16-Sep-2021 15:35	17-Sep-2021 09:00
					CG2104213-006	CG2104213-007	CG2104213-008	CG2104213-009	CG2104213-010
					Result	Result	Result	Result	Result
Total Metals									
sodium, total	17341-25-2	E420	0.050	mg/L	1.68	1.56	<0.050	1.55	8.49
strontium, total	7440-24-6	E420	0.00020	mg/L	0.153	0.145	<0.00020	0.146	0.407
sulfur, total	7704-34-9	E420	0.50	mg/L	67.6	62.0	<0.50	61.2	238
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000042
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00267	0.00227	<0.000010	0.00226	0.0132
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	0.0137
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0012	<0.0010	<0.0010	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00018	0.00016	<0.00010	0.00016	0.00077
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0762	0.0844	<0.00010	0.0860	0.0282
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	0.031
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0256	0.0274	<0.0050	0.0312	0.203
calcium, dissolved	7440-70-2	E421	0.050	mg/L	94.7	88.9	<0.050	90.7	248
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	0.14
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00026
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0498	0.0426	<0.0010	0.0440	0.351
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	40.2	36.9	<0.0050	37.5	142
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00026	0.00066	<0.00010	0.00051	0.00079
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000054	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00112	0.000999	<0.000050	0.00106	0.00323

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FBLANK_WS-2_2021-09-16_NP	RG_RIVER_WS-2_2021-09-16_NP	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP
				Client sampling date / time	16-Sep-2021 16:00	16-Sep-2021 15:35	16-Sep-2021 15:35	16-Sep-2021 15:35	17-Sep-2021 09:00
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	CG2104213-006	CG2104213-007	CG2104213-008	CG2104213-009	CG2104213-010
					Result	Result	Result	Result	Result
Dissolved Metals									
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00470	0.00324	<0.00050	0.00318	0.0539
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.51	1.37	<0.050	1.43	6.42
selenium, dissolved	7782-49-2	E421	0.050	µg/L	42.2	38.6	<0.050	38.1	180
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.93	1.95	<0.050	1.96	1.37
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.77	1.65	<0.050	1.69	8.94
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.154	0.150	<0.00020	0.150	0.399
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	70.9	63.6	<0.50	65.2	249
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000043
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00263	0.00227	<0.000010	0.00229	0.0134
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0018	0.0014	0.0015 RRV	0.0015	0.0134
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	RG_WED_WS_LAEMP_FRO_2021-09-17_NP	----	----	----
				Client sampling date / time	17-Sep-2021 14:00	17-Sep-2021 11:45	----	----	----
					CG2104213-011	CG2104213-012	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	6.1	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	245	151	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	8.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	245	159	----	----	----
conductivity	----	E100	2.0	µS/cm	2030	559	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	1200	290	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	482	455	----	----	----
pH	----	E108	0.10	pH units	8.18	8.37	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	1750	408	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	6.3	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	3.59	<0.10	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	298	184	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	4.8	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	3.76	0.32	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.167	0.175	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	0.190 TKNI	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	82.8	6.01	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0117	0.0031	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010 HTD	<0.0010 HTD	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0088	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	712	128	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	0.61	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.21	0.62	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	RG_WED_WS_LAEMP_FRO_2021-09-17_NP	----	----	----
				Client sampling date / time	17-Sep-2021 14:00	17-Sep-2021 11:45	----	----	----
					CG2104213-011	CG2104213-012	--------	--------	--------
					Result	Result	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	25.7	6.29	----	----	----
cation sum	----	EC101	0.10	meq/L	24.6	5.88	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.7	93.5	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.19	3.37	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0696	0.0039	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00065	0.00010	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0552	0.0821	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.034	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.101	0.0133	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	267	70.1	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00017	0.00011	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.106	<0.010	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000118	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.359	0.0248	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	130	25.2	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00467	0.00020	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00098	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00267	0.000718	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0122	0.00056	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	6.19	0.972	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	161	18.4	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.20	1.90	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	RG_WED_WS_LAEMP_FRO_2021-09-17_NP	----	----	----
				Client sampling date / time	17-Sep-2021 14:00	17-Sep-2021 11:45	----	----	----
					CG2104213-011	CG2104213-012	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
sodium, total	17341-25-2	E420	0.050	mg/L	8.93	1.10	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.396	0.123	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	250	40.2	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000014	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00164	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0129	0.00122	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0041	<0.0030	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00064	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0551	0.0852	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.032	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0813	0.0163	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	248	71.1	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.354	0.0249	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	142	27.4	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00028	0.00018	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00286	0.000732	----	----	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	RG_WED_WS_LAEMP_FRO_2021-09-17_NP	----	----	----
				Client sampling date / time	17-Sep-2021 14:00	17-Sep-2021 11:45	----	----	----
					CG2104213-011	CG2104213-012	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0120	0.00053	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	6.63	1.02	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	163	19.5	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.10	2.05	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.54	1.19	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.402	0.128	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	253	43.9	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0130	0.00127	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0027	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104213**	Page	: 1 of 43
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 18-Sep-2021 09:05
PO	: VPO00748510	Issue Date	: 10-Oct-2021 15:03
C-O-C number	: SEPTEMBER FRO LAEMP 2021		
Sampler	: JI		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E298	17-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FBLANK_WS-1_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FBLANK_WS-2_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_RIVER_WS-1_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_RIVER_WS-2_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
RG_TRIP_WS_2021-09-16_NP	E298	16-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	13 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.Br-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FBLANK_WS-1_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.Br-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.Cl-L	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.Cl-L	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E378-U	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	× EHT

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_TRIP_WS_2021-09-16_NP	E378-U	16-Sep-2021	----	----	----		20-Sep-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.F	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.F	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.NO3-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		21-Sep-2021	3 days	5 days	✗ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.NO3-L	16-Sep-2021	----	----	----		21-Sep-2021	3 days	5 days	✗ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.NO2-L	17-Sep-2021	----	----	----		19-Sep-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.NO2-L	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E235.SO4	17-Sep-2021	----	----	----		19-Sep-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_TRIP_WS_2021-09-16_NP	E235.SO4	16-Sep-2021	----	----	----		19-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E318	17-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E318	17-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E318	17-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-1_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-2_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS-1_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS-2_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_2021-09-16_NP	E318	16-Sep-2021	24-Sep-2021	----	----		28-Sep-2021	28 days	12 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E372-U	17-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-1_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-2_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_RIVER_WS-1_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_RIVER_WS-2_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_TRIP_WS_2021-09-16_NP	E372-U	16-Sep-2021	23-Sep-2021	----	----		23-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E421.Cr-L	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FBLANK_WS-2_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E421.Cr-L	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_RIVER_WS-2_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E421.Cr-L	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FBLANK_WS-1_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_RIVER_WS-1_2021-09-16_NP	E421.Cr-L	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FBLANK_WS-2_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_RIVER_WS-2_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E509	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FBLANK_WS-1_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_RIVER_WS-1_2021-09-16_NP	E509	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_TRIP_WS_2021-09-16_NP	E421	16-Sep-2021	27-Sep-2021	----	----		27-Sep-2021	180 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E421	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FBLANK_WS-2_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E421	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_RIVER_WS-2_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E421	17-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FBLANK_WS-1_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_RIVER_WS-1_2021-09-16_NP	E421	16-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E358-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FBLANK_WS-1_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FBLANK_WS-2_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_RIVER_WS-1_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_RIVER_WS-2_2021-09-16_NP	E358-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E355-L	17-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	13 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-1_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS-2_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS-1_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS-2_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		30-Sep-2021	28 days	14 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E355-L	16-Sep-2021	27-Sep-2021	----	----		01-Oct-2021	28 days	15 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : Acidity by Titration										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E283	17-Sep-2021	----	----	----		29-Sep-2021	14 days	12 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : Acidity by Titration										
HDPE										
RG_RIVER_WS-2_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Acidity by Titration										
HDPE										
RG_TRIP_WS_2021-09-16_NP	E283	16-Sep-2021	----	----	----		29-Sep-2021	14 days	13 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E290	17-Sep-2021	----	----	----		28-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_FBLANK_WS-1_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_FBLANK_WS-2_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_TRIP_WS_2021-09-16_NP	E290	16-Sep-2021	----	----	----		28-Sep-2021	14 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E100	17-Sep-2021	----	----	----		28-Sep-2021	28 days	11 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_TRIP_WS_2021-09-16_NP	E100	16-Sep-2021	----	----	----		28-Sep-2021	28 days	12 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	240 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	242 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E125	17-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	245 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	262 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	262 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	262 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	262 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	263 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	263 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_TRIP_WS_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	264 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	265 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E125	16-Sep-2021	----	----	----		27-Sep-2021	0.34 hrs	268 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	262 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	264 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E108	17-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	267 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	284 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	284 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	284 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	284 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	286 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	286 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_TRIP_WS_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	286 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	287 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E108	16-Sep-2021	----	----	----		28-Sep-2021	0.25 hrs	291 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_TRIP_WS_2021-09-16_NP	E162	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E162	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FBLANK_WS-1_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FBLANK_WS-2_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_RIVER_WS-1_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_RIVER_WS-2_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_TRIP_WS_2021-09-16_NP	E160-L	16-Sep-2021	----	----	----		23-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E160-L	17-Sep-2021	----	----	----		24-Sep-2021	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E121	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FBLANK_WS-1_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FBLANK_WS-2_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E121	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Physical Tests : Turbidity by Nephelometry										
HDPE RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_RIVER_WS-1_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_RIVER_WS-2_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_TRIP_WS_2021-09-16_NP	E121	16-Sep-2021	----	----	----		19-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E121	17-Sep-2021	----	----	----		20-Sep-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E420.Cr-L	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FBLANK_WS-1_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FBLANK_WS-2_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_RIVER_WS-1_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_RIVER_WS-2_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_TRIP_WS_2021-09-16_NP	E420.Cr-L	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FBLANK_WS-1_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FBLANK_WS-2_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_RIVER_WS-1_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_RIVER_WS-2_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_TRIP_WS_2021-09-16_NP	E508-L	16-Sep-2021	----	----	----		26-Sep-2021	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓

Work Order : CG2104213
Client : Teck Coal Limited
Project : REGIONAL EFFECTS PROGRAM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E508-L	17-Sep-2021	----	----	----		26-Sep-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_WED_WS_LAEMP_FRO_2021-09-17_NP	E420	17-Sep-2021	----	----	----		23-Sep-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FBLANK_WS-1_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FBLANK_WS-2_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_RIVER_WS-1_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_RIVER_WS-2_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_TRIP_WS_2021-09-16_NP	E420	16-Sep-2021	----	----	----		23-Sep-2021	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	306147	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304819	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	305806	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296854	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296855	1	16	6.2	5.0	✓
Conductivity in Water	E100	304817	2	31	6.4	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	301064	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	301065	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297211	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296856	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296857	1	16	6.2	5.0	✓
ORP by Electrode	E125	303225	1	20	5.0	5.0	✓
pH by Meter	E108	304818	2	31	6.4	5.0	✓
Sulfate in Water by IC	E235.SO4	296853	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300154	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300529	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302132	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300530	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296848	2	16	12.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	306147	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304819	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	305806	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296854	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296855	1	16	6.2	5.0	✓
Conductivity in Water	E100	304817	2	31	6.4	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	301064	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	301065	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297211	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type / Analytical Methods	Method	QC Lot #	Count QC	Count Regular	Frequency (%) Actual	Frequency (%) Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	296858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296856	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296857	1	16	6.2	5.0	✓
ORP by Electrode	E125	303225	1	20	5.0	5.0	✓
pH by Meter	E108	304818	2	31	6.4	5.0	✓
Sulfate in Water by IC	E235.SO4	296853	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300154	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300529	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302132	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300530	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300146	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296848	2	16	12.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	306147	2	31	6.4	5.0	✓
Alkalinity Species by Titration	E290	304819	2	31	6.4	5.0	✓
Ammonia by Fluorescence	E298	305806	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296854	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296855	1	16	6.2	5.0	✓
Conductivity in Water	E100	304817	2	31	6.4	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	301064	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	301065	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297211	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296856	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296857	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296853	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	300154	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300529	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302132	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300530	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	2	40	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	300146	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	296848	2	16	12.5	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	305806	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	296854	1	16	6.2	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	296855	1	16	6.2	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	301064	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	301261	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	301065	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	303950	2	40	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	297211	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	296858	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	296856	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	296857	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	296853	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	300529	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	302132	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303055	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	300530	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	303957	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	299080	2	40	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **CG2104213**	Page	:
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Justine Buma-a
Address	: Fording River Operations PO BOX 100 Elkford BC Canada V0B 1H0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 18-Sep-2021 09:05
PO	: VPO00748510	Date Analysis Commenced	: 19-Sep-2021
C-O-C number	: SEPTEMBER FRO LAEMP 2021	Issue Date	: 10-Oct-2021 15:03
Sampler	: JI		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 296848)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 296886)											
CG2104213-010	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	turbidity	----	E121	0.10	NTU	0.32	0.32	0.007	Diff <2x LOR	----
Physical Tests (QC Lot: 300154)											
CG2104211-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	616	619	0.486%	20%	----
Physical Tests (QC Lot: 301372)											
CG2104213-010	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	solids, total dissolved [TDS]	----	E162	20	mg/L	1710	1670	2.66%	20%	----
Physical Tests (QC Lot: 303225)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	506	510	0.945%	15%	----
Physical Tests (QC Lot: 304817)											
CG2104202-002	Anonymous	conductivity	----	E100	2.0	µS/cm	1520	1520	0.329%	10%	----
Physical Tests (QC Lot: 304818)											
CG2104202-002	Anonymous	pH	----	E108	0.10	pH units	8.14	8.15	0.123%	4%	----
Physical Tests (QC Lot: 304819)											
CG2104202-002	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	354	354	0.113%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	354	354	0.113%	20%	----
Physical Tests (QC Lot: 304820)											
CG2104213-007	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	conductivity	----	E100	2.0	µS/cm	715	716	0.140%	10%	----
Physical Tests (QC Lot: 304821)											
CG2104213-007	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	pH	----	E108	0.10	pH units	8.37	8.39	0.239%	4%	----
Physical Tests (QC Lot: 304822)											
CG2104213-007	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	162	161	0.619%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	8.8	7.2	1.6	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	171	168	1.53%	20%	----
Physical Tests (QC Lot: 306147)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Physical Tests (QC Lot: 306147) - continued											
CG2104202-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	5.4	6.1	0.7	Diff <2x LOR	----
Physical Tests (QC Lot: 306148)											
CG2104213-007	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296853)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296854)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296855)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296856)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0063	0.0013	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296857)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 296858)											
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 297211)											
CG2104209-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299080)											
CG2104202-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299081)											
CG2104213-006	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0021	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 302132)											
CG2104202-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.054	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 305806)											
CG2104200-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	2.80	2.81	0.535%	20%	----
Anions and Nutrients (QC Lot: 306152)											
CG2104213-005	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0163	0.0179	0.0016	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303950)											
CG2104202-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.92	0.79	0.13	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303951)											
CG2104213-008	RG_FBLANK_WS-2_2021-09-16_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic Carbon (QC Lot: 303957)											
CG2104202-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.63	0.64	0.006	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 303958)											
CG2104213-006	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.55	1.18	0.37	Diff <2x LOR	----
Total Metals (QC Lot: 300529)											
CG2104211-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 300530)											
CG2104211-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0031	0.0039	0.0008	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00036	0.00035	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00013	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0666	0.0668	0.250%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.019	0.020	0.0009	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.308 µg/L	0.000293	4.79%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	101	103	2.45%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0566	0.0582	2.70%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	43.9	43.8	0.260%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00013	0.00013	0.00000010	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00172	0.00169	1.70%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00904	0.00903	0.0545%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.61	1.63	0.920%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	40.7 µg/L	0.0388	4.76%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.18	2.09	4.33%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	8.29	8.15	1.73%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.213	0.212	0.550%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	76.1	73.7	3.27%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000016	0.000014	0.000002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00332	0.00338	1.64%	20%	----

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 300530) - continued											
CG2104211-001	Anonymous	vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0149	0.0154	0.0005	Diff <2x LOR	----
Total Metals (QC Lot: 303055)											
CG2104202-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 301064)											
CG2104212-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00016	0.00001	Diff <2x LOR	----
Dissolved Metals (QC Lot: 301065)											
CG2104212-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	0.00010	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00015	0.00017	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0397	0.0404	1.83%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0134 µg/L	0.0000153	0.0000018	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.7	80.4	2.18%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0078	0.0080	0.0002	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	53.4	53.8	0.660%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00012	0.00011	0.00001	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000975	0.000969	0.644%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00105	0.00104	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.987	1.01	2.14%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	46.6 µg/L	0.0476	2.14%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.98	2.02	2.30%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.43	1.52	6.32%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.112	0.109	2.20%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	89.4	88.6	0.858%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	0.000012	0.000001	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 301065) - continued											
CG2104212-001	Anonymous	uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00301	0.00311	3.08%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0033	0.0016	0.0017	Diff <2x LOR	----
Dissolved Metals (QC Lot: 301261)											
CG2104212-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 303332)											
CG2104212-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 303332) - continued											
CG2104212-002	Anonymous	vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 296848)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 296886)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 300146)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 300154)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 301367)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 301372)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 304817)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 304819)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	1.1	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 304820)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 304822)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 306147)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 306148)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 296853)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 296854)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 296855)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 296856)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 296857)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 296858)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 297211)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 299080)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 299081)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 302132)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 305806)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 306152)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 303950)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 303951)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 303957)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 303958)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 300529)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 300530)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 300530) - continued						
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 303055)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 301064)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 301065)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 301065) - continued						
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 301261)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 303332)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 303332) - continued						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 296848)									
turbidity	----	E121	0.1	NTU	200 NTU	98.7	85.0	115	----
Physical Tests (QCLot: 296886)									
turbidity	----	E121	0.1	NTU	200 NTU	98.4	85.0	115	----
Physical Tests (QCLot: 300146)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	93.8	85.0	115	----
Physical Tests (QCLot: 300154)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.1	85.0	115	----
Physical Tests (QCLot: 301367)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	90.9	85.0	115	----
Physical Tests (QCLot: 301372)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	93.1	85.0	115	----
Physical Tests (QCLot: 303225)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
Physical Tests (QCLot: 304817)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 304818)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 304819)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	98.9	85.0	115	----
Physical Tests (QCLot: 304820)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 304821)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 304822)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	100.0	85.0	115	----
Physical Tests (QCLot: 306147)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	108	85.0	115	----
Physical Tests (QCLot: 306148)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 296853)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 296854)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 296854) - continued									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 296855)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 296856)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	110	90.0	110	----
Anions and Nutrients (QCLot: 296857)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 296858)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.1	90.0	110	----
Anions and Nutrients (QCLot: 297211)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	100	80.0	120	----
Anions and Nutrients (QCLot: 299080)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.2	80.0	120	----
Anions and Nutrients (QCLot: 299081)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	97.0	80.0	120	----
Anions and Nutrients (QCLot: 302132)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	92.7	75.0	125	----
Anions and Nutrients (QCLot: 305806)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 306152)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
Organic / Inorganic Carbon (QCLot: 303950)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	98.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 303951)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 303957)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	103	80.0	120	----
Organic / Inorganic Carbon (QCLot: 303958)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	104	80.0	120	----
Total Metals (QCLot: 300529)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Total Metals (QCLot: 300530)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 300530) - continued									
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.6	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Total Metals (QCLot: 303055)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	89.6	80.0	120	----
Dissolved Metals (QCLot: 301064)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Dissolved Metals (QCLot: 301065)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 301065) - continued									
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.9	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	107	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.4	80.0	120	----
Dissolved Metals (QCLot: 303332)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	92.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Dissolved Metals (QCLot: 303332) - continued									
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.7	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	92.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	93.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.2	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.6	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	95.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.1	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	92.8	80.0	120	----

Laboratory Control Sample (LCS) Report

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 296853)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	sulfate (as SO4)	14808-79-8	E235.SO4	91.5 mg/L	100 mg/L	91.5	75.0	125	----
Anions and Nutrients (QCLot: 296854)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	bromide	24959-67-9	E235.Br-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 296855)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	chloride	16887-00-6	E235.Cl-L	94.0 mg/L	100 mg/L	94.0	75.0	125	----
Anions and Nutrients (QCLot: 296856)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.39 mg/L	2.5 mg/L	95.7	75.0	125	----
Anions and Nutrients (QCLot: 296857)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.467 mg/L	0.5 mg/L	93.5	75.0	125	----
Anions and Nutrients (QCLot: 296858)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	fluoride	16984-48-8	E235.F	0.854 mg/L	1 mg/L	85.4	75.0	125	----
Anions and Nutrients (QCLot: 297211)										
CG2104210-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0582 mg/L	0.05 mg/L	116	70.0	130	----
Anions and Nutrients (QCLot: 299080)										
CG2104202-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0561 mg/L	0.0676 mg/L	83.0	70.0	130	----
Anions and Nutrients (QCLot: 299081)										
CG2104213-007	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	phosphorus, total	7723-14-0	E372-U	0.0623 mg/L	0.0676 mg/L	92.2	70.0	130	----
Anions and Nutrients (QCLot: 302132)										
CG2104202-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.22 mg/L	2.5 mg/L	88.6	70.0	130	----
Anions and Nutrients (QCLot: 305806)										
CG2104202-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.116 mg/L	0.1 mg/L	116	75.0	125	----
Anions and Nutrients (QCLot: 306152)										
CG2104213-008	RG_FBLANK_WS-2_2021-09-16_NP	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Organic / Inorganic Carbon (QCLot: 303950)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 303950) - continued										
CG2104202-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.0 mg/L	23.9 mg/L	96.3	70.0	130	----
Organic / Inorganic Carbon (QCLot: 303951)										
CG2104213-008	RG_FBLANK_WS-2_2021-09-16_NP	carbon, dissolved organic [DOC]	----	E358-L	26.3 mg/L	23.9 mg/L	110	70.0	130	----
Organic / Inorganic Carbon (QCLot: 303957)										
CG2104202-001	Anonymous	carbon, total organic [TOC]	----	E355-L	23.3 mg/L	23.9 mg/L	97.5	70.0	130	----
Organic / Inorganic Carbon (QCLot: 303958)										
CG2104213-006	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	carbon, total organic [TOC]	----	E355-L	24.0 mg/L	23.9 mg/L	100	70.0	130	----
Total Metals (QCLot: 300529)										
CG2104212-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
Total Metals (QCLot: 300530)										
CG2104212-001	Anonymous	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		boron, total	7440-42-8	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		copper, total	7440-50-8	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0368 mg/L	0.04 mg/L	91.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.76 mg/L	4 mg/L	94.0	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.79 mg/L	10 mg/L	97.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	----
		sodium, total	17341-25-2	E420	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 300530) - continued										
CG2104212-001	Anonymous	sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
Total Metals (QCLot: 303055)										
CG2104202-002	Anonymous	mercury, total	7439-97-6	E508-L	4.36 ng/L	5 ng/L	87.1	70.0	130	----
Dissolved Metals (QCLot: 301064)										
CG2104191-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
Dissolved Metals (QCLot: 301065)										
CG2104191-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.199 mg/L	0.2 mg/L	99.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00914 mg/L	0.01 mg/L	91.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	97.8	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.00 mg/L	4 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.66 mg/L	10 mg/L	96.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.98 mg/L	2 mg/L	98.8	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
					Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 301065) - continued										
CG2104191-001	Anonymous	sulfur, dissolved	7704-34-9	E421	21.2 mg/L	20 mg/L	106	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.383 mg/L	0.4 mg/L	95.8	70.0	130	----
Dissolved Metals (QCLot: 301261)										
CG2104212-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000962 mg/L	0.0001 mg/L	96.2	70.0	130	----
Dissolved Metals (QCLot: 303332)										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	aluminum, dissolved	7429-90-5	E421	1.74 mg/L	2 mg/L	87.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.178 mg/L	0.2 mg/L	89.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.186 mg/L	0.2 mg/L	93.2	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.358 mg/L	0.4 mg/L	89.4	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.903 mg/L	1 mg/L	90.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		calcium, dissolved	7440-70-2	E421	36.8 mg/L	40 mg/L	92.1	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.185 mg/L	0.2 mg/L	92.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.5 mg/L	20 mg/L	92.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.189 mg/L	0.2 mg/L	94.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.943 mg/L	1 mg/L	94.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	8.80 mg/L	10 mg/L	88.0	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.182 mg/L	0.2 mg/L	90.9	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.182 mg/L	0.2 mg/L	90.9	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.372 mg/L	0.4 mg/L	92.9	70.0	130	----
		potassium, dissolved	7440-09-7	E421	38.7 mg/L	40 mg/L	96.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----
		silicon, dissolved	7440-21-3	E421	88.9 mg/L	100 mg/L	88.9	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	18.9 mg/L	20 mg/L	94.3	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.188 mg/L	0.2 mg/L	93.8	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	185 mg/L	200 mg/L	92.7	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 303332) - continued										
CG2104213-001	RG_TRIP_WS_2021-09-16_NP	tin, dissolved	7440-31-5	E421	0.185 mg/L	0.2 mg/L	92.5	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.380 mg/L	0.4 mg/L	95.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.911 mg/L	1 mg/L	91.1	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.68 mg/L	4 mg/L	92.1	70.0	130	----

Teck

Page 1 of 1

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	mike.pope@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8202		

LABORATORY

Lab Name	ALS Calgary		
Lab Contact	Lyudmyla Shvets		
Email	lyudmyla.shvets@alsglobal.com		
Address	2559 29 Street NE		
City	Calgary	Province	AB
Postal Code	T1Y 7B5	Country	Canada
Phone Number	1 403 407 1794		

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teckcoal@equisonline.com			
lbowron@minnow.ca			
jessica.ritz@teck.com			
cschaun@minnow.ca			

SAMPLE DETAILS / **ANALYSIS REQUESTED**

	Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
									N	P	N	N	P	N	P
										H2SO4	H2SO4		HCL	HNO3	HNO3
1	RG_TRIP_WS_2021-09-16_NP	RG_TRIP	WS	No	9/16/2021	1330	G	7	X	X	X	X	X	X	X
2	RG_RIVER_WS-1_2021-19-16_NP	RG_RIVER	WS	No	9/16/2021	1410	G	7	X	X	X	X	X	X	X
3	RG_FOUSH_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUSH	WS	No	9/16/2021	1410	G	7	X	X	X	X	X	X	X
4	RG_FBLANK_WS-1_2021-19-16_NP	RG_FBLANK	WS	No	9/16/2021	1300	G	7	X	X	X	X	X	X	X
5	RG_HENUP_WS_LAEMP_FRO_2021-09-16_NP	RG_HENUP	WS	No	9/16/2021	0915	G	7	X	X	X	X	X	X	X
6	RG_FODNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FODNGD	WS	No	9/16/2021	1600	G	7	X	X	X	X	X	X	X
7	RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_NP	RG_FOUNGD	WS	No	9/16/2021	1535	G	7	X	X	X	X	X	X	X
8	RG_FBLANK_WS-2_2021-19-16_NP	RG_FBLANK	WS	No	9/16/2021	1535	G	7	X	X	X	X	X	X	X
9	RG_RIVER_WS-2_2021-09-16_NP	RG_RIVER	WS	No	9/16/2021	1535	G	7	X	X	X	X	X	X	X
10	RG_CLODE_WS_LAEMP_FRO_2021-09-17_NP	RG_CLODE	WS	No	9/17/2021	900	G	7	X	X	X	X	X	X	X
11	RG_GRASSY_WS_LAEMP_FRO_2021-09-17_NP	RG_GRASSY	WS	No	9/17/2021	1400	G	7	X	X	X	X	X	X	X
12	RG_WED_WS_LAEMP_FRO_2021-09-17_NP	RG_WED	WS	No	9/17/2021	1145	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
Jennifer Ings/Minnow	################		18/09 9:05

NO OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature		Date/Time	September 17, 2021

Environmental Division
Calgary
Work Order Reference
CG2104213

Telephone : +1 403 407 1800

6

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104262**	Page	: 1 of 7
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 21-Sep-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 22-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 08-Oct-2021 13:04
Sampler	: JENNIFER INGS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	----	----	----
				Client sampling date / time	19-Sep-2021 15:00	19-Sep-2021 09:00	----	----	----
					CG2104262-001	CG2104262-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	4.2	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	284	278	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	6.2	6.4	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	290	285	----	----	----
conductivity	----	E100	2.0	µS/cm	1230	1210	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	678	660	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	482	440	----	----	----
pH	----	E108	0.10	pH units	8.31	8.31	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	958	949	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.5	----	----	----
turbidity	----	E121	0.10	NTU	<0.10	0.39	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	347	339	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	3.7	3.8	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.250 DLDS	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.77	2.20	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.146	0.106	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	<0.050 TKNI	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	31.1	28.0	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0063	<0.0050 DLDS	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0023	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	319	290	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.79	0.76	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	----	----	----
				Client sampling date / time	19-Sep-2021 15:00	19-Sep-2021 09:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104262-001	CG2104262-002	--------	--------	--------
					Result	Result	----	----	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.71	0.84	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	14.7	13.8	----	----	----
cation sum	----	EC101	0.10	meq/L	13.8	13.4	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	93.9	97.1	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	3.16	1.47	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	0.0116	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	0.00011	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00011	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.111	0.0979	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.020	0.019	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0444	0.0460	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	158	150	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00015	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.018	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0657	0.0602	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	73.9	64.2	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00064	0.00175	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000861	0.000905	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00062	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	3.20	2.77	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	107	104	----	----	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	----	----	----
				Client sampling date / time	19-Sep-2021 15:00	19-Sep-2021 09:00	----	----	----
					CG2104262-001	CG2104262-002	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	2.19	2.18	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	4.05	3.53	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.182	0.171	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	109	107	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00490	0.00458	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00011	0.00012	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.106	0.102	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.019	0.019	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0351	0.0339	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	150	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00014	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	<0.10	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0646	0.0635	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	70.0	69.3	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00013	0.00084	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	----	----	----
				Client sampling date / time	19-Sep-2021 15:00	19-Sep-2021 09:00	----	----	----
					CG2104262-001	CG2104262-002	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000837	0.000861	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00057	0.00068	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.82	2.76	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	112	111	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.19	2.16	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.58	3.57	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.179	0.182	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	109	109	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00494	0.00481	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0019	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104262**	Page	: 1 of 15
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 21-Sep-2021 08:50
PO	: VPO00748510	Issue Date	: 08-Oct-2021 13:04
C-O-C number	: September FRO LAEMP 2021		
Sampler	: JENNIFER INGS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E298	19-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	10 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E298	19-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	10 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.Br-L	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.Br-L	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.Cl-L	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.Cl-L	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E378-U	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E378-U	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.F	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.F	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.NO3-L	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.NO3-L	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.NO2-L	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.NO2-L	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E235.SO4	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E235.SO4	19-Sep-2021	----	----	----		22-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E318	19-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E318	19-Sep-2021	27-Sep-2021	----	----		28-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E372-U	19-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E372-U	19-Sep-2021	24-Sep-2021	----	----		24-Sep-2021	28 days	5 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E421.Cr-L	19-Sep-2021	26-Sep-2021	----	----		27-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E421.Cr-L	19-Sep-2021	26-Sep-2021	----	----		27-Sep-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E509	19-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E509	19-Sep-2021	28-Sep-2021	----	----		28-Sep-2021	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E421	19-Sep-2021	26-Sep-2021	----	----		27-Sep-2021	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E421	19-Sep-2021	26-Sep-2021	----	----		27-Sep-2021	180 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E358-L	19-Sep-2021	29-Sep-2021	----	----		01-Oct-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E358-L	19-Sep-2021	29-Sep-2021	----	----		01-Oct-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E355-L	19-Sep-2021	29-Sep-2021	----	----		01-Oct-2021	28 days	12 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E355-L	19-Sep-2021	29-Sep-2021	----	----		01-Oct-2021	28 days	12 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E283	19-Sep-2021	----	----	----		30-Sep-2021	14 days	11 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E283	19-Sep-2021	----	----	----		30-Sep-2021	14 days	11 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E290	19-Sep-2021	----	----	----		29-Sep-2021	14 days	10 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E290	19-Sep-2021	----	----	----		29-Sep-2021	14 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E100	19-Sep-2021	----	----	----		29-Sep-2021	28 days	10 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E100	19-Sep-2021	----	----	----		29-Sep-2021	28 days	10 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E125	19-Sep-2021	----	----	----		28-Sep-2021	0.34 hrs	214 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E125	19-Sep-2021	----	----	----		28-Sep-2021	0.34 hrs	220 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E108	19-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	235 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E108	19-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	241 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E162	19-Sep-2021	----	----	----		24-Sep-2021	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E162	19-Sep-2021	----	----	----		24-Sep-2021	7 days	5 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E160-L	19-Sep-2021	----	----	----		24-Sep-2021	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E160-L	19-Sep-2021	----	----	----		24-Sep-2021	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E121	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E121	19-Sep-2021	----	----	----		22-Sep-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E420.Cr-L	19-Sep-2021	----	----	----		25-Sep-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E420.Cr-L	19-Sep-2021	----	----	----		25-Sep-2021	180 days	6 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E508-L	19-Sep-2021	----	----	----		27-Sep-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E508-L	19-Sep-2021	----	----	----		27-Sep-2021	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-09-19_NP	E420	19-Sep-2021	----	----	----		25-Sep-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	E420	19-Sep-2021	----	----	----		25-Sep-2021	180 days	6 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	306984	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305852	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306174	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	299058	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	299059	1	6	16.6	5.0	✓
Conductivity in Water	E100	305850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303255	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303254	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306496	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299350	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	299056	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	299060	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	299061	1	6	16.6	5.0	✓
ORP by Electrode	E125	304906	1	20	5.0	5.0	✓
pH by Meter	E108	305851	1	37	2.7	5.0	×
Sulfate in Water by IC	E235.SO4	299057	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	301374	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302333	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303732	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303842	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302332	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306501	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300193	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	299002	2	21	9.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	306984	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305852	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306174	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	299058	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	299059	1	6	16.6	5.0	✓
Conductivity in Water	E100	305850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303255	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303254	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306496	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299350	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	299056	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	299060	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	299061	1	6	16.6	5.0	✓
ORP by Electrode	E125	304906	1	20	5.0	5.0	✓
pH by Meter	E108	305851	2	37	5.4	5.0	✓
Sulfate in Water by IC	E235.SO4	299057	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	301374	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302333	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303732	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303842	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302332	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306501	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300193	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301369	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	299002	2	21	9.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	306984	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	305852	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306174	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	299058	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	299059	1	6	16.6	5.0	✓
Conductivity in Water	E100	305850	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303255	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303254	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306496	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299350	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	299056	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	299060	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	299061	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	299057	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	301374	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302333	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303732	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303842	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302332	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306501	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300193	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	301369	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	299002	2	21	9.5	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	306174	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	299058	1	6	16.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	299059	1	6	16.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	303255	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	304269	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	303254	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	306496	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	299350	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	299056	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	299060	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	299061	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	299057	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	302333	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	303732	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	303842	1	16	6.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	302332	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	306501	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	300193	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2104262**	Page	: 1 of 18
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 21-Sep-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 22-Sep-2021
C-O-C number	: September FRO LAEMP 2021	Issue Date	: 08-Oct-2021 13:04
Sampler	: JENNIFER INGS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
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Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Physical Tests (QC Lot: 299002)											
CG2104217-001	Anonymous	turbidity	----	E121	0.10	NTU	2.67	2.88	7.57%	15%	----
Physical Tests (QC Lot: 299402)											
CG2104218-001	Anonymous	turbidity	----	E121	0.10	NTU	1.07	1.01	0.06	Diff <2x LOR	----
Physical Tests (QC Lot: 301374)											
CG2104231-013	Anonymous	solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 304906)											
CG2104260-010	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	536	537	0.261%	15%	----
Physical Tests (QC Lot: 305850)											
CG2104255-004	Anonymous	conductivity	----	E100	2.0	µS/cm	2930	2920	0.342%	10%	----
Physical Tests (QC Lot: 305851)											
CG2104255-004	Anonymous	pH	----	E108	0.10	pH units	7.83	7.88	0.636%	4%	----
Physical Tests (QC Lot: 305852)											
CG2104255-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	549	545	0.694%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	549	545	0.694%	20%	----
Physical Tests (QC Lot: 306984)											
CG2104260-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	14.8	14.4	0.4	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299056)											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	fluoride	16984-48-8	E235.F	0.100	mg/L	0.146	0.137	0.010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299057)											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	319	315	1.20%	20%	----
Anions and Nutrients (QC Lot: 299058)											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299059)											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	1.77	1.76	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299060)											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	31.1	30.9	0.667%	20%	----
Anions and Nutrients (QC Lot: 299061)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 299061) - continued											
CG2104262-001	RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0063	0.0072	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 299350)											
CG2104260-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 300193)											
CG2104255-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 303732)											
CG2104240-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.135	0.085	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 306174)											
CG2104260-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0110	0.0063	0.0047	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 306496)											
CG2104255-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.94	0.86	0.08	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 306501)											
CG2104255-006	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.85	0.64	0.21	Diff <2x LOR	----
Total Metals (QC Lot: 302332)											
CG2104241-009	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
CG2104241-009	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	0.00045	0.00044	0.000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00071	0.00074	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0113	0.0111	1.86%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.034	0.033	0.0010	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.326 µg/L	0.000323	0.779%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	258	255	1.11%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	14.3 µg/L	0.0142	0.401%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.328	0.334	1.71%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000101	0.000099	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0538	0.0510	5.20%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	158	156	0.806%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.351	0.350	0.209%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0233	0.0232	0.329%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0506	0.0504	0.435%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	5.35	5.36	0.256%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	11.2 µg/L	0.0107	4.48%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.05	3.01	1.12%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 302332) - continued											
CG2104241-009	Anonymous	silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.83	7.86	0.478%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.382	0.382	0.0134%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	320	316	1.32%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000086	0.000079	0.000007	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0117	0.0118	0.760%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0197	0.0195	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 302333)											
CG2104241-009	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 303842)											
CG2104261-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 303254)											
CG2104254-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0013	0.0006	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00014	0.00014	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0738	0.0767	3.90%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.0002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0739 µg/L	0.0000795	7.35%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	77.8	77.1	0.827%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.10	mg/L	0.17 µg/L	0.00016	0.000006	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00110	0.00113	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000068	0.000068	0.0000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0061	0.0061	0.00001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.3	27.1	3.01%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0421	0.0428	1.83%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00450	0.00458	1.77%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00099	0.00096	0.00002	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.15	1.17	1.80%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	3.70 µg/L	0.00390	5.24%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 303254) - continued											
CG2104254-001	Anonymous	silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.11	4.14	0.742%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.30	3.29	0.189%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.245	0.244	0.257%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	18.7	19.0	1.52%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000055	0.000056	0.0000009	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00271	0.00275	1.21%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0093	0.0095	0.0002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 303255)											
CG2104254-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 304269)											
CG2104251-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000140	0.0000144	0.0000004	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 299002)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 299402)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 301369)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 301374)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 305850)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 305852)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 306984)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 299056)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 299057)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 299058)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 299059)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 299060)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 299061)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 299350)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 300193)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 303732)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 303732) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 306174)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 306496)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 306501)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 302332)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 302332) - continued						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 302333)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 303842)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 303254)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 303254) - continued						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 303255)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 304269)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 299002)									
turbidity	----	E121	0.1	NTU	200 NTU	98.8	85.0	115	----
Physical Tests (QCLot: 299402)									
turbidity	----	E121	0.1	NTU	200 NTU	98.0	85.0	115	----
Physical Tests (QCLot: 301369)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	95.0	85.0	115	----
Physical Tests (QCLot: 301374)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.7	85.0	115	----
Physical Tests (QCLot: 304906)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
Physical Tests (QCLot: 305850)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 305851)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 305852)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.5	85.0	115	----
Physical Tests (QCLot: 305853)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 306984)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 299056)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 299057)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100.0	90.0	110	----
Anions and Nutrients (QCLot: 299058)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 299059)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 299060)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 299061)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.1	90.0	110	----
Anions and Nutrients (QCLot: 299350)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 299350) - continued									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.3	80.0	120	----
Anions and Nutrients (QCLot: 300193)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	86.8	80.0	120	----
Anions and Nutrients (QCLot: 303732)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 306174)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.6	85.0	115	----
Organic / Inorganic Carbon (QCLot: 306496)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	104	80.0	120	----
Organic / Inorganic Carbon (QCLot: 306501)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
Total Metals (QCLot: 302332)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.5	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.1	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.1	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 302332) - continued									
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	96.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.5	80.0	120	----
Total Metals (QCLot: 302333)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
Total Metals (QCLot: 303842)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	107	80.0	120	----
Dissolved Metals (QCLot: 303254)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	110	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 303254) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	111	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	107	80.0	120	----
Dissolved Metals (QCLot: 303255)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	97.9	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 299056)										
CG2104264-001	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 299057)										
CG2104264-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 299058)										
CG2104264-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 299059)										
CG2104264-001	Anonymous	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 299060)										
CG2104264-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 299061)										
CG2104264-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 299350)										
CG2104260-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0572 mg/L	0.05 mg/L	114	70.0	130	----
Anions and Nutrients (QCLot: 300193)										
CG2104257-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 303732)										
CG2104240-009	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.76 mg/L	2.5 mg/L	110	70.0	130	----
Anions and Nutrients (QCLot: 306174)										
CG2104260-010	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.106 mg/L	0.1 mg/L	106	75.0	125	----
Organic / Inorganic Carbon (QCLot: 306496)										
CG2104255-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	22.9 mg/L	23.9 mg/L	96.0	70.0	130	----
Organic / Inorganic Carbon (QCLot: 306501)										
CG2104255-006	Anonymous	carbon, total organic [TOC]	----	E355-L	23.0 mg/L	23.9 mg/L	96.1	70.0	130	----
Total Metals (QCLot: 302332)										
CG2104241-011	Anonymous	aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	99.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Total Metals (QCLot: 302332) - continued										
CG2104241-011	Anonymous	beryllium, total	7440-41-7	E420	0.0370 mg/L	0.04 mg/L	92.5	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00881 mg/L	0.01 mg/L	88.1	70.0	130	----
		boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	93.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0915 mg/L	0.1 mg/L	91.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.70 mg/L	4 mg/L	92.4	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.24 mg/L	10 mg/L	92.4	70.0	130	----
		silver, total	7440-22-4	E420	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.0395 mg/L	0.04 mg/L	98.9	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.4	70.0	130	----
Total Metals (QCLot: 302333)										
CG2104241-011	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
Total Metals (QCLot: 303842)										
CG2104261-002	Anonymous	mercury, total	7439-97-6	E508-L	4.43 ng/L	5 ng/L	88.7	70.0	130	----
Dissolved Metals (QCLot: 303254)										
CG2104254-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 303254) - continued										
CG2104254-002	Anonymous	beryllium, dissolved	7440-41-7	E421	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00905 mg/L	0.01 mg/L	90.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0945 mg/L	0.1 mg/L	94.5	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0366 mg/L	0.04 mg/L	91.4	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.71 mg/L	10 mg/L	87.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.94 mg/L	2 mg/L	96.8	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.3	70.0	130	----
Dissolved Metals (QCLot: 303255)										
CG2104254-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
Dissolved Metals (QCLot: 304269)										
CG2104251-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----

Matrix Spike (MS) Report

Teck

Page 1 of 1

COC ID: September FRO LAEMP 2021 | **TURNAROUND TIME:**

PROJECT/CLIENT INFO				LABORATORY			
Facility Name / Job#	REP			Lab Name	ALS Calgary		
Project Manager	Mike Pope			Lab Contact	Lyudmyla Shvets		
Email	mike.pope@teck.com			Email	lyudmyla.shvets@alsglobal.com		
Address	421 Pine Avenue			Address	2559 29 Street NE		
City	Sparwood	Province	BC	City	Calgary	Province	AB
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y 7B5	Country	Canada
Phone Number	250-425-8202			Phone Number	1 403 407 1794		

	Excel	PDF	EDD
mike.pope@teck.com			
teckcoal@equisonline.com			
lbowron@minnow.ca			
jessica.ritz@teck.com			
pschmon@minnow.ca			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_FRGHSC_WS_1_2021_09_19_1500	RG_FRGHSC	WS	No	9/19/2021	1500	G	7	X	X	X	X	X	X	X
RG_FRUPO_WS_1_2021_09_19_0900	RG_FRUPO	WS	No	9/19/2021	900	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510	Jennifer Ings/Minnow	################		9/21 0650

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature		Date/Time	September 20, 2021

2°c

Environmental Division
Calgary
Work Order Reference
CG2104262

Telephone : +1 403 407 1800

4262

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **CG2104360**	Page	: 1 of 6
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Sep-2021 15:25
PO	: VPO00748510	Date Analysis Commenced	: 23-Sep-2021
C-O-C number	: SEPTEMBER FRO LAEMP 2021	Issue Date	: 08-Oct-2021 13:10
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_UFR1_WS_LAEMP_FRO_2021-09-20_NP	RG_FOUKI_WS_LAEMP_FRO_2021-09-20_NP	----	----	----
				Client sampling date / time	20-Sep-2021 09:00	20-Sep-2021 11:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104360-001	CG2104360-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	2.4	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	137	200	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	10.2	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	147	200	----	----	----
conductivity	----	E100	2.0	µS/cm	349	905	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	184	518	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	454	----	----	----
pH	----	E108	0.10	pH units	8.44	8.25	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	203	658	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	0.71	0.35	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	167	244	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	6.1	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0588	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.16	1.52	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.230	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	0.404 TKNI	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	14.4	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0331	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	0.0015	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	44.8	255	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.97	1.22	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_UFR1_WS_LAEMP_FRO_2021-09-20_NP	RG_FOUKI_WS_LAEMP_FRO_2021-09-20_NP	----	----	----
				Client sampling date / time	20-Sep-2021 09:00	20-Sep-2021 11:15	----	----	----
					CG2104360-001	CG2104360-002	--------	--------	--------
					Result	Result	----	----	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.82	1.14	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	3.88	10.4	----	----	----
cation sum	----	EC101	0.10	meq/L	3.72	10.5	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	95.9	101	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	2.10	0.478	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0063	0.0034	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00040	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	0.00014	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0710	0.0772	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.019	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0094	0.0309	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	51.2	112	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00010	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	0.69	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.052	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0018	0.0611	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	13.8	58.9	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00034	0.0264	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000624	0.00201	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00844	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	0.420	2.99	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	0.640	43.3	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_UFR1_WS_LAEMP_FRO_2021-09-20_NP	RG_FOUKI_WS_LAEMP_FRO_2021-09-20_NP	----	----	----
				Client sampling date / time	20-Sep-2021 09:00	20-Sep-2021 11:15	----	----	----
					CG2104360-001	**CG2104360-002**	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	1.88	2.08	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	0.644	2.74	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.101	0.204	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	14.6	91.0	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000014	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000479	0.00358	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	0.0014	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00035	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0739	0.0755	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.019	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0081	0.0282	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	51.9	115	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	<0.10	0.64	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00022	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	0.016	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0022	0.0608	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	13.3	56.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00014	0.0245	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	----	----	----
				Client sampling date / time	20-Sep-2021 09:00	20-Sep-2021 11:15	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2104360-001	CG2104360-002	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000640	0.00191	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00807	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.444	2.79	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.684	40.4	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.84	1.92	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	17341-25-2	E421	0.050	mg/L	0.632	2.52	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.104	0.207	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	13.9	84.0	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000015	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000481	0.00357	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0016	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2104360**	Page	: 1 of 15
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Sep-2021 15:25
PO	: VPO00748510	Issue Date	: 08-Oct-2021 13:10
C-O-C number	: SEPTEMBER FRO LAEMP 2021		
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E298	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E298	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.Br-L	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.Br-L	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.Cl-L	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.Cl-L	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E378-U	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
Container / Client Sample ID(s)			*Preparation Date*	*Holding Times Rec*	*Holding Times Actual*	*Eval*	*Analysis Date*	*Holding Times Rec*	*Holding Times Actual*	*Eval*
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E378-U	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.F	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.F	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.NO3-L	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.NO3-L	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.NO2-L	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.NO2-L	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E235.SO4	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E235.SO4	20-Sep-2021	----	----	----		23-Sep-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E318	20-Sep-2021	04-Oct-2021	----	----		05-Oct-2021	28 days	15 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E318	20-Sep-2021	04-Oct-2021	----	----		05-Oct-2021	28 days	15 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E372-U	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E372-U	20-Sep-2021	29-Sep-2021	----	----		29-Sep-2021	28 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E421.Cr-L	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	180 days	10 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E421.Cr-L	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	180 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E509	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E509	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	28 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E421	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E421	20-Sep-2021	30-Sep-2021	----	----		30-Sep-2021	180 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E358-L	20-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	11 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E358-L	20-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	11 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E355-L	20-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	11 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E355-L	20-Sep-2021	30-Sep-2021	----	----		01-Oct-2021	28 days	11 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E283	20-Sep-2021	----	----	----		30-Sep-2021	14 days	10 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E283	20-Sep-2021	----	----	----		30-Sep-2021	14 days	10 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E290	20-Sep-2021	----	----	----		29-Sep-2021	14 days	9 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E290	20-Sep-2021	----	----	----		29-Sep-2021	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E100	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E100	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E125	20-Sep-2021	----	----	----		30-Sep-2021	0.34 hrs	242 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E125	20-Sep-2021	----	----	----		30-Sep-2021	0.34 hrs	244 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E108	20-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	215 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E108	20-Sep-2021	----	----	----		29-Sep-2021	0.25 hrs	218 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E162	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E162	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E160-L	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E160-L	20-Sep-2021	----	----	----		27-Sep-2021	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E121	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✖ EHTL
Physical Tests : Turbidity by Nephelometry										
HDPE RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E121	20-Sep-2021	----	----	----		23-Sep-2021	3 days	3 days	✖ EHTL
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E420.Cr-L	20-Sep-2021	----	----	----		30-Sep-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E420.Cr-L	20-Sep-2021	----	----	----		30-Sep-2021	180 days	10 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E508-L	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E508-L	20-Sep-2021	----	----	----		29-Sep-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_ FOUKI_WS_LAEMP_FRO_2021-09-20_NP	E420	20-Sep-2021	----	----	----		30-Sep-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_ UFR1_WS_LAEMP_FRO_2021-09-20_NP	E420	20-Sep-2021	----	----	----		30-Sep-2021	180 days	10 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: ✗ = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	306997	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	305895	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306446	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300856	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300857	1	4	25.0	5.0	✓
Conductivity in Water	E100	305897	0	18	0.0	5.0	✗
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	307181	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	306762	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	307180	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307306	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300947	0	3	0.0	5.0	✗
Fluoride in Water by IC	E235.F	300854	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300858	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300859	1	4	25.0	5.0	✓
ORP by Electrode	E125	307394	1	20	5.0	5.0	✓
pH by Meter	E108	305896	0	20	0.0	5.0	✗
Sulfate in Water by IC	E235.SO4	300855	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	303322	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	306493	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310453	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	305811	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	306492	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307319	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304406	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	301003	1	9	11.1	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	306997	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	305895	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306446	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300856	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300857	1	4	25.0	5.0	✓
Conductivity in Water	E100	305897	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	307181	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	306762	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	307180	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307306	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300947	1	3	33.3	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	300854	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300858	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300859	1	4	25.0	5.0	✓
ORP by Electrode	E125	307394	1	20	5.0	5.0	✓
pH by Meter	E108	305896	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	300855	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	303322	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	306493	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310453	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	305811	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	306492	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307319	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304406	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303318	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	301003	1	9	11.1	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	306997	1	14	7.1	5.0	✓
Alkalinity Species by Titration	E290	305895	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	306446	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300856	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300857	1	4	25.0	5.0	✓
Conductivity in Water	E100	305897	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	307181	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	306762	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	307180	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307306	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300947	1	3	33.3	5.0	✓
Fluoride in Water by IC	E235.F	300854	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300858	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300859	1	4	25.0	5.0	✓
Sulfate in Water by IC	E235.SO4	300855	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	303322	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	306493	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310453	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	305811	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	306492	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307319	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304406	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	303318	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	301003	1	9	11.1	5.0	✓

Matrix: **Water**

Evaluation: ✗ = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	306446	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	300856	1	4	25.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	300857	1	4	25.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	307181	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	306762	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	307180	2	20	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	307306	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	300947	0	3	0.0	5.0	✗
Fluoride in Water by IC	E235.F	300854	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	300858	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	300859	1	4	25.0	5.0	✓
Sulfate in Water by IC	E235.SO4	300855	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	306493	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	310453	1	13	7.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	305811	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	306492	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	307319	1	14	7.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	304406	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as $CaCO_3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO_3.

Preparation Methods	*Method / Lab*	*Matrix*	*Method Reference*	*Method Descriptions*
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2104360**	Page	: 1 of 17
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 23-Sep-2021 15:25
PO	: VPO00748510	Date Analysis Commenced	: 23-Sep-2021
C-O-C number	: SEPTEMBER FRO LAEMP 2021	Issue Date	: 08-Oct-2021 13:10
Sampler	: ----		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 301003)											
CG2104299-002	Anonymous	turbidity	----	E121	0.10	NTU	0.14	0.15	0.004	Diff <2x LOR	----
Physical Tests (QC Lot: 303322)											
CG2104264-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	585	577	1.46%	20%	----
Physical Tests (QC Lot: 305895)											
CG2104350-005	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	481	493	2.50%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	481	493	2.50%	20%	----
Physical Tests (QC Lot: 306997)											
CG2104356-002	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	33.5	34.5	3.06%	20%	----
Physical Tests (QC Lot: 307394)											
CG2104356-001	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	458	467	1.94%	15%	----
Anions and Nutrients (QC Lot: 300854)											
CG2104358-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 300855)											
CG2104358-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	986	987	0.0901%	20%	----
Anions and Nutrients (QC Lot: 300856)											
CG2104358-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 300857)											
CG2104358-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	15.1	15.1	0.250%	20%	----
Anions and Nutrients (QC Lot: 300858)											
CG2104358-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	13.5	13.5	0.0540%	20%	----
Anions and Nutrients (QC Lot: 300859)											
CG2104358-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 304406)											
CG2104356-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 306446)											
CG2104353-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	6.28	6.32	0.532%	20%	----
Anions and Nutrients (QC Lot: 310453)											
CG2104360-001	RG_ UFR1_WS_LAEMP_FRO_ 2021-09-20_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic Carbon (QC Lot: 307306)											
CG2104358-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.25	3.48	0.22	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 307319)											
CG2104358-002	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	3.43	3.34	0.09	Diff <2x LOR	----
Total Metals (QC Lot: 305811)											
CG2104357-001	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 306492)											
CG2104358-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.100	0.0953	5.29%	20%	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00142	0.00091	0.00051	Diff <2x LOR	----
CG2104358-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00020	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00024	0.00025	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0700	0.0698	0.339%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.026	0.026	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0500 µg/L	0.0000477	0.0000023	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	234	238	1.73%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.135	0.125	7.59%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000094	0.000095	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0344	0.0338	1.67%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	154	154	0.314%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00933	0.00905	3.11%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00129	0.00132	2.05%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00470	0.00473	0.00002	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.56	2.54	1.07%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	160 µg/L	0.162	1.46%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.64	3.52	3.40%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.4	11.4	0.165%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.618	0.612	0.978%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	355	357	0.692%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00665	0.00677	1.69%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 306492) - continued											
CG2104358-001	Anonymous	vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Total Metals (QC Lot: 306493)											
CG2104358-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00015	0.00012	0.00003	Diff <2x LOR	----
Dissolved Metals (QC Lot: 306762)											
CG2104353-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 307180)											
CG2104353-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0037	0.0034	0.0004	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00292	0.00286	2.15%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0212	0.0211	0.898%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.112	0.111	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.598 µg/L	0.000603	0.939%	20%	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	384	384	0.179%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.20	mg/L	46.6 µg/L	0.0463	0.822%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.961	0.952	0.962%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	154	151	1.77%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.280	0.277	1.10%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00540	0.00529	2.00%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.379	0.374	1.45%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	16.0	16.0	0.0560%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	78.9 µg/L	0.0797	1.11%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	2.99	2.97	0.506%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.100	mg/L	29.4	29.1	0.898%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.670	0.662	1.35%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	256	260	1.50%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000262	0.000246	6.16%	20%	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Dissolved Metals (QC Lot: 307180) - continued											
CG2104353-001	Anonymous	uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0247	0.0235	4.97%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0464	0.0466	0.417%	20%	----
Dissolved Metals (QC Lot: 307181)											
CG2104353-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 301003)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 303318)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 303322)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 305895)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 305897)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 306997)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Anions and Nutrients (QCLot: 300854)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 300855)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 300856)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 300857)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 300858)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 300859)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 300947)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 304406)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 306446)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 310453)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 310453) - continued						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 307306)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 307319)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 305811)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Total Metals (QCLot: 306492)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 306492) - continued						
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 306493)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 306762)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 307180)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 307180) - continued						
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 307181)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Physical Tests (QCLot: 301003)									
turbidity	----	E121	0.1	NTU	200 NTU	99.4	85.0	115	----
Physical Tests (QCLot: 303318)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	102	85.0	115	----
Physical Tests (QCLot: 303322)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	97.0	85.0	115	----
Physical Tests (QCLot: 305895)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.6	85.0	115	----
Physical Tests (QCLot: 305896)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 305897)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 306997)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	85.6	85.0	115	----
Physical Tests (QCLot: 307394)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----
Anions and Nutrients (QCLot: 300854)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 300855)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 300856)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	96.9	85.0	115	----
Anions and Nutrients (QCLot: 300857)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 300858)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 300859)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 300947)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	98.4	80.0	120	----
Anions and Nutrients (QCLot: 304406)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	93.7	80.0	120	----
Anions and Nutrients (QCLot: 306446)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Anions and Nutrients (QCLot: 306446) - continued									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.4	85.0	115	----
Anions and Nutrients (QCLot: 310453)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 307306)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	107	80.0	120	----
Organic / Inorganic Carbon (QCLot: 307319)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	109	80.0	120	----
Total Metals (QCLot: 305811)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	96.8	80.0	120	----
Total Metals (QCLot: 306492)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.4	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	91.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.6	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	91.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.6	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.0	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.2	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.8	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 306492) - continued									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.6	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.6	80.0	120	----
Total Metals (QCLot: 306493)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	95.7	80.0	120	----
Dissolved Metals (QCLot: 307180)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	96.2	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.0	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	92.1	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	92.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	92.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	90.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	92.1	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.6	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	89.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	96.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.7	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	93.5	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 307180) - continued									
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	93.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	87.3	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.7	80.0	120	----
Dissolved Metals (QCLot: 307181)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.7	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 300854)										
CG2104358-002	Anonymous	fluoride	16984-48-8	E235.F	0.861 mg/L	1 mg/L	86.1	75.0	125	----
Anions and Nutrients (QCLot: 300855)										
CG2104358-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 300856)										
CG2104358-002	Anonymous	bromide	24959-67-9	E235.Br-L	0.524 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 300857)										
CG2104358-002	Anonymous	chloride	16887-00-6	E235.Cl-L	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 300858)										
CG2104358-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 300859)										
CG2104358-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 304406)										
CG2104357-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0566 mg/L	0.0676 mg/L	83.8	70.0	130	----
Anions and Nutrients (QCLot: 306446)										
CG2104353-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0933 mg/L	0.1 mg/L	93.3	75.0	125	----
Anions and Nutrients (QCLot: 310453)										
CG2104360-002	RG_ FOUKI_WS_LAEMP_FRO_ 2021-09-20_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.58 mg/L	2.5 mg/L	103	70.0	130	----
Organic / Inorganic Carbon (QCLot: 307306)										
CG2104358-002	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	23.7 mg/L	23.9 mg/L	99.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 307319)										
CG2104358-002	Anonymous	carbon, total organic [TOC]	----	E355-L	23.5 mg/L	23.9 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 305811)										
CG2104357-002	Anonymous	mercury, total	7439-97-6	E508-L	4.78 ng/L	5 ng/L	95.5	70.0	130	----
Total Metals (QCLot: 306492)										
CG2104358-002	Anonymous	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	96.1	70.0	130	----
		antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 306492) - continued										
CG2104358-002	Anonymous	barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0357 mg/L	0.04 mg/L	89.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00889 mg/L	0.01 mg/L	88.9	70.0	130	----
		boron, total	7440-42-8	E420	0.091 mg/L	0.1 mg/L	91.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0173 mg/L	0.02 mg/L	86.4	70.0	130	----
		iron, total	7439-89-6	E420	1.84 mg/L	2 mg/L	92.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0891 mg/L	0.1 mg/L	89.1	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0354 mg/L	0.04 mg/L	88.6	70.0	130	----
		potassium, total	7440-09-7	E420	4.06 mg/L	4 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.15 mg/L	10 mg/L	91.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00382 mg/L	0.004 mg/L	95.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00369 mg/L	0.004 mg/L	92.2	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.361 mg/L	0.4 mg/L	90.2	70.0	130	----
Total Metals (QCLot: 306493)										
CG2104358-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
Dissolved Metals (QCLot: 306762)										
CG2104353-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000998 mg/L	0.0001 mg/L	99.8	70.0	130	----
Dissolved Metals (QCLot: 307180)										
CG2104353-002	Anonymous	iron, dissolved	7439-89-6	E421	3.96 mg/L	4 mg/L	98.9	70.0	130	----
CG2104353-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.909 mg/L	0.8 mg/L	114	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0962 mg/L	0.08 mg/L	120	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Dissolved Metals (QCLot: 307180) - continued										
CG2104353-002	Anonymous	arsenic, dissolved	7440-38-2	E421	0.0955 mg/L	0.08 mg/L	119	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0930 mg/L	0.08 mg/L	116	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.175 mg/L	0.16 mg/L	109	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0437 mg/L	0.05 mg/L	87.4	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.444 mg/L	0.4 mg/L	111	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0182 mg/L	0.016 mg/L	114	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	16 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0851 mg/L	0.08 mg/L	106	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0854 mg/L	0.08 mg/L	107	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0876 mg/L	0.08 mg/L	110	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.4 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0970 mg/L	0.08 mg/L	121	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.16 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	16 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.186 mg/L	0.16 mg/L	116	70.0	130	----
		silicon, dissolved	7440-21-3	E421	41.9 mg/L	40 mg/L	105	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0177 mg/L	0.016 mg/L	111	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	80 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0172 mg/L	0.016 mg/L	107	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0922 mg/L	0.08 mg/L	115	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.188 mg/L	0.16 mg/L	118	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.016 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.479 mg/L	0.4 mg/L	120	70.0	130	----
		zinc, dissolved	7440-66-6	E421	1.80 mg/L	1.6 mg/L	112	70.0	130	----
Dissolved Metals (QCLot: 307181)										
CG2104353-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.184 mg/L	0.16 mg/L	115	70.0	130	----

Teck

COC ID:	September FRO LAEMP 2021	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	mike.pope@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8202		

LABORATORY

Lab Name	ALS Calgary		
Lab Contact	Lyudmyla Shvets		
Email	lyudmyla.shvets@alsglobal.com		
Address	2559 29 Street NE		
City	Calgary	Province	AB
Postal Code	T1Y 7B5	Country	Canada
Phone Number	1 403 407 1794		

	Excel	PDF	EDD
mike.pope@teck.com			
teckcoal@equisonline.com			
rbowron@minnow.ca			
jessica.ritz@teck.com			
pschmurr@minnow.ca			

SAMPLE DETAILS / **ANALYSIS REQUESTED**

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

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
Filtered								N	F	N	N	F	N	F
Preserved									H2SO4	H2SO4		HCL	HNO3	HNO3
RG_UFRI_WS_1_2021_09_20_0900	RG_UFRI	WS	No	9/20/2021	900	G	7	X	X	X	X	X	X	X
RG_FOUKI_WS_1_2021_09_20_1115	RG_FOUKI	WS	No	9/20/2021	1115	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Jennifer Ings/Minnow	################		9/23 900

6

NO OF BOTTLES RETURNED/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature		Date/Time	September 22, 2021

Environmental Division
Calgary
Work Order Reference
CG2104360

Telephone : +1 403 407 1800

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **CG2106595**	Page	: 1 of 7
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 10-Dec-2021 09:20
PO	: VPO00748510	Date Analysis Commenced	: 10-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 22-Dec-2021 17:06
Sampler	: AMC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruby Pham	Lab Assistant	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Workorder Comments

SULPHIDE SAMPLE NOT RECEIVED.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	09-Dec-2021 09:45	09-Dec-2021 12:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106595-001	CG2106595-002	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	263	228	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	321	278	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	263	228	----	----	----
conductivity	----	E100	2.0	µS/cm	1230	1230	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	667	654	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	317	320	----	----	----
pH	----	E108	0.10	pH units	8.13	8.14	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	923	944	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	2.0	4.3	----	----	----
turbidity	----	E121	0.10	NTU	1.43	0.61	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0909	0.0845	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.250 DLDS	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.23	2.12	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.181	0.176	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.441 TKNI	0.442 TKNI	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	24.7	24.8	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0527	0.0569	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0020	0.0023	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	422	408	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.32	1.28	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	09-Dec-2021 09:45	09-Dec-2021 12:00	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106595-001	CG2106595-002	--------	--------	--------
					Result	Result	----	----	----
Organic / Inorganic Carbon									
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.23	1.19	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	15.9	14.9	----	----	----
cation sum	----	EC101	0.10	meq/L	13.5	13.2	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	84.9	88.6	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	8.16	6.05	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0078	0.0171	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00085	0.00083	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00022	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0920	0.0910	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.012	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.166	0.168	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	157	151	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	0.52	0.53	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.032	0.051	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0635	0.0622	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	76.6	76.2	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0112	0.0144	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00464	0.00446	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0137	0.0138	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	2.58	2.59	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	107	102	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	09-Dec-2021 09:45	09-Dec-2021 12:00	----	----	----
					CG2106595-001	CG2106595-002	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
silicon, total	7440-21-3	E420	0.10	mg/L	2.01	2.04	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	2.63	2.66	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.201	0.197	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	148	144	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000021	0.000022	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00040	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00572	0.00563	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0083	0.0081	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0016	0.0022	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00080	0.00082	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00017	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0834	0.0828	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.011	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.144	0.128	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	143	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.10	µg/L	0.44	0.44	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00028	0.00024	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.012	0.014	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0594	0.0571	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	72.8	72.2	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00968	0.00904	----	----	----

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	09-Dec-2021 09:45	09-Dec-2021 12:00	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**CG2106595-001**	**CG2106595-002**	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00436	0.00442	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0128	0.0124	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.37	2.36	----	----	----
selenium, dissolved	7782-49-2	E421	0.050	µg/L	110	103	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.85	1.78	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.50	2.54	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.187	0.194	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	143	136	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000019	0.000019	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00507	0.00495	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0086	0.0067	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2106595**	Page	: 1 of 15
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 10-Dec-2021 09:20
PO	: VPO00748510	Issue Date	: 22-Dec-2021 17:06
C-O-C number	: FRO LAEMP 21-11		
Sampler	: AMC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E298	09-Dec-2021	12-Dec-2021	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E298	09-Dec-2021	12-Dec-2021	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.Br-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.Cl-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E378-U	09-Dec-2021	----	----	----		11-Dec-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E378-U	09-Dec-2021	----	----	----		11-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.F	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.F	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.NO3-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.NO2-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E235.SO4	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E235.SO4	09-Dec-2021	----	----	----		12-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E318	09-Dec-2021	17-Dec-2021	----	----		20-Dec-2021	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E318	09-Dec-2021	17-Dec-2021	----	----		20-Dec-2021	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E372-U	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E372-U	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E421.Cr-L	09-Dec-2021	18-Dec-2021	----	----		18-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	09-Dec-2021	18-Dec-2021	----	----		18-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E509	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E509	09-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E421	09-Dec-2021	18-Dec-2021	----	----		18-Dec-2021	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E421	09-Dec-2021	18-Dec-2021	----	----		18-Dec-2021	180 days	9 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E358-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E358-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E355-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E355-L	09-Dec-2021	10-Dec-2021	----	----		11-Dec-2021	28 days	2 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E283	09-Dec-2021	----	----	----		13-Dec-2021	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E283	09-Dec-2021	----	----	----		13-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E290	09-Dec-2021	----	----	----		14-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E290	09-Dec-2021	----	----	----		14-Dec-2021	14 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E100	09-Dec-2021	----	----	----		14-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E100	09-Dec-2021	----	----	----		14-Dec-2021	28 days	5 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E125	09-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E125	09-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	193 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E108	09-Dec-2021	----	----	----		14-Dec-2021	0.25 hrs	118 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E108	09-Dec-2021	----	----	----		14-Dec-2021	0.25 hrs	121 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E162	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E162	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E160-L	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE [TSS-WB] RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E160-L	09-Dec-2021	----	----	----		15-Dec-2021	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E121	09-Dec-2021	----	----	----		11-Dec-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E121	09-Dec-2021	----	----	----		12-Dec-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E420.Cr-L	09-Dec-2021	----	----	----		15-Dec-2021	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	09-Dec-2021	----	----	----		15-Dec-2021	180 days	7 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E508-L	09-Dec-2021	----	----	----		18-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E508-L	09-Dec-2021	----	----	----		18-Dec-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBSC_WS_LAEMP_ FRO_2021-12_NP	E420	09-Dec-2021	----	----	----		15-Dec-2021	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	E420	09-Dec-2021	----	----	----		15-Dec-2021	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367202	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	365756	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367200	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	370363	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369978	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	370364	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
ORP by Electrode	E125	370679	1	20	5.0	5.0	✓
pH by Meter	E108	367201	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367165	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	366497	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	371458	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	366496	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365599	1	20	5.0	5.0	✓
Turbidity by Nephelometry	E121	365452	2	40	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367202	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	365756	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367200	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	370363	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369978	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	370364	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
ORP by Electrode	E125	370679	1	20	5.0	5.0	✓
pH by Meter	E108	367201	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367165	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	366497	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	371458	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	366496	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365599	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366764	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	365452	2	40	5.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	366547	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	367202	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	365756	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Conductivity in Water	E100	367200	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	370363	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369978	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	370364	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	367165	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	366497	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	371458	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	366496	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365599	1	20	5.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	366764	2	40	5.0	5.0	✓
Turbidity by Nephelometry	E121	365452	2	40	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	365756	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	365681	1	18	5.5	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	365682	1	18	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	370363	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	369978	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	370364	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	364958	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	365474	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	365685	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	365683	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	365684	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	365680	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	366497	1	12	8.3	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	371114	1	20	5.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	371458	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	366496	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	364962	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	365599	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as $CaCO3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO_3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2106595**	Page	: 1 of 18
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Mike Pope	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: ----	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 10-Dec-2021 09:20
PO	: VPO00748510	Date Analysis Commenced	: 10-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 22-Dec-2021 17:06
Sampler	: AMC		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Elke Tabora		Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
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Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 365452)											
CG2106553-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 365590)											
CG2106573-005	Anonymous	turbidity	----	E121	0.10	NTU	6.50	6.57	1.07%	15%	----
Physical Tests (QC Lot: 366547)											
CG2106593-001	Anonymous	acidity (as CaCO3)	----	E283	10.0	mg/L	29.8	29.0	0.8	Diff <2x LOR	----
Physical Tests (QC Lot: 367165)											
CG2106593-002	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	3410	3420	0.381%	20%	----
Physical Tests (QC Lot: 367167)											
CG2106563-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	420	445	5.66%	20%	----
Physical Tests (QC Lot: 367200)											
CG2106589-018	Anonymous	conductivity	----	E100	2.0	µS/cm	3960	3990	0.755%	10%	----
Physical Tests (QC Lot: 367201)											
CG2106589-018	Anonymous	pH	----	E108	0.10	pH units	7.38	7.40	0.271%	4%	----
Physical Tests (QC Lot: 367202)											
CG2106589-018	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	498	500	0.280%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	498	500	0.280%	20%	----
Physical Tests (QC Lot: 370679)											
CG2106589-009	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	409	413	0.900%	15%	----
Anions and Nutrients (QC Lot: 365474)											
CG2106595-001	RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 365599)											
CG2106589-019	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 365680)											
CG2106573-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	796	795	0.232%	20%	----
Anions and Nutrients (QC Lot: 365681)											
CG2106573-013	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 365682)											
CG2106573-013	Anonymous	chloride	16887-00-6	E235.Cl-L	0.50	mg/L	8.32	7.94	4.62%	20%	----
Anions and Nutrients (QC Lot: 365683)											

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrients (QC Lot: 365683) - continued											
CG2106573-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	1.27	1.24	2.13%	20%	----
Anions and Nutrients (QC Lot: 365684)											
CG2106573-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0118	0.0106	0.0012	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 365685)											
CG2106573-013	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.283	0.276	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 365756)											
CG2106589-012	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	2.40	2.43	1.30%	20%	----
Anions and Nutrients (QC Lot: 371114)											
CG2106593-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.250	mg/L	5.27	5.68	7.49%	20%	----
Organic / Inorganic Carbon (QC Lot: 364958)											
CG2106580-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.84	0.87	0.03	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 364962)											
CG2106580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.26	5.18	1.58%	20%	----
Total Metals (QC Lot: 366496)											
CG2106546-001	Anonymous	aluminum, total	7429-90-5	E420	0.0150	mg/L	<0.0150	<0.0150	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00050	mg/L	0.00302	0.00305	0.00003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00050	mg/L	0.0216	0.0216	0.00791%	20%	----
		beryllium, total	7440-41-7	E420	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.050	mg/L	0.125	0.128	0.003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0250	mg/L	2.15 µg/L	0.00215	0.0930%	20%	----
		calcium, total	7440-70-2	E420	0.250	mg/L	605	613	1.25%	20%	----
		cobalt, total	7440-48-4	E420	0.50	mg/L	84.7 µg/L	0.0850	0.341%	20%	----
		copper, total	7440-50-8	E420	0.00250	mg/L	<0.00250	0.00297	0.00047	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.050	mg/L	0.050	0.087	0.037	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0050	mg/L	1.21	1.22	0.653%	20%	----
		magnesium, total	7439-95-4	E420	0.0250	mg/L	249	248	0.463%	20%	----
		manganese, total	7439-96-5	E420	0.00050	mg/L	0.444	0.447	0.640%	20%	----
		molybdenum, total	7439-98-7	E420	0.000250	mg/L	0.00618	0.00594	3.95%	20%	----
		nickel, total	7440-02-0	E420	0.00250	mg/L	0.563	0.566	0.484%	20%	----
		potassium, total	7440-09-7	E420	0.250	mg/L	19.9	20.0	0.935%	20%	----
		selenium, total	7782-49-2	E420	0.250	mg/L	85.4 µg/L	0.0851	0.370%	20%	----
		silicon, total	7440-21-3	E420	0.50	mg/L	3.14	3.08	0.06	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 366496) - continued											
CG2106546-001	Anonymous	silver, total	7440-22-4	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.250	mg/L	42.8	42.9	0.155%	20%	----
		strontium, total	7440-24-6	E420	0.00100	mg/L	1.49	1.47	1.48%	20%	----
		sulfur, total	7704-34-9	E420	2.50	mg/L	468	459	2.13%	20%	----
		thallium, total	7440-28-0	E420	0.000050	mg/L	0.000196	0.000189	0.000007	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000050	mg/L	0.0343	0.0341	0.697%	20%	----
		vanadium, total	7440-62-2	E420	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0150	mg/L	0.155	0.157	1.63%	20%	----
Total Metals (QC Lot: 366497)											
CG2106546-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Total Metals (QC Lot: 371458)											
CG2106590-001	Anonymous	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 369978)											
CG2106573-008	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 370363)											
CG2106573-017	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 370364)											
CG2106573-017	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	<0.0020	0.0021	0.00010	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00153	0.00148	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.00988	0.00979	0.936%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.082	0.080	0.001	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0100	mg/L	0.0147 µg/L	0.0000152	0.0000005	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	470	460	2.10%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00020	mg/L	0.0552	0.0547	0.990%	20%	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	2.42	2.42	0.169%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.115	0.109	5.44%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	230	230	0.285%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.938	0.899	4.21%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 370364) - continued											
CG2106573-017	Anonymous	molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00158	0.00163	3.04%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.276	0.276	0.0752%	20%	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	6.83	6.83	0.00524%	20%	----
		selenium, dissolved	7782-49-2	E421	0.100	mg/L	0.124 µg/L	<0.000100	0.000024	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.32	3.32	0.0741%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	5.56	5.68	2.07%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.516	0.526	1.74%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	525	526	0.246%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	0.000119	0.000116	0.000003	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.0306	0.0306	0.0428%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	0.0674	0.0755	11.3%	20%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 365452)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 365590)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 366547)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 366764)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 366765)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 367165)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 367167)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 367200)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 367202)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 365474)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 365599)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 365680)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 365681)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 365682)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 365683)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 365684)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 365684) - continued						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 365685)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 365756)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 371114)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 364958)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 364962)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 366496)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 366496) - continued						
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 366497)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 371458)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Dissolved Metals (QCLot: 369978)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 370363)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 370364)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 370364) - continued						
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 365452)									
turbidity	----	E121	0.1	NTU	200 NTU	95.9	85.0	115	----
Physical Tests (QCLot: 365590)									
turbidity	----	E121	0.1	NTU	200 NTU	93.6	85.0	115	----
Physical Tests (QCLot: 366547)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	107	85.0	115	----
Physical Tests (QCLot: 366764)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	96.7	85.0	115	----
Physical Tests (QCLot: 366765)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	104	85.0	115	----
Physical Tests (QCLot: 367165)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	93.7	85.0	115	----
Physical Tests (QCLot: 367167)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	91.6	85.0	115	----
Physical Tests (QCLot: 367200)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 367201)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 367202)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 370679)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
Anions and Nutrients (QCLot: 365474)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	96.4	80.0	120	----
Anions and Nutrients (QCLot: 365599)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.4	80.0	120	----
Anions and Nutrients (QCLot: 365680)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 365681)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 365682)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 365683)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 365683) - continued									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	----
Anions and Nutrients (QCLot: 365684)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 365685)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 365756)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.6	85.0	115	----
Anions and Nutrients (QCLot: 371114)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	100	75.0	125	----
Organic / Inorganic Carbon (QCLot: 364958)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	87.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 364962)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	91.1	80.0	120	----
Total Metals (QCLot: 366496)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	113	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.8	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.7	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.9	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 366496) - continued									
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.0	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.8	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	106	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.2	80.0	120	----
Total Metals (QCLot: 366497)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
Total Metals (QCLot: 371458)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	97.2	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.8	80.0	120	----
Dissolved Metals (QCLot: 370363)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	90.5	80.0	120	----
Dissolved Metals (QCLot: 370364)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	92.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.8	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	90.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	91.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.5	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	93.4	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	91.7	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.8	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 370364) - continued									
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.1	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.4	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	92.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	88.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.0	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	94.4	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	90.6	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 365474)										
CG2106595-002	RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 365599)										
CG2106589-020	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.5	70.0	130	----
Anions and Nutrients (QCLot: 365680)										
CG2106573-014	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	95.1 mg/L	100 mg/L	95.1	75.0	125	----
Anions and Nutrients (QCLot: 365681)										
CG2106573-014	Anonymous	bromide	24959-67-9	E235.Br-L	0.508 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 365682)										
CG2106573-014	Anonymous	chloride	16887-00-6	E235.Cl-L	95.2 mg/L	100 mg/L	95.2	75.0	125	----
Anions and Nutrients (QCLot: 365683)										
CG2106573-014	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.38 mg/L	2.5 mg/L	95.1	75.0	125	----
Anions and Nutrients (QCLot: 365684)										
CG2106573-014	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.480 mg/L	0.5 mg/L	96.1	75.0	125	----
Anions and Nutrients (QCLot: 365685)										
CG2106573-014	Anonymous	fluoride	16984-48-8	E235.F	0.961 mg/L	1 mg/L	96.1	75.0	125	----
Anions and Nutrients (QCLot: 365756)										
CG2106589-013	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 371114)										
CG2106593-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	ND mg/L	2.5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 364958)										
CG2106580-001	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.5	70.0	130	----
Organic / Inorganic Carbon (QCLot: 364962)										
CG2106580-001	Anonymous	carbon, total organic [TOC]	----	E355-L	22.2 mg/L	23.9 mg/L	92.7	70.0	130	----
Total Metals (QCLot: 366496)										
CG2106546-002	Anonymous	aluminum, total	7429-90-5	E420	0.402 mg/L	0.4 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
					Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 366496) - continued										
CG2106546-002	Anonymous	barium, total	7440-39-3	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0774 mg/L	0.08 mg/L	96.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		boron, total	7440-42-8	E420	0.196 mg/L	0.2 mg/L	97.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00788 mg/L	0.008 mg/L	98.6	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		iron, total	7439-89-6	E420	3.82 mg/L	4 mg/L	95.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0858 mg/L	0.08 mg/L	107	70.0	130	----
		silicon, total	7440-21-3	E420	19.2 mg/L	20 mg/L	95.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00777 mg/L	0.008 mg/L	97.1	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00750 mg/L	0.008 mg/L	93.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0822 mg/L	0.08 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.211 mg/L	0.2 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.726 mg/L	0.8 mg/L	90.8	70.0	130	----
Total Metals (QCLot: 366497)										
CG2106546-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
Total Metals (QCLot: 371458)										
CG2106593-001	Anonymous	mercury, total	7439-97-6	E508-L	4.58 ng/L	5 ng/L	91.5	70.0	130	----
Dissolved Metals (QCLot: 369978)										
CG2106573-009	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000999 mg/L	0.0001 mg/L	99.9	70.0	130	----
Dissolved Metals (QCLot: 370363)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 370363) - continued										
CG2106573-018	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0680 mg/L	0.08 mg/L	85.1	70.0	130	----
Dissolved Metals (QCLot: 370364)										
CG2106573-018	Anonymous	aluminum, dissolved	7429-90-5	E421	0.345 mg/L	0.4 mg/L	86.2	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0340 mg/L	0.04 mg/L	84.9	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0743 mg/L	0.08 mg/L	92.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.185 mg/L	0.2 mg/L	92.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00667 mg/L	0.008 mg/L	83.3	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0322 mg/L	0.04 mg/L	80.5	70.0	130	----
		iron, dissolved	7439-89-6	E421	3.43 mg/L	4 mg/L	85.6	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0351 mg/L	0.04 mg/L	87.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.164 mg/L	0.2 mg/L	82.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		nickel, dissolved	7440-02-0	E421	ND mg/L	0.08 mg/L	ND	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	8 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0854 mg/L	0.08 mg/L	107	70.0	130	----
		silicon, dissolved	7440-21-3	E421	17.7 mg/L	20 mg/L	88.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00709 mg/L	0.008 mg/L	88.6	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00710 mg/L	0.008 mg/L	88.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0338 mg/L	0.04 mg/L	84.6	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0728 mg/L	0.08 mg/L	91.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.008 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.179 mg/L	0.2 mg/L	89.4	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.636 mg/L	0.8 mg/L	79.5	70.0	130	----

Teck

Page 1 of 1

COC ID:	FRO LAEMP 21-11	TURNAROUND TIME:	

PROJECT/CLIENT INFO

Facility Name / Job#	FRO
Project Manager	Cait Good
Email	cait.good@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
City	Calgary
Province	AB
Postal Code	T1Y 7B5
Country	Canada
Phone Number	1 403 407 1794

Excel | PDF | EDD

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_SCOUTDS	WS	No	12/9/2021	9:45	G	7	X	X	X	X	X	X	X
RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC	WS	No	12/9/2021	12:00	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
Alex McClymont	December 9, 2021		12/10 9:20

NB OF BOTTLES RETURNED/DESCRIPTION

Regular (default) x
~~Priority (2-3 business days) - 50% surcharge~~
Emergency (1 Business Day) - 100% surcharge
For Emergency <1 Day, ASAP or Weekend - Contact ALS

Sampler's Name	Alex McClymont	Mobile #	780-293-6750
Sampler's Signature	AMC	Date/Time	December 9, 2021

Environmental Division
Calgary
Work Order Reference
CG2106595

Telephone : +1 403 407 1800

CERTIFICATE OF ANALYSIS

Work Order	: **CG2106778**	Page	: 1 of 15
Amendment	: **2**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Dec-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 21-Jan-2022 15:05
Sampler	: Peter Schnurr		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Ann Ho	Laboratory Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Oscar Ruiz	Lab Assistant	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Shirley Li		Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	14-Dec-2021 09:30	13-Dec-2021 13:00	14-Dec-2021 14:00	14-Dec-2021 13:50	14-Dec-2021 11:00
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	CG2106778-001	CG2106778-002	CG2106778-003	CG2106778-004	CG2106778-005
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	8.3	7.2	<2.0	<2.0	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	275	306	229	219	219
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	335	373	280	267	267
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	11.3
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	6.8
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	275	306	229	219	219
conductivity	----	E100	2.0	µS/cm	1200	1300	1070	1060	1280
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	734	797	625	640	774
oxidation-reduction potential [ORP]	----	E125	0.10	mV	452	412	451	450	438
pH	----	E108	0.10	pH units	8.12	8.20	8.22	8.18	8.29
solids, total dissolved [TDS]	----	E162	10	mg/L	884	911	786	780	953
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	1.3	<1.0	1.8	2.2	1.7
turbidity	----	E121	0.10	NTU	1.24	0.18	0.48	0.52	1.08
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0053	<0.0050	0.0065	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.250 DLDS	<0.250 DLDS	<0.250 DLDS	<0.250 DLDS
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.41	1.91	1.60	1.62	2.02
fluoride	16984-48-8	E235.F	0.020	mg/L	0.107	0.115	0.130	0.131	0.126
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.337 TKNI	0.339 TKNI	0.337 TKNI	<0.050 TKNI	<0.050 TKNI
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	23.5	29.0	23.8	23.8	24.7
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	<0.0050 DLDS	0.0068	0.0078	0.0087
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	0.0031	<0.0010	<0.0010	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	0.0044 DLM	<0.0020	<0.0020	0.0034
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	357	358	319	318	431
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.69	0.79	1.06	1.18	1.30
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.71	0.66	0.99	1.08	1.22

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	14-Dec-2021 09:30	13-Dec-2021 13:00	14-Dec-2021 14:00	14-Dec-2021 13:50	14-Dec-2021 11:00
					CG2106778-001	CG2106778-002	CG2106778-003	CG2106778-004	CG2106778-005
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	14.6	15.7	13.0	12.7	15.2
cation sum	----	EC101	0.10	meq/L	14.8	16.2	12.7	13.0	15.6
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	103	97.7	102	103
ion balance (cation-anion difference)	----	EC101	0.010	%	0.680	1.57	1.17	1.17	1.30
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0.0042	0.0073	0.0049
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	<0.00010	0.00032	0.00035	0.00037
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00011	0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	0.0857	0.107	0.0914	0.0941	0.0835
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.020	0.011	0.011	0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0409	0.0479	0.0885	0.0775	0.139
calcium, total	7440-70-2	E420	0.050	mg/L	152	170	140	133	157
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00016	0.00011	0.00016	0.00010
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	0.13	0.13	0.14
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.036	0.038	0.023
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0496	0.0715	0.0672	0.0707	0.0650
magnesium, total	7439-95-4	E420	0.0050	mg/L	73.2	79.1	62.2	61.9	83.7
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00065	0.00027	0.0136	0.0113	0.00843
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00113	0.000907	0.00165	0.00171	0.00337
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00135	0.00054	0.00707	0.00723	0.0107
potassium, total	7440-09-7	E420	0.050	mg/L	2.03	2.92	2.12	2.07	2.31
selenium, total	7782-49-2	E420	0.050	µg/L	96.1	103	67.9	71.8	109
silicon, total	7440-21-3	E420	0.10	mg/L	2.30	2.44	1.77	1.69	1.85
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	2.97	4.12	2.98	2.95	2.91

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	14-Dec-2021 09:30	13-Dec-2021 13:00	14-Dec-2021 14:00	14-Dec-2021 13:50	14-Dec-2021 11:00
					CG2106778-001	**CG2106778-002**	**CG2106778-003**	**CG2106778-004**	**CG2106778-005**
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.191	0.189	0.204	0.206	0.204
sulfur, total	7704-34-9	E420	0.50	mg/L	134	133	117	111	161
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000010	0.000012
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00389	0.00484	0.00389	0.00398	0.00502
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0044	0.0039	0.0097
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0.0013	0.0015	0.0022
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	<0.00010	0.00034	0.00033	0.00040
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0899	0.110	0.0925	0.0940	0.0867
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.018	0.011	0.011	0.011
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0389	0.0452	0.0804	0.0784	0.127
calcium, dissolved	7440-70-2	E421	0.050	mg/L	163	181	144	150	168
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0.00013	0.00012	0.00012
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0.00024	0.00025	0.00149 DTC
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.022	0.020	0.017
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0563	0.0749	0.0738	0.0752	0.0706
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.4	83.9	64.5	64.4	86.0
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00058	0.00022	0.0122	0.0105	0.00742
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00116	0.000865	0.00170	0.00172	0.00409
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00146	<0.00050	0.00752	0.00741	0.0116
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.22	3.13	2.23	2.19	2.46

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	14-Dec-2021 09:30	13-Dec-2021 13:00	14-Dec-2021 14:00	14-Dec-2021 13:50	14-Dec-2021 11:00
Analyte	CAS Number	Method	LOR	Unit	CG2106778-001	CG2106778-002	CG2106778-003	CG2106778-004	CG2106778-005
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	113	122	75.4	77.0	121
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.31	2.54	1.78	1.76	1.83
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.15	4.46	3.12	3.16	3.04
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.202	0.200	0.217	0.216	0.224
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	123	123	108	108	144
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000010	0.000014
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00434	0.00552	0.00432	0.00433	0.00548
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0010	0.0037	0.0030	0.0108
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	13-Dec-2021 09:30	14-Dec-2021 09:40	13-Dec-2021 12:10	13-Dec-2021 14:30	13-Dec-2021 14:30
Analyte	CAS Number	Method	LOR	Unit	CG2106778-006	CG2106778-007	CG2106778-008	CG2106778-009	CG2106778-010
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	6.6	6.2	3.8	2.1	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	292	270	282	265	<1.0
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	357	329	344	323	<1.0
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	292	270	282	265	<1.0
conductivity	----	E100	2.0	μS/cm	1290	1200	1210	1160	<2.0
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	774	739	733	671	<0.50
oxidation-reduction potential [ORP]	----	E125	0.10	mV	435	434	444	470	502
pH	----	E108	0.10	pH units	8.18	8.19	8.24	8.22	5.52
solids, total dissolved [TDS]	----	E162	10	mg/L	952	872	870	809	<10
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	8.6	1.2	<1.0	<1.0	<1.0
turbidity	----	E121	0.10	NTU	0.60	0.31	0.14	0.19	<0.10
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0051	0.0059	<0.0050	<0.0050
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.250 DLDS	<0.250 DLDS	<0.250 DLDS	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.11	1.45	1.70	1.64	<0.10
fluoride	16984-48-8	E235.F	0.020	mg/L	0.116	0.110	0.107	0.107	<0.020
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.301 TKNI	0.356 TKNI	0.381 TKNI	0.372 TKNI	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	28.4	24.1	25.0	23.0	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	<0.0050 DLDS	<0.0050 DLDS	<0.0050 DLDS	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0028	0.0022	0.0017	0.0012	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0035	<0.0020	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	365	353	347	321	<0.30
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.82	0.86	0.78	0.80	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.78	0.75	0.83	0.72	<0.50
Ion Balance									

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	13-Dec-2021 09:30	14-Dec-2021 09:40	13-Dec-2021 12:10	13-Dec-2021 14:30	13-Dec-2021 14:30
					CG2106778-006	CG2106778-007	CG2106778-008	CG2106778-009	CG2106778-010
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	15.5	14.5	14.7	13.7	<0.10
cation sum	----	EC101	0.10	meq/L	15.7	15.0	14.8	13.6	<0.10
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	103	101	99.3	100
ion balance (cation-anion difference)	----	EC101	0.010	%	0.641	1.69	0.339	0.366	<0.010
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0047	0.0037	0.0032	<0.0030	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	0.00011	0.00011	0.00011	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	0.104	0.0921	0.101	0.0983	<0.00010
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.012	0.019	0.013	<0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0567	0.0322	0.0377	0.0372	<0.0050
calcium, total	7440-70-2	E420	0.050	mg/L	164	154	155	156	<0.050
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00013	0.00012	0.00010	0.00011	<0.00010
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0.020	0.016	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0664	0.0465	0.0502	0.0492	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	77.6	74.6	72.2	65.9	<0.0050
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00099	0.00074	0.00659	0.00573	<0.00010
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000991	0.00150	0.000942	0.00121	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00116	0.00114	0.00097	0.00091	<0.00050
potassium, total	7440-09-7	E420	0.050	mg/L	2.72	2.04	2.07	1.89	<0.050
selenium, total	7782-49-2	E420	0.050	µg/L	102	94.6	94.5	85.3	<0.050
silicon, total	7440-21-3	E420	0.10	mg/L	2.36	2.33	2.38	2.36	<0.10
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	4.00	3.02	3.26	3.14	<0.050

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	13-Dec-2021 09:30	14-Dec-2021 09:40	13-Dec-2021 12:10	13-Dec-2021 14:30	13-Dec-2021 14:30
					CG2106778-006	CG2106778-007	CG2106778-008	CG2106778-009	CG2106778-010
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.193	0.193	0.188	0.198	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L	134	132	129	117	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00475	0.00402	0.00376	0.00377	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0013	0.0015	<0.0010	0.0016	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00012	0.00011	0.00010	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.106	0.0955	0.105	0.102	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.012	0.014	0.012	<0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0518	0.0406	0.0389	0.0367	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	176	165	168	154	<0.050
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00010	<0.00010	0.00011	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00035	0.00021	0.00038	0.00044	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0.017	0.017	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0731	0.0505	0.0525	0.0488	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	81.3	79.4	76.1	69.5	<0.0050
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00083	0.00061	0.00578	0.00518	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00100	0.00120	0.000936	0.000929	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00172	0.00148	0.00082	0.00080	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.89	2.17	2.21	2.06	<0.050

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP
Client sampling date / time					13-Dec-2021 09:30	14-Dec-2021 09:40	13-Dec-2021 12:10	13-Dec-2021 14:30	13-Dec-2021 14:30
					CG2106778-006	CG2106778-007	CG2106778-008	CG2106778-009	CG2106778-010
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	120	115	110	100	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.42	2.33	2.40	2.38	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L	4.16	3.28	3.40	3.26	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.208	0.210	0.207	0.193	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	124	122	118	111	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00526	0.00430	0.00429	0.00396	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0039	0.0035	0.0020	0.0016	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Laboratory

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

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	----	----	----
Client sampling date / time					13-Dec-2021 14:30	13-Dec-2021 14:30	----	----	----
					CG2106778-011	CG2106778-012	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	2.2	2.0	----	----	----
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	267	<1.0	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	325	<1.0	----	----	----
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	----	----	----
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	267	<1.0	----	----	----
conductivity	----	E100	2.0	µS/cm	1140	<2.0	----	----	----
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	684	<0.50	----	----	----
oxidation-reduction potential [ORP]	----	E125	0.10	mV	451	483	----	----	----
pH	----	E108	0.10	pH units	8.27	5.36	----	----	----
solids, total dissolved [TDS]	----	E162	10	mg/L	770	<10	----	----	----
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	----	----	----
turbidity	----	E121	0.10	NTU	0.14	<0.10	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	----	----	----
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.050	----	----	----
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	1.62	<0.10	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.105	<0.020	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.376 TKNI	<0.050	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	22.9	<0.0050	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	<0.0010	----	----	----
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0015	<0.0010	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	320	<0.30	----	----	----
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.93	<0.50	----	----	----
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.79	<0.50	----	----	----
Ion Balance									

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	13-Dec-2021 14:30	13-Dec-2021 14:30	----	----	----
					CG2106778-011	CG2106778-012	--------	--------	--------
					Result	Result	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	13.7	<0.10	----	----	----
cation sum	----	EC101	0.10	meq/L	13.9	<0.10	----	----	----
ion balance (cations/anions ratio)	----	EC101	0.010	%	101	100	----	----	----
ion balance (cation-anion difference)	----	EC101	0.010	%	0.725	<0.010	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00010	<0.00010	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.102	<0.00010	----	----	----
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.012	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0293	<0.0050	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	143	<0.050	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	<0.00010	----	----	----
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.016	<0.010	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0436	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	67.3	<0.0050	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00595	<0.00010	----	----	----
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00136	<0.000050	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00094	<0.00050	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.96	<0.050	----	----	----
selenium, total	7782-49-2	E420	0.050	µg/L	85.3	<0.050	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	2.41	<0.10	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	3.19	<0.050	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	----	----	----
Client sampling date / time					13-Dec-2021 14:30	13-Dec-2021 14:30	----	----	----
					CG2106778-011	CG2106778-012	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.186	<0.00020	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	117	<0.50	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00357	<0.000010	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.104	<0.00010	----	----	----
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	<0.010	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0359	<0.0050	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L	157	<0.050	----	----	----
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00010	<0.00010	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00038	<0.00020	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.016	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0490	<0.0010	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	70.9	<0.0050	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00516	<0.00010	----	----	----
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00122	<0.000050	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00083	<0.00050	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.06	<0.050	----	----	----

Analytical Results

Sub-Matrix: Water

(Matrix: Water)

				Client sample ID	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	----	----	----
				Client sampling date / time	13-Dec-2021 14:30	13-Dec-2021 14:30	----	----	----
Analyte	CAS Number	Method	LOR	Unit	CG2106778-011	CG2106778-012	--------	--------	--------
					Result	Result	----	----	----
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	97.4	<0.050	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.40	<0.050	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.36	<0.050	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.195	<0.00020	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	107	<0.50	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00391	<0.000010	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0029	<0.0010	----	----	----
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	----	----
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2106778**	Page	: 1 of 43
Amendment	: **2**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Dec-2021 08:50
PO	: VPO00748510	Issue Date	: 21-Jan-2022 15:06
C-O-C number	: FRO LAEMP 21-11		
Sampler	: Peter Schnurr		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E298	14-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E298	14-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E298	14-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E298	14-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E298	14-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	15-Dec-2021	----	----		15-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E298	13-Dec-2021	16-Dec-2021	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE										
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E378-U	14-Dec-2021	----	----	----		15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E378-U	13-Dec-2021	----	----	----		15-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.F	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.F	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.F	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.F	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.F	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.F	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E235.SO4	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E235.SO4	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E235.SO4	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E235.SO4	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E235.SO4	14-Dec-2021	----	----	----		16-Dec-2021	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.SO4	13-Dec-2021	----	----	----		16-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E318	14-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E318	14-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E318	14-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E318	14-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E318	14-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E318	13-Dec-2021	21-Dec-2021	----	----		22-Dec-2021	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E372-U	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E372-U	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E509	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E509	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E509	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E509	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E509	14-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E509	13-Dec-2021	21-Dec-2021	----	----		21-Dec-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	20-Dec-2021	----	----		20-Dec-2021	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E421	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E421	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E421	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E421	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E421	14-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E421	13-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	9 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E358-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E358-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E358-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E358-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E358-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E358-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E355-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E355-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E355-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E355-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E355-L	14-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E355-L	13-Dec-2021	15-Dec-2021	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E283	14-Dec-2021	----	----	----		16-Dec-2021	14 days	2 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E283	14-Dec-2021	----	----	----		16-Dec-2021	14 days	2 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E283	14-Dec-2021	----	----	----		16-Dec-2021	14 days	2 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E283	14-Dec-2021	----	----	----		16-Dec-2021	14 days	2 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E283	14-Dec-2021	----	----	----		16-Dec-2021	14 days	2 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E283	13-Dec-2021	----	----	----		16-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E290	14-Dec-2021	----	----	----		17-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E290	14-Dec-2021	----	----	----		17-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E290	14-Dec-2021	----	----	----		17-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E290	14-Dec-2021	----	----	----		17-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E290	14-Dec-2021	----	----	----		17-Dec-2021	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓

Matrix: **Water**

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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E290	13-Dec-2021	----	----	----		17-Dec-2021	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E100	14-Dec-2021	----	----	----		17-Dec-2021	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E100	14-Dec-2021	----	----	----		17-Dec-2021	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E100	14-Dec-2021	----	----	----		17-Dec-2021	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E100	14-Dec-2021	----	----	----		17-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E100	14-Dec-2021	----	----	----		17-Dec-2021	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E100	13-Dec-2021	----	----	----		17-Dec-2021	28 days	4 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E125	14-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	166 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E125	14-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E125	14-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	170 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E125	14-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	170 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E125	14-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	172 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	191 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	193 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E125	13-Dec-2021	----	----	----		21-Dec-2021	0.25 hrs	196 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E108	14-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	71 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E108	14-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	71 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E108	14-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	74 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E108	14-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	75 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E108	14-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	75 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	94 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	94 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	94 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	94 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	96 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	97 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E108	13-Dec-2021	----	----	----		17-Dec-2021	0.25 hrs	99 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E162	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E162	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E162	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E162	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E162	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E162	13-Dec-2021	----	----	----		20-Dec-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E160-L	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E160-L	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E160-L	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E160-L	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E160-L	14-Dec-2021	----	----	----		20-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E160-L	13-Dec-2021	----	----	----		19-Dec-2021	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E121	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E121	14-Dec-2021	----	----	----		16-Dec-2021	3 days	2 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FO22_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E121	14-Dec-2021	----	----	----		17-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E121	14-Dec-2021	----	----	----		17-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Turbidity by Nephelometry										
HDPE										
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E121	14-Dec-2021	----	----	----		17-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE										
RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E121	13-Dec-2021	----	----	----		16-Dec-2021	3 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FO22_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E508-L	14-Dec-2021	----	----	----		22-Dec-2021	28 days	8 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E508-L	14-Dec-2021	----	----	----		22-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E508-L	14-Dec-2021	----	----	----		22-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E508-L	14-Dec-2021	----	----	----		22-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E508-L	14-Dec-2021	----	----	----		22-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E508-L	13-Dec-2021	----	----	----		22-Dec-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FO22_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E420	13-Dec-2021	----	----	----		23-Dec-2021	180 days	10 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	E420	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	E420	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODPO_WS_LAEMP_FRO_2021-12_NP	E420	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	E420	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	E420	14-Dec-2021	----	----	----		23-Dec-2021	180 days	9 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	369579	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	370835	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	368773	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	369131	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	369132	1	20	5.0	5.0	✓
Conductivity in Water	E100	370834	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	374625	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	373634	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	372280	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	368525	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368690	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	369129	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	369133	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	369134	1	20	5.0	5.0	✓
ORP by Electrode	E125	372269	2	40	5.0	5.0	✓
pH by Meter	E108	370833	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	369130	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	369814	4	80	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	375099	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	374037	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	374532	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	375100	2	18	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	368526	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	368487	2	33	6.0	5.0	✓
Turbidity by Nephelometry	E121	369150	6	108	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	369579	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	370835	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	368773	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	369131	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	369132	1	20	5.0	5.0	✓
Conductivity in Water	E100	370834	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	374625	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	373634	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	372280	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	368525	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368690	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	369129	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	369133	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	369134	1	20	5.0	5.0	✓
ORP by Electrode	E125	372269	2	40	5.0	5.0	✓
pH by Meter	E108	370833	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	369130	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	369814	4	80	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	375099	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	374037	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	374532	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	375100	1	18	5.5	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	368526	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	368487	2	33	6.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	369805	3	56	5.3	5.0	✓
Turbidity by Nephelometry	E121	369150	6	108	5.5	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	369579	2	40	5.0	5.0	✓
Alkalinity Species by Titration	E290	370835	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	368773	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	369131	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	369132	1	20	5.0	5.0	✓
Conductivity in Water	E100	370834	1	13	7.6	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	374625	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	373634	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	372280	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	368525	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368690	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	369129	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	369133	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	369134	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	369130	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	369814	4	80	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	375099	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	374037	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	374532	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	375100	2	18	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	368526	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	368487	2	33	6.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	369805	3	56	5.3	5.0	✓
Turbidity by Nephelometry	E121	369150	6	108	5.5	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	368773	2	40	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	369131	1	20	5.0	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	369132	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	374625	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	373634	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	372280	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	368525	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368690	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	369129	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	369133	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	369134	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	369130	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	375099	1	18	5.5	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	374037	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	374532	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	375100	2	18	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	368526	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	368487	2	33	6.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2106778**	Page	: 1 of 24
Amendment	: **2**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 15-Dec-2021 08:50
PO	: VPO00748510	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 21-Jan-2022 15:06
Sampler	: Peter Schnurr		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 12		
No. of samples analysed	: 12		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Ann Ho	Laboratory Analyst	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
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Sara Niroomand		Inorganics, Calgary, Alberta
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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 369150)											
CG2106743-003	Anonymous	turbidity	----	E121	0.10	NTU	5.38	5.44	1.13%	15%	----
Physical Tests (QC Lot: 369421)											
CG2106723-002	Anonymous	turbidity	----	E121	0.10	NTU	20.6	20.6	0.194%	15%	----
Physical Tests (QC Lot: 369577)											
CG2106729-001	Anonymous	turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 369579)											
CG2106768-001	Anonymous	acidity (as CaCO3)	----	E283	2.0	mg/L	6.2	5.5	0.7	Diff <2x LOR	----
Physical Tests (QC Lot: 369580)											
CG2106778-012	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	2.0	2.0	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 369725)											
CG2106767-001	Anonymous	turbidity	----	E121	0.10	NTU	1.15	1.19	0.03	Diff <2x LOR	----
Physical Tests (QC Lot: 369814)											
CG2106740-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	782	802	2.46%	20%	----
Physical Tests (QC Lot: 369817)											
CG2106769-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	214	214	0.233%	20%	----
Physical Tests (QC Lot: 370341)											
CG2106761-001	Anonymous	turbidity	----	E121	0.10	NTU	20.0	18.5	7.80%	15%	----
Physical Tests (QC Lot: 370735)											
CG2106761-002	Anonymous	turbidity	----	E121	0.10	NTU	26.8	26.4	1.50%	15%	----
Physical Tests (QC Lot: 370833)											
CG2106769-004	Anonymous	pH	----	E108	0.10	pH units	8.16	8.16	0.00%	4%	----
Physical Tests (QC Lot: 370834)											
CG2106769-004	Anonymous	conductivity	----	E100	2.0	µS/cm	433	426	1.63%	10%	----
Physical Tests (QC Lot: 370835)											
CG2106769-004	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	192	185	3.82%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	192	185	3.82%	20%	----
Physical Tests (QC Lot: 371908)											
CG2106767-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	1850	1850	0.378%	20%	----
Physical Tests (QC Lot: 372269)											

Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 372269) - continued											
CG2106767-006	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	410	413	0.559%	15%	----
Physical Tests (QC Lot: 372270)											
CG2106778-005	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	oxidation-reduction potential [ORP]	----	E125	0.10	mV	438	443	1.14%	15%	----
Physical Tests (QC Lot: 372482)											
CG2106761-001	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	474	470	0.742%	20%	----
Anions and Nutrients (QC Lot: 368487)											
CG2106767-006	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 368488)											
CG2106778-004	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 368690)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0026	0.0023	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 368773)											
CG2106767-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.211	0.204	3.61%	20%	----
Anions and Nutrients (QC Lot: 369129)											
CG2106765-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.175	0.173	0.003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 369130)											
CG2106765-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	742	743	0.0602%	20%	----
Anions and Nutrients (QC Lot: 369131)											
CG2106765-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.066	0.068	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 369132)											
CG2106765-001	Anonymous	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	7.32	7.30	0.223%	20%	----
Anions and Nutrients (QC Lot: 369133)											
CG2106765-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.123	0.122	0.652%	20%	----
Anions and Nutrients (QC Lot: 369134)											
CG2106765-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0036	0.0035	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 369489)											
CG2106778-005	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 374037)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.337	0.371	0.034	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 368525)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.69	0.67	0.02	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 368526)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic Carbon (QC Lot: 368526) - continued											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	0.71	0.71	0.002	Diff <2x LOR	----
Total Metals (QC Lot: 374532)											
CG2106767-008	Anonymous	mercury, total	7439-97-6	E508-L	0.00050	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	----
Total Metals (QC Lot: 375099)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00012	0.00012	0.0000003	Diff <2x LOR	----
Total Metals (QC Lot: 375100)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	manganese, total	7439-96-5	E420	0.00010	mg/L	0.00065	0.00064	0.000006	Diff <2x LOR	----
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00013	0.000003	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0857	0.0849	0.872%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.012	0.012	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0409 µg/L	0.0000357	0.0000053	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	152	150	1.23%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0496	0.0505	1.86%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	73.2	74.9	2.32%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00113	0.00114	0.749%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00135	0.00129	0.00006	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.03	2.07	1.84%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	96.1 µg/L	0.0939	2.32%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.30	2.24	2.53%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	2.97	2.99	0.510%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.191	0.191	0.209%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	134	131	2.59%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 375100) - continued											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	uranium, total	7440-61-1	E420	0.000010	mg/L	0.00389	0.00388	0.103%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 372280)											
CG2106765-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	0.00063	0.00070	0.00007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0113	0.0116	2.41%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0250	mg/L	0.0570 µg/L	0.0000570	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	241	240	0.311%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.50	mg/L	7.76 µg/L	0.00775	0.141%	20%	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	0.669	0.669	0.0407%	20%	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0596	0.0615	3.25%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	156	155	0.447%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.261	0.262	0.429%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00434	0.00434	0.104%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0282	0.0283	0.265%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	4.63	4.65	0.385%	20%	----
		selenium, dissolved	7782-49-2	E421	0.250	mg/L	1.90 µg/L	0.00188	0.000018	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	2.98	2.97	0.311%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.250	mg/L	6.32	6.33	0.0848%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.437	0.424	3.02%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	270	271	0.125%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	0.000055	<0.000050	0.000005	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00969	0.00966	0.336%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0112	0.0111	0.00010	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 373634)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 374625)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	0.00012	0.00002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 374626)											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00014	0.00014	0.000004	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0899	0.0923	2.70%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.011	0.0006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0389 µg/L	0.0000407	0.0000018	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	163	165	1.00%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0563	0.0540	4.13%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	79.4	80.6	1.49%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00058	0.00056	0.00002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00116	0.00117	1.30%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00146	0.00149	0.00003	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.22	2.26	2.09%	20%	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	113 µg/L	0.113	0.281%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.31	2.34	1.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	3.15	3.26	3.55%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.202	0.214	5.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	123	121	1.51%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00434	0.00444	2.30%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 374626) - continued											
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0012	0.0011	0.00006	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 369150)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 369421)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 369577)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 369579)						
acidity (as CaCO3)	----	E283	2	mg/L	<2.0	----
Physical Tests (QCLot: 369580)						
acidity (as CaCO3)	----	E283	2	mg/L	2.0	----
Physical Tests (QCLot: 369725)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 369805)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 369814)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 369817)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 370341)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 370735)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 370834)						
conductivity	----	E100	1	µS/cm	1.4	----
Physical Tests (QCLot: 370835)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 371907)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 371908)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 372480)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 372480) - continued						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 372482)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 368487)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 368488)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 368690)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 368773)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 369129)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 369130)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 369131)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 369132)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 369133)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 369134)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 369489)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 374037)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 368525)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 368526)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 374532)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Total Metals (QCLot: 375099)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 375100)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 375100) - continued						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	MBRR
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Dissolved Metals (QCLot: 372280)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 372280) - continued						
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 373634)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 374625)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	MBRR
Dissolved Metals (QCLot: 374626)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 374626) - continued						
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----

Qualifiers

Qualifier	*Description*
MBRR	*Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 369150)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 369421)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 369577)									
turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 369579)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	105	85.0	115	----
Physical Tests (QCLot: 369580)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	107	85.0	115	----
Physical Tests (QCLot: 369725)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 369805)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	100	85.0	115	----
Physical Tests (QCLot: 369814)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.3	85.0	115	----
Physical Tests (QCLot: 369817)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	95.6	85.0	115	----
Physical Tests (QCLot: 370341)									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
Physical Tests (QCLot: 370735)									
turbidity	----	E121	0.1	NTU	200 NTU	101	85.0	115	----
Physical Tests (QCLot: 370833)									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
Physical Tests (QCLot: 370834)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	99.5	90.0	110	----
Physical Tests (QCLot: 370835)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.8	85.0	115	----
Physical Tests (QCLot: 371907)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	106	85.0	115	----
Physical Tests (QCLot: 371908)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	92.0	85.0	115	----
Physical Tests (QCLot: 372269)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	101	95.4	104	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Physical Tests (QCLot: 372270)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	100	95.4	104	----
Physical Tests (QCLot: 372480)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	112	85.0	115	----
Physical Tests (QCLot: 372482)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.1	85.0	115	----
Anions and Nutrients (QCLot: 368487)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	90.0	80.0	120	----
Anions and Nutrients (QCLot: 368488)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	92.4	80.0	120	----
Anions and Nutrients (QCLot: 368690)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	105	80.0	120	----
Anions and Nutrients (QCLot: 368773)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 369129)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 369130)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 369131)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.5	85.0	115	----
Anions and Nutrients (QCLot: 369132)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	98.6	90.0	110	----
Anions and Nutrients (QCLot: 369133)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 369134)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 369489)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	----
Anions and Nutrients (QCLot: 374037)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	101	75.0	125	----
Organic / Inorganic Carbon (QCLot: 368525)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	96.0	80.0	120	----
Organic / Inorganic Carbon (QCLot: 368526)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	95.6	80.0	120	----
Total Metals (QCLot: 374532)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 374532) - continued									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	88.2	80.0	120	----
Total Metals (QCLot: 375099)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
Total Metals (QCLot: 375100)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.5	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.1	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.8	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.2	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.5	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.4	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.5	80.0	120	----
Dissolved Metals (QCLot: 372280)									

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 372280) - continued									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.0	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	112	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.4	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	116	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	105	80.0	120	----
Dissolved Metals (QCLot: 374625)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Dissolved Metals (QCLot: 374626)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 374626) - continued									
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.5	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	108	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 368487)										
CG2106767-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
Anions and Nutrients (QCLot: 368488)										
CG2106778-005	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	phosphorus, total	7723-14-0	E372-U	0.0551 mg/L	0.0676 mg/L	81.5	70.0	130	----
Anions and Nutrients (QCLot: 368690)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0538 mg/L	0.05 mg/L	108	70.0	130	----
Anions and Nutrients (QCLot: 368773)										
CG2106767-009	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 369129)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 369130)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 369131)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	bromide	24959-67-9	E235.Br-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 369132)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	chloride	16887-00-6	E235.Cl-L	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 369133)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 369134)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.540 mg/L	0.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 369489)										
CG2106778-010	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 374037)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	Kjeldahl nitrogen, total [TKN]	----	E318	2.58 mg/L	2.5 mg/L	103	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 368525)										
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	carbon, dissolved organic [DOC]	----	E358-L	22.3 mg/L	23.9 mg/L	93.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 368526)										
CG2106778-001	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	carbon, total organic [TOC]	----	E355-L	23.7 mg/L	23.9 mg/L	99.2	70.0	130	----
Total Metals (QCLot: 374532)										
CG2106767-009	Anonymous	mercury, total	7439-97-6	E508-L	3.98 ng/L	5 ng/L	79.5	70.0	130	----
Total Metals (QCLot: 375099)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	chromium, total	7440-47-3	E420.Cr-L	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
Total Metals (QCLot: 375100)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00880 mg/L	0.01 mg/L	88.0	70.0	130	----
		boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	95.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0943 mg/L	0.1 mg/L	94.3	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		potassium, total	7440-09-7	E420	3.73 mg/L	4 mg/L	93.4	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	8.79 mg/L	10 mg/L	87.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 375100) - continued										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.6	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.363 mg/L	0.4 mg/L	90.8	70.0	130	----
Dissolved Metals (QCLot: 372280)										
CG2106765-002	Anonymous	aluminum, dissolved	7429-90-5	E421	1.89 mg/L	2 mg/L	94.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.184 mg/L	0.2 mg/L	92.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.187 mg/L	0.2 mg/L	93.6	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0890 mg/L	0.1 mg/L	89.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.957 mg/L	1 mg/L	95.7	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0374 mg/L	0.04 mg/L	93.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.186 mg/L	0.2 mg/L	92.8	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
		iron, dissolved	7439-89-6	E421	18.7 mg/L	20 mg/L	93.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.191 mg/L	0.2 mg/L	95.7	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.928 mg/L	1 mg/L	92.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.198 mg/L	0.2 mg/L	99.3	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.368 mg/L	0.4 mg/L	92.1	70.0	130	----
		potassium, dissolved	7440-09-7	E421	38.6 mg/L	40 mg/L	96.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.405 mg/L	0.4 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	89.6 mg/L	100 mg/L	89.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		sodium, dissolved	7440-23-5	E421	18.5 mg/L	20 mg/L	92.5	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	200 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.183 mg/L	0.2 mg/L	91.3	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.364 mg/L	0.4 mg/L	91.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 372280) - continued										
CG2106765-002	Anonymous	vanadium, dissolved	7440-62-2	E421	0.942 mg/L	1 mg/L	94.2	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.64 mg/L	4 mg/L	91.1	70.0	130	----
Dissolved Metals (QCLot: 373634)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 374625)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
Dissolved Metals (QCLot: 374626)										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	aluminum, dissolved	7429-90-5	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00899 mg/L	0.01 mg/L	89.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	89.3	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00419 mg/L	0.004 mg/L	105	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.14 mg/L	4 mg/L	104	70.0	130	----
		selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.97 mg/L	10 mg/L	89.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 374626) - continued										
CG2106778-002	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.408 mg/L	0.4 mg/L	102	70.0	130	----

Teck

Page 1 of 1

COC ID:	FRO LAEMP 21-11	TURNAROUND TIME:	

PROJECT/CLIENT INFO		LABORATORY				
Facility Name / Job#	FRO	Lab Name	ALS Calgary			
Project Manager	Cait Good	Lab Contact	Lyudmyla Shvets			
Email	cait.good@teck.com	Email	lyudmyla.shvets@alsglobal.com			
		Address	2559 29 Street NE			
	...arwood, Province BC	City	Calgary	Province	AB	
	...0B 2G0, Country Canada	Postal Code	T1Y 7B5	Country	Canada	
		Phone Number	1 403 407 1794			

Excel	PDF	EDD

Environmental Division
Calgary
Work Order Reference
CG2106778

Telephone : +1 403 407 1800

ANALYSIS REQUESTED

	Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA	ALS_Package-DOC	ALS_Package-TKN/TOC	HG-T-U-CVAF-VA	HG-D-CVAF-VA	TECKCOAL-MET-T-VA	TECKCOAL-MET-D-VA
Filter									N	F	N	N	F	N	F
Preservative										H2SO4	H2SO4		HCL	HNO3	HNO3
1	RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRSCH2	WS	No	12/14/2021	9:30	G	7	X	X	X	X	X	X	X
2	RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC	WS	No	12/13/2021	13:00	G	7	X	X	X	X	X	X	X
3	RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI	WS	No	12/14/2021	14:00	G	7	X	X	X	X	X	X	X
4	RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS	WS	No	12/14/2021	13:50	G	7	X	X	X	X	X	X	X
5	RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	RH_FOBCP	WS	No	12/14/2021	11:00	G	7	X	X	X	X	X	X	X
6	RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FRUPO	WS	No	12/13/2021	9:30	G	7	X	X	X	X	X	X	X
7	RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO	WS	No	12/14/2021	9:40	G	7	X	X	X	X	X	X	X
8	RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FO22	WS	No	12/13/2021	12:10	G	7	X	X	X	X	X	X	X
9	RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW	WS	No	12/13/2021	14:30	G	7	X	X	X	X	X	X	X
10	RG_TRIP_WS_2021-12_NP	RG_TRIP (Trip Blank lab pre-filled)	WS	No	12/13/2021	14:30	G	4	X		X	X		X	
11	RG_RIVER_WS_2021-12_NP	RG_RIVER	WS	No	12/13/2021	14:30	G	7	X	X	X	X	X	X	X
12	RG_FBLANK_WS_2021-12_NP	RG_FBLANK (Field Blank NOT lab-pre filled)	WS	No	12/13/2021	14:30	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	
ALS PO 748510				12/15 8:20

NB OF BOTTLES RETURNED/DESCRIPTION	
Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature		Date/Time	December 14, 2021/ 17:00

3

CERTIFICATE OF ANALYSIS

Work Order	: **CG2106911**	Page	: 1 of 11
Amendment	: **5**		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Dec-2021 08:40
PO	: VPO00748510	Date Analysis Commenced	: 19-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 24-Jan-2022 09:25
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 10		
No. of samples analysed	: 10		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maria Tuguinay	Lab Assistant	Inorganics, Calgary, Alberta
Owen Cheng		Metals, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li		Metals, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

General Comments

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

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

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

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

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

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Workorder Comments

Samples CG2106911-002 to -007 expired for Nitrite, Nitrate, Turbidity and Orthophosphate.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DTC	*Dissolved concentration exceeds total. Results were confirmed by re-analysis.*
RRV	*Reported result verified by repeat analysis.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	16-Dec-2021 10:00	15-Dec-2021 09:50	15-Dec-2021 11:30	15-Dec-2021 10:30	15-Dec-2021 13:30
					CG2106911-001	CG2106911-002	CG2106911-003	CG2106911-004	CG2106911-005
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.3	2.4	<2.0
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	133	170	159	195	209
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	162	207	194	237	254
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	133	170	159	195	209
conductivity	----	E100	2.0	µS/cm	300	714	661	989	1060
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	167	388	366	549	609
oxidation-reduction potential [ORP]	----	E125	0.10	mV	412	460	435	440	448
pH	----	E108	0.10	pH units	8.04	8.13	8.11	8.16	8.23
solids, total dissolved [TDS]	----	E162	10	mg/L	203	508	487	758	897
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	2.1
turbidity	----	E121	0.10	NTU	1.44	0.12	<0.10	0.16	0.40
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0050	0.0122	0.0052	<0.0050	0.0412
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.250 DLDS
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.20	0.52	0.39	1.27	1.68
fluoride	16984-48-8	E235.F	0.020	mg/L	0.144	0.256	0.177	0.167	0.177
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.056 TKNI	0.278 TKNI	0.257 TKNI	0.372 TKNI	0.382 TKNI
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.102	6.72	6.41	24.2	30.0
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	0.0021	0.0024	0.0030	0.0217
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0047	<0.0010	0.0013	<0.0010	0.0012
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0060	0.0027	<0.0020	<0.0020	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	37.0	217	192	300	337
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.44	2.20 DTC, RRV	1.02	0.91	0.84
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	0.78 DTC, RRV	0.80	0.77	0.85

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	16-Dec-2021 10:00	15-Dec-2021 09:50	15-Dec-2021 11:30	15-Dec-2021 10:30	15-Dec-2021 13:30
Analyte	CAS Number	Method	LOR	Unit	CG2106911-001	CG2106911-002	CG2106911-003	CG2106911-004	CG2106911-005
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	3.45	8.42	7.65	11.9	13.4
cation sum	----	EC101	0.10	meq/L	3.38	7.81	7.38	11.1	12.3
ion balance (cations/anions ratio)	----	EC101	0.010	%	98.0	92.8	96.5	93.3	91.8
ion balance (cation-anion difference)	----	EC101	0.010	%	1.02	3.76	1.80	3.48	4.28
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0541	0.0042	<0.0030	<0.0030	0.0053
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00020	0.00041
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	0.00015	0.00012	0.00012	0.00017
barium, total	7440-39-3	E420	0.00010	mg/L	0.0596	0.0429	0.0823	0.0840	0.0849
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.0160	0.0243	0.0351	0.124	0.140
calcium, total	7440-70-2	E420	0.050	mg/L	44.4	98.1	96.0	141	152
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00022	0.00017	0.00015	0.00012	0.00013
cobalt, total	7440-48-4	E420	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	0.23
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.030	<0.010	<0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0014	0.0154	0.0088	0.0792	0.0747
magnesium, total	7439-95-4	E420	0.0050	mg/L	12.0	38.7	31.3	52.8	57.3
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00086	0.00150	0.00077	0.00064	0.00196
mercury, total	7439-97-6	E508-L	0.00050	µg/L	0.00093	0.00156	<0.00050	<0.00050	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000618	0.000944	0.000720	0.00123	0.00193
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00092	0.00129	0.00903	0.0107
potassium, total	7440-09-7	E420	0.050	mg/L	0.358	1.05	0.751	1.79	2.13
selenium, total	7782-49-2	E420	0.050	µg/L	0.720	40.1	37.3	72.0	87.0
silicon, total	7440-21-3	E420	0.10	mg/L	2.04	1.64	1.69	1.97	1.99
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	0.663	0.815	0.756	2.50	2.40

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	16-Dec-2021 10:00	15-Dec-2021 09:50	15-Dec-2021 11:30	15-Dec-2021 10:30	15-Dec-2021 13:30
					CG2106911-001	CG2106911-002	CG2106911-003	CG2106911-004	CG2106911-005
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0897	0.152	0.151	0.208	0.211
sulfur, total	7704-34-9	E420	0.50	mg/L	12.7	84.5	72.3	122	124
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000012
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00097	<0.00030	<0.00030	<0.00030	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000471	0.00180	0.00152	0.00393	0.00411
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0040	<0.0030	0.0056	0.0070
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0166	<0.0010	0.0028	<0.0010	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00018	0.00031
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00012
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0586	0.0425	0.0836	0.0819	0.0898
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.0124	0.0194	0.0297	0.119	0.0925
calcium, dissolved	7440-70-2	E421	0.050	mg/L	46.0	92.3	93.3	131	144
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00011	0.00011	0.00011	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00011
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00023	<0.00020	<0.00020	<0.00020	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0016	0.0149	0.0088	0.0782	0.0714
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.7	38.2	32.4	53.8	60.5
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00036	0.00145	0.00068	0.00061	0.00188
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000569	0.000918	0.000702	0.00100	0.00168
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00099	0.00197	0.00838	0.00741
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.350	0.988	0.750	1.71	2.00

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

				Client sample ID	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	16-Dec-2021 10:00	15-Dec-2021 09:50	15-Dec-2021 11:30	15-Dec-2021 10:30	15-Dec-2021 13:30
Analyte	CAS Number	Method	LOR	Unit	CG2106911-001	CG2106911-002	CG2106911-003	CG2106911-004	CG2106911-005
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	0.706	36.1	34.6	62.1	75.7
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.85	1.50	1.59	1.81	1.79
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.702	0.808	0.805	2.70	2.90
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0821	0.140	0.146	0.188	0.198
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	72.2	62.5	103	110
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00046	<0.00030	<0.00030	<0.00030	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000470	0.00173	0.00148	0.00371	0.00407
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0064 DTC	0.0025	0.0023	0.0052	0.0048
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

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

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	15-Dec-2021 13:10	15-Dec-2021 14:30	16-Dec-2021 10:00	16-Dec-2021 10:00	16-Dec-2021 10:00
					CG2106911-006	CG2106911-007	CG2106911-008	CG2106911-009	CG2106911-010
					Result	Result	Result	Result	Result
Physical Tests									
acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	2.0	<2.0	2.1
alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	221	208	<1.0	138	<1.0
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	270	254	<1.0	168	<1.0
alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	221	208	<1.0	138	<1.0
conductivity	----	E100	2.0	µS/cm	1060	1050	<2.0	296	<2.0
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	601	610	<0.50	167	<0.50
oxidation-reduction potential [ORP]	----	E125	0.10	mV	455	464	527	445	500
pH	----	E108	0.10	pH units	8.19	8.23	5.46	8.05	5.51
solids, total dissolved [TDS]	----	E162	10	mg/L	841	851	<10	171	<10
solids, total suspended [TSS]	----	E160-L	1.0	mg/L	<1.0	1.9	<1.0	<1.0	<1.0
turbidity	----	E121	0.10	NTU	0.16	0.39	<0.10	1.81	<0.10
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0163	0.0100	<0.0050	0.0101	0.0098 RRV
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.250 DLDS	<0.050	<0.050	<0.050
chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.00	1.92	<0.10	0.21	<0.10
fluoride	16984-48-8	E235.F	0.020	mg/L	0.181	0.183	<0.020	0.144	<0.020
Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	<0.050 TKNI	<0.050 TKNI	<0.050	0.060	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	27.7	27.2	<0.0050	0.105	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0142	0.0152	<0.0010	0.0012	<0.0010
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0087	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0044	0.0037	<0.0020	0.0127	<0.0020
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	342	342	<0.30	36.6	<0.30
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.99	0.88	----	1.38	<0.50
carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.07	1.05	<0.50	1.76	<0.50
Ion Balance									

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

				Client sample ID	RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	15-Dec-2021 13:10	15-Dec-2021 14:30	16-Dec-2021 10:00	16-Dec-2021 10:00	16-Dec-2021 10:00
Analyte	CAS Number	Method	LOR	Unit	CG2106911-006	CG2106911-007	CG2106911-008	CG2106911-009	CG2106911-010
					Result	Result	Result	Result	Result
Ion Balance									
anion sum	----	EC101	0.10	meq/L	13.6	13.3	<0.10	3.54	<0.10
cation sum	----	EC101	0.10	meq/L	12.2	12.4	<0.10	3.38	<0.10
ion balance (cations/anions ratio)	----	EC101	0.010	%	89.7	93.2	100	95.5	100 RRV
ion balance (cation-anion difference)	----	EC101	0.010	%	5.43	3.50	<0.010	2.31	<0.010
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0075	0.0033	<0.0030	0.0671	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00033	0.00034	<0.00010	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.00020	<0.00010	0.00014	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	0.0836	0.0883	<0.00010	0.0590	<0.00010
beryllium, total	7440-41-7	E420	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0050	µg/L	0.122	0.0968	<0.0050	0.0213	<0.0050
calcium, total	7440-70-2	E420	0.050	mg/L	147	148	<0.050	43.5	<0.050
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00013	0.00015	<0.00010	0.00027	<0.00010
cobalt, total	7440-48-4	E420	0.10	µg/L	0.16	0.12	<0.10	<0.10	<0.10
copper, total	7440-50-8	E420	0.00050	mg/L	0.00053	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.014	0.052	<0.010	0.027	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	0.000074	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0722	0.0717	<0.0010	0.0014	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	55.9	58.1	<0.0050	11.5	<0.0050
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00290	0.0150	<0.00010	0.00084	<0.00010
mercury, total	7439-97-6	E508-L	0.00050	µg/L	<0.00050	<0.00050	<0.00050	0.00064	<0.00050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00159	0.00195	<0.000050	0.000566	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00820	0.00780	<0.00050	<0.00050	<0.00050
potassium, total	7440-09-7	E420	0.050	mg/L	1.93	2.00	<0.050	0.363	<0.050
selenium, total	7782-49-2	E420	0.050	µg/L	81.9	79.2	<0.050	0.848	<0.050
silicon, total	7440-21-3	E420	0.10	mg/L	1.86	1.89	<0.10	1.94	<0.10
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	2.52	2.68	<0.050	0.693	<0.050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP
				Client sampling date / time	15-Dec-2021 13:10	15-Dec-2021 14:30	16-Dec-2021 10:00	16-Dec-2021 10:00	16-Dec-2021 10:00
					CG2106911-006	CG2106911-007	CG2106911-008	CG2106911-009	CG2106911-010
					Result	Result	Result	Result	Result
Total Metals									
strontium, total	7440-24-6	E420	0.00020	mg/L	0.204	0.211	<0.00020	0.0880	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L	121	121	<0.50	12.9	<0.50
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	0.00112	<0.00030
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00410	0.00419	<0.000010	0.000461	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0068	0.0093	<0.0030	<0.0030	<0.0030
Dissolved Metals									
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	----	0.0256	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00037	0.00030	----	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.00012	----	<0.00010	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0863	0.0876	----	0.0578	<0.00010
beryllium, dissolved	7440-41-7	E421	0.020	µg/L	<0.020	<0.020	----	<0.020	<0.020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.011	0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0050	µg/L	0.128	0.114	----	0.0118	<0.0050
calcium, dissolved	7440-70-2	E421	0.050	mg/L	144	145	<0.050	46.6	<0.050
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	----	0.00014	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00020	0.00014	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00040	----	0.00021	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	----	0.016	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0724	0.0750	----	0.0015	<0.0010
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	58.7	60.1	<0.0050	12.3	<0.0050
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00181	0.00243	----	0.00062	<0.00010
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	----	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00182	0.00157	----	0.000574	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0101	0.00835	----	<0.00050	<0.00050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.12	2.02	<0.050	0.344	<0.050

Analytical Results

Sub-Matrix: **Water**

(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_TRIP_WS_LAEMP_FRO_2021-12_NP	RG_RIVER_WS_LAEMP_FRO_2021-12_NP	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP
Client sampling date / time					15-Dec-2021 13:10	15-Dec-2021 14:30	16-Dec-2021 10:00	16-Dec-2021 10:00	16-Dec-2021 10:00
					CG2106911-006	CG2106911-007	CG2106911-008	CG2106911-009	CG2106911-010
					Result	Result	Result	Result	Result
Dissolved Metals									
selenium, dissolved	7782-49-2	E421	0.050	µg/L	78.1	74.8	----	0.725	<0.050
silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.82	1.79	----	1.88	<0.050
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.58	2.86	<0.050	0.678	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.195	0.200	----	0.0823	<0.00020
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	107	108	----	11.8	<0.50
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000010	----	<0.000010	<0.000010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	----	0.00084	<0.00030
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00395	0.00416	----	0.000441	<0.000010
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	----	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0064	0.0059	----	0.0011	0.0015 RRV
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	Field	Field
dissolved metals filtration location	----	EP421	-	-	Field	Field	Laboratory	Field	Field

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

ALS Environmental

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **CG2106911**	Page	: 1 of 38
Amendment	: 5		
Client	: **Teck Coal Limited**	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Dec-2021 08:40
PO	: VPO00748510	Issue Date	: 24-Jan-2022 09:25
C-O-C number	: FRO LAEMP 21-11		
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 10		
No. of samples analysed	: 10		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Anions and Nutrients	Anonymous	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	22.6 % TKND	20%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	*Description*
TKND	*TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E298	16-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E298	16-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E298	16-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E298	16-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E298	15-Dec-2021	19-Dec-2021	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.Br-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.Cl-L	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E378-U	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E378-U	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E378-U	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E378-U	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E378-U	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	× EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.F	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.F	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.F	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.F	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.F	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.NO3-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✖ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.NO2-L	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E235.SO4	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E235.SO4	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E235.SO4	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E235.SO4	16-Dec-2021	----	----	----		19-Dec-2021	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E235.SO4	15-Dec-2021	----	----	----		19-Dec-2021	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E318	16-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	13 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E318	16-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	13 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E318	16-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	13 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E318	16-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	13 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E318	15-Dec-2021	23-Dec-2021	----	----		29-Dec-2021	28 days	14 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E372-U	16-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E372-U	16-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E372-U	16-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E372-U	16-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E372-U	15-Dec-2021	23-Dec-2021	----	----		23-Dec-2021	28 days	8 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E421.Cr-L	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E509	16-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	20 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E509	16-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	20 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E509	16-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	20 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓

Matrix: **Water**

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Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E509	15-Dec-2021	05-Jan-2022	----	----		05-Jan-2022	28 days	21 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E421	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E421	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E421	16-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	19 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E421	15-Dec-2021	04-Jan-2022	----	----		05-Jan-2022	180 days	20 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E421	16-Dec-2021	22-Dec-2021	----	----		22-Dec-2021	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E358-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E358-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E358-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓

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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E358-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E355-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E355-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E355-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E355-L	16-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E355-L	15-Dec-2021	19-Dec-2021	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E283	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E283	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E283	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E283	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓

Matrix: **Water**

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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Acidity by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E283	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E290	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E290	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E290	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : Alkalinity Species by Titration										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E290	16-Dec-2021	----	----	----		20-Dec-2021	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E290	15-Dec-2021	----	----	----		20-Dec-2021	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E100	16-Dec-2021	----	----	----		20-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E100	16-Dec-2021	----	----	----		20-Dec-2021	28 days	4 days	✓

Matrix: **Water**

Evaluation: ✗ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E100	16-Dec-2021	----	----	----		20-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E100	16-Dec-2021	----	----	----		20-Dec-2021	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E100	15-Dec-2021	----	----	----		20-Dec-2021	28 days	5 days	✓
Physical Tests : ORP by Electrode										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E125	16-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	240 hrs	✗ EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : ORP by Electrode										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E125	16-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	240 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E125	16-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	240 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E125	16-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	240 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	259 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	260 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	261 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	262 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	263 hrs	× EHTR-FM
Physical Tests : ORP by Electrode										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E125	15-Dec-2021	----	----	----		26-Dec-2021	0.25 hrs	264 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : pH by Meter										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E108	16-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	101 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E108	16-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	101 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E108	16-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	101 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E108	16-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	101 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	121 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	122 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	122 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	124 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	125 hrs	✖ EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE										
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E108	15-Dec-2021	----	----	----		20-Dec-2021	0.25 hrs	125 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E162	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E162	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E162	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E162	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E162	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E160-L	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E160-L	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E160-L	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E160-L	16-Dec-2021	----	----	----		20-Dec-2021	7 days	4 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		21-Dec-2021	7 days	6 days	✓

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		22-Dec-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		22-Dec-2021	7 days	7 days	✓
Physical Tests : TSS by Gravimetry (Low Level)										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E160-L	15-Dec-2021	----	----	----		22-Dec-2021	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E121	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E121	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E121	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E121	16-Dec-2021	----	----	----		19-Dec-2021	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT

Matrix: **Water**

Evaluation: ✘ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation* — *Preparation Date*	*Holding Times* *Rec*	*Holding Times* *Actual*	*Eval*	*Analysis* — *Analysis Date*	*Holding Times* *Rec*	*Holding Times* *Actual*	*Eval*
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Physical Tests : Turbidity by Nephelometry										
HDPE RG_MP1_WS_LAEMP_FRO_2021-12_NP	E121	15-Dec-2021	----	----	----		19-Dec-2021	3 days	4 days	✘ EHT
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Extraction / Preparation: Holding Times Rec	Extraction / Preparation: Holding Times Actual	Extraction / Preparation: Eval	Analysis: Analysis Date	Analysis: Holding Times Rec	Analysis: Holding Times Actual	Analysis: Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E420.Cr-L	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E508-L	16-Dec-2021	----	----	----		24-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E508-L	16-Dec-2021	----	----	----		24-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E508-L	16-Dec-2021	----	----	----		24-Dec-2021	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E508-L	16-Dec-2021	----	----	----		24-Dec-2021	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E508-L	15-Dec-2021	----	----	----		24-Dec-2021	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	E420	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_RIVER_WS_LAEMP_FRO_2021-12_NP	E420	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_TRIP_WS_LAEMP_FRO_2021-12_NP	E420	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_UFR1_WS_LAEMP_FRO_2021-12_NP	E420	16-Dec-2021	----	----	----		30-Dec-2021	180 days	14 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODHE_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_MP1_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	15 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	E420	15-Dec-2021	----	----	----		30-Dec-2021	180 days	20 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by Titration	E283	372499	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	372864	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	372160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	372073	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	372074	1	10	10.0	5.0	✓
Conductivity in Water	E100	372863	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	380349	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	380594	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	374855	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	372228	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	372126	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	372077	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	372075	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	372076	1	13	7.6	5.0	✓
ORP by Electrode	E125	376682	1	20	5.0	5.0	✓
pH by Meter	E108	372862	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	372072	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	372503	3	43	6.9	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	378161	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	375467	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	376365	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	378162	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	372229	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	372071	1	10	10.0	5.0	✓
Turbidity by Nephelometry	E121	372118	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by Titration	E283	372499	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	372864	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	372160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	372073	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	372074	1	10	10.0	5.0	✓
Conductivity in Water	E100	372863	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	380349	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	380594	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	374855	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	372228	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	372126	1	10	10.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	372077	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	372075	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	372076	1	13	7.6	5.0	✓
ORP by Electrode	E125	376682	1	20	5.0	5.0	✓
pH by Meter	E108	372862	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	372072	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	372503	3	43	6.9	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	378161	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	375467	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	376365	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	378162	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	372229	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	372071	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	372521	3	40	7.5	5.0	✓
Turbidity by Nephelometry	E121	372118	1	10	10.0	5.0	✓
Method Blanks (MB)							
Acidity by Titration	E283	372499	1	20	5.0	5.0	✓
Alkalinity Species by Titration	E290	372864	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	372160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	372073	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	372074	1	10	10.0	5.0	✓
Conductivity in Water	E100	372863	1	20	5.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	380349	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	380594	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	374855	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	372228	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	372126	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	372077	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	372075	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	372076	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	372072	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	372503	3	43	6.9	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	378161	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	375467	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	376365	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	378162	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	372229	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	372071	1	10	10.0	5.0	✓
TSS by Gravimetry (Low Level)	E160-L	372521	3	40	7.5	5.0	✓
Turbidity by Nephelometry	E121	372118	1	10	10.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	372160	1	20	5.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	372073	1	13	7.6	5.0	✓
Chloride in Water by IC (Low Level)	E235.Cl-L	372074	1	10	10.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	380349	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	380594	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	374855	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	372228	1	9	11.1	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	372126	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	372077	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	372075	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	372076	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	372072	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	378161	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	375467	1	19	5.2	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	376365	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	378162	2	20	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	372229	1	10	10.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	372071	1	10	10.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by “mod”).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 Calgary - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Calgary - Environmental	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry (Low Level)	E160-L Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Acidity by Titration	E283 Calgary - Environmental	Water	APHA 2310 B (mod)	Acidity is determined by potentiometric titration to pH 8.3

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as $CaCO_3$), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **CG2106911**		
Amendment	: **5**		
Client	: Teck Coal Limited	Laboratory	: Calgary - Environmental
Contact	: Cait Good	Account Manager	: Lyudmyla Shvets
Address	: 421 Pine Avenue Sparwood BC Canada V0B 2G0	Address	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
Telephone	: 250 425 8202 / 250 425 2555	Telephone	: +1 403 407 1800
Project	: REGIONAL EFFECTS PROGRAM	Date Samples Received	: 17-Dec-2021 08:40
PO	: VPO00748510	Date Analysis Commenced	: 19-Dec-2021
C-O-C number	: FRO LAEMP 21-11	Issue Date	: 24-Jan-2022 09:25
Sampler	: PS		
Site	: ----		
Quote number	: Teck Coal Master Quote		
No. of samples received	: 10		
No. of samples analysed	: 10		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
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Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 372118)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	turbidity	----	E121	0.10	NTU	1.44	1.41	2.24%	15%	----
Physical Tests (QC Lot: 372499)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	acidity (as CaCO3)	----	E283	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 372503)											
CG2106867-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	4340	4150	4.48%	20%	----
Physical Tests (QC Lot: 372523)											
CG2106895-001	Anonymous	solids, total dissolved [TDS]	----	E162	40	mg/L	4080	4190	2.58%	20%	----
Physical Tests (QC Lot: 372862)											
CG2106908-001	Anonymous	pH	----	E108	0.10	pH units	7.66	7.70	0.521%	4%	----
Physical Tests (QC Lot: 372863)											
CG2106908-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2150	2140	0.466%	10%	----
Physical Tests (QC Lot: 372864)											
CG2106908-001	Anonymous	alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	573	570	0.508%	20%	----
		alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
		alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	573	570	0.508%	20%	----
Physical Tests (QC Lot: 372959)											
CG2106903-002	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	403	411	1.97%	20%	----
Physical Tests (QC Lot: 376682)											
CG2106905-002	Anonymous	oxidation-reduction potential [ORP]	----	E125	0.10	mV	391	394	0.688%	15%	----
Anions and Nutrients (QC Lot: 372071)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0060	0.0060	0.00006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372072)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	37.0	37.0	0.108%	20%	----
Anions and Nutrients (QC Lot: 372073)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372074)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	chloride	16887-00-6	E235.Cl-L	0.10	mg/L	0.20	0.19	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372075)											

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Anions and Nutrients (QC Lot: 372075) - continued											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.102	0.102	0.0980%	20%	----
Anions and Nutrients (QC Lot: 372076)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372077)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	fluoride	16984-48-8	E235.F	0.020	mg/L	0.144	0.144	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372126)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0047	0.0051	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 372160)											
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0098	0.0123	0.0025	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 375467)											
CG2106867-001	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	3.81	3.03	22.6%	20%	TKND
Organic / Inorganic Carbon (QC Lot: 372228)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.44	1.44	0.0005	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 372229)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	carbon, total organic [TOC]	----	E355-L	0.50	mg/L	1.37	1.52	0.14	Diff <2x LOR	----
Total Metals (QC Lot: 376365)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	mercury, total	7439-97-6	E508-L	0.00050	ng/L	0.00093 µg/L	0.91	0.02	Diff <2x LOR	----
Total Metals (QC Lot: 378161)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00022	0.00019	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 378162)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0541	0.0536	0.808%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	0.00016	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0596	0.0600	0.743%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.0160 µg/L	0.0000178	0.0000018	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	44.4	44.6	0.362%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 378162) - continued											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	iron, total	7439-89-6	E420	0.010	mg/L	0.030	0.031	0.0001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000113	0.000063	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0014	0.0014	0.000001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	12.0	12.1	1.18%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00086	0.00100	0.00013	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000618	0.000586	5.28%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	0.358	0.370	0.012	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.050	mg/L	0.720 µg/L	0.000750	4.07%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.04	2.00	1.85%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	0.663	0.673	1.50%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0897	0.0882	1.68%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	12.7	13.0	2.01%	20%	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00097	0.00113	0.00016	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000471	0.000467	0.787%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 374855)											
CG2106899-013	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	0.0231	0.0209	0.0022	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00119	0.00121	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0109	0.0110	0.895%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	0.00104	0.00106	1.88%	20%	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	266	278	4.27%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	0.0163	0.0165	1.08%	20%	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	0.00435	0.00410	0.00025	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0550	0.0554	0.713%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Dissolved Metals (QC Lot: 374855) - continued											
CG2106899-013	Anonymous	magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	175	183	4.32%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.312	0.321	2.93%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.0559	0.0593	5.79%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.0624	0.0654	4.77%	20%	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	3.88	4.11	5.71%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.0164	0.0175	6.64%	20%	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	2.73	2.80	2.48%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.250	mg/L	5.62	5.82	3.50%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	0.336	0.356	5.87%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	274	277	1.25%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	0.000129	0.000114	0.000016	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.0108	0.0111	3.51%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	0.0237	0.0261	0.0025	Diff <2x LOR	----
Dissolved Metals (QC Lot: 380349)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00011	0.00012	0.00001	Diff <2x LOR	----
Dissolved Metals (QC Lot: 380350)											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0166	0.0190	13.5%	20%	----
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0586	0.0592	1.08%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0050	mg/L	0.0124 µg/L	0.0000094	0.0000029	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	46.0	46.9	1.86%	20%	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00023	0.00023	0.000001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0016	0.0016	0.00001	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 380350) - continued											
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	12.7	12.7	0.0904%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00036	0.00038	0.00002	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000569	0.000554	2.63%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.350	0.357	0.006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.050	mg/L	0.706 µg/L	0.000850	18.6%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.85	1.84	0.640%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.702	0.716	1.87%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0821	0.0868	5.59%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	12.2	12.0	1.79%	20%	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00046	0.00054	0.00007	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000470	0.000459	2.43%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 380594)											
CG2106905-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
TKND	*TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 372118)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 372499)						
acidity (as CaCO3)	----	E283	2	mg/L	2.2	----
Physical Tests (QCLot: 372503)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 372521)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 372523)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 372525)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 372863)						
conductivity	----	E100	1	μS/cm	<1.0	----
Physical Tests (QCLot: 372864)						
alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 372956)						
solids, total suspended [TSS]	----	E160-L	1	mg/L	<1.0	----
Physical Tests (QCLot: 372959)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 372071)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 372072)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 372073)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 372074)						
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	----
Anions and Nutrients (QCLot: 372075)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 372076)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 372076) - continued						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 372077)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 372126)						
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 372160)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 375467)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 372228)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 372229)						
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 376365)						
mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	----
Total Metals (QCLot: 378161)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 378162)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	MBRR
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 378162) - continued						
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Dissolved Metals (QCLot: 374855)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 374855) - continued						
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 380349)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 380350)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	MBRR
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 380350) - continued						
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Dissolved Metals (QCLot: 380594)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	*Description*
MBRR	*Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 372118)									
turbidity	----	E121	0.1	NTU	200 NTU	106	85.0	115	----
Physical Tests (QCLot: 372499)									
acidity (as CaCO3)	----	E283	2	mg/L	50 mg/L	104	85.0	115	----
Physical Tests (QCLot: 372503)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	106	85.0	115	----
Physical Tests (QCLot: 372521)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	90.2	85.0	115	----
Physical Tests (QCLot: 372523)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	92.8	85.0	115	----
Physical Tests (QCLot: 372525)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	89.8	85.0	115	----
Physical Tests (QCLot: 372862)									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
Physical Tests (QCLot: 372863)									
conductivity	----	E100	1	µS/cm	146.9 µS/cm	97.5	90.0	110	----
Physical Tests (QCLot: 372864)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 372956)									
solids, total suspended [TSS]	----	E160-L	1	mg/L	150 mg/L	94.5	85.0	115	----
Physical Tests (QCLot: 372959)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	102	85.0	115	----
Physical Tests (QCLot: 376682)									
oxidation-reduction potential [ORP]	----	E125	----	mV	220 mV	99.6	95.4	104	----
Anions and Nutrients (QCLot: 372071)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	112	80.0	120	----
Anions and Nutrients (QCLot: 372072)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 372073)									
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.4	85.0	115	----
Anions and Nutrients (QCLot: 372074)									
chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 372075)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 372075) - continued									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 372076)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 372077)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 372126)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	92.4	80.0	120	----
Anions and Nutrients (QCLot: 372160)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 375467)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	109	75.0	125	----
Organic / Inorganic Carbon (QCLot: 372228)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	10 mg/L	87.3	80.0	120	----
Organic / Inorganic Carbon (QCLot: 372229)									
carbon, total organic [TOC]	----	E355-L	0.5	mg/L	10 mg/L	94.1	80.0	120	----
Total Metals (QCLot: 376365)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	80.2	80.0	120	----
Total Metals (QCLot: 378161)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	----
Total Metals (QCLot: 378162)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100.0	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.1	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.1	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.0	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	87.8	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 378162) - continued									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.5	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.2	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	94.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	96.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.5	80.0	120	----
Dissolved Metals (QCLot: 374855)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	94.1	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	93.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.4	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	89.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	93.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.1	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.0	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.7	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	96.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.3	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.3	80.0	120	----

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 374855) - continued									
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.4	60.0	140	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	98.7	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.4	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	88.5	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	80.7	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	84.8	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.5	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	89.6	80.0	120	----
Dissolved Metals (QCLot: 380349)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
Dissolved Metals (QCLot: 380350)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.0	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.4	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.2	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.1	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.6	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.2	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.7	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.4	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.2	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.5	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	93.6	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.7	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	94.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.9	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	96.6	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	87.8	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 380350) - continued									
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	81.0	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.7	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	88.4	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	95.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 372071)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	phosphorus, total	7723-14-0	E372-U	0.0530 mg/L	0.0676 mg/L	78.4	70.0	130	----
Anions and Nutrients (QCLot: 372072)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 372073)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	bromide	24959-67-9	E235.Br-L	0.571 mg/L	0.5 mg/L	114	75.0	125	----
Anions and Nutrients (QCLot: 372074)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	chloride	16887-00-6	E235.Cl-L	108 mg/L	100 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 372075)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	nitrate (as N)	14797-55-8	E235.NO3-L	2.70 mg/L	2.5 mg/L	108	75.0	125	----
Anions and Nutrients (QCLot: 372076)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	nitrite (as N)	14797-65-0	E235.NO2-L	0.551 mg/L	0.5 mg/L	110	75.0	125	----
Anions and Nutrients (QCLot: 372077)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 372126)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0515 mg/L	0.05 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 372160)										
CG2106911-010	RG_FBLANK_WS_LAEMP_FRO_2021-12_NP	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 375467)										
CG2106867-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.39 mg/L	2.5 mg/L	95.5	70.0	130	----
Organic / Inorganic Carbon (QCLot: 372228)										
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	carbon, dissolved organic [DOC]	----	E358-L	21.9 mg/L	23.9 mg/L	91.5	70.0	130	----
Organic / Inorganic Carbon (QCLot: 372229)										
CG2106911-001	RG_UFR1_WS_LAEMP_FRO_2021-12_NP	carbon, total organic [TOC]	----	E355-L	23.4 mg/L	23.9 mg/L	98.0	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 376365)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	mercury, total	7439-97-6	E508-L	4.37 ng/L	5 ng/L	87.4	70.0	130	----
Total Metals (QCLot: 378161)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	chromium, total	7440-47-3	E420.Cr-L	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
Total Metals (QCLot: 378162)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	96.2	70.0	130	----
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00947 mg/L	0.01 mg/L	94.7	70.0	130	----
		boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	96.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		iron, total	7439-89-6	E420	1.97 mg/L	2 mg/L	98.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		potassium, total	7440-09-7	E420	3.86 mg/L	4 mg/L	96.5	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	10.0 mg/L	10 mg/L	100	70.0	130	----
		silver, total	7440-22-4	E420	0.00376 mg/L	0.004 mg/L	94.0	70.0	130	----
		sodium, total	7440-23-5	E420	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*Concentration*	*Target*	*MS*	*Low*	*High*	*Qualifier*
Total Metals (QCLot: 378162) - continued										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	zinc, total	7440-66-6	E420	0.379 mg/L	0.4 mg/L	94.7	70.0	130	----
Dissolved Metals (QCLot: 374855)										
CG2106899-014	Anonymous	aluminum, dissolved	7429-90-5	E421	2.06 mg/L	2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.217 mg/L	0.2 mg/L	108	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0932 mg/L	0.1 mg/L	93.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	1.09 mg/L	1 mg/L	109	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	41.0 mg/L	40 mg/L	102	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.199 mg/L	0.2 mg/L	99.5	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.224 mg/L	0.2 mg/L	112	70.0	130	----
		iron, dissolved	7439-89-6	E421	19.7 mg/L	20 mg/L	98.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.198 mg/L	0.2 mg/L	99.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	1.03 mg/L	1 mg/L	103	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	10.2 mg/L	10 mg/L	102	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.217 mg/L	0.2 mg/L	109	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.399 mg/L	0.4 mg/L	99.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	39.5 mg/L	40 mg/L	98.7	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.403 mg/L	0.4 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	94.5 mg/L	100 mg/L	94.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		sodium, dissolved	7440-23-5	E421	21.1 mg/L	20 mg/L	106	70.0	130	----
		strontium, dissolved	7440-24-6	E421	0.182 mg/L	0.2 mg/L	90.8	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	188 mg/L	200 mg/L	94.1	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.360 mg/L	0.4 mg/L	90.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.0385 mg/L	0.04 mg/L	96.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	1.00 mg/L	1 mg/L	100	70.0	130	----
		zinc, dissolved	7440-66-6	E421	3.86 mg/L	4 mg/L	96.4	70.0	130	----
Dissolved Metals (QCLot: 380349)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	chromium, dissolved	7440-47-3	E421.Cr-L	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Dissolved Metals (QCLot: 380350)										
CG2106911-002	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00849 mg/L	0.01 mg/L	84.9	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	99.6	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.87 mg/L	2 mg/L	93.3	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.3	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0950 mg/L	0.1 mg/L	95.0	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0363 mg/L	0.04 mg/L	90.8	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.85 mg/L	4 mg/L	96.2	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.36 mg/L	10 mg/L	93.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00371 mg/L	0.004 mg/L	92.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	2.14 mg/L	2 mg/L	107	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00370 mg/L	0.004 mg/L	92.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.374 mg/L	0.4 mg/L	93.6	70.0	130	----
Dissolved Metals (QCLot: 380594)										
CG2106905-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----

Teck

COC ID: **FRO LAEMP 21-11** TURNAROUND TIME:

PROJECT/CLIENT INFO

Facility Name / Job#	FRO
Project Manager	Cait Good
Email	cait.good@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Country	Canada
Postal Code	V0B 2G0
Phone Number	250-425-8202

LABORATORY

Lab Name	ALS Calgary
Lab Contact	Lyudmyla Shvets
Email	lyudmyla.shvets@alsglobal.com
Address	2559 29 Street NE
City	Calgary
Province	AB
Postal Code	T1Y 7B5
Country	Canada
Phone Number	1 403 407 1794

Excel | PDF | EDD

SAMPLE DETAILS / **ANALYSIS REQUESTED**

	Sample ID	Sample Location	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	TECKCOAL-ROUTINE-VA (N)	ALS_Package-DOC (F, H2SO4)	ALS_Package-TKN/TOC (N, H2SO4)	HG-T-U-CVAF-VA (N)	HG-D-CVAF-VA (F, HCL)	TECKCOAL-MET-T-VA (N, HNO3)	TECKCOAL-MET-D-VA (F, HNO3)
1	RG_UFR1_WS_LAEMP_FRO_2021-12-NP	RG_UFR1	WS	No	12/16/2021	10:00	G	7	X	X	X	X	X	X	X
2	RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FODHE	WS	No	12/15/2021	9:50	G	7	X	X	X	X	X	X	X
3	RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL	WS	No	12/15/2021	11:30	G	7	X	X	X	X	X	X	X
4	RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD	WS	No	12/15/2021	10:30	G	7	X	X	X	X	X	X	X
5	RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD	WS	No	12/15/2021	13:30	G	7	X	X	X	X	X	X	X
6	RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_MP1	WS	No	12/15/2021	13:10	G	7	X	X	X	X	X	X	X
7	RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH	WS	No	12/15/2021	14:30	G	7	X	X	X	X	X	X	X
8	RG_TRIP_WS_2021-12_NP	RG_TRIP (Trip Blank lab pre-filled)	WS	No	12/16/2021	10:00	G	4	X		X	X		X	
9	RG_RIVER_WS_2021-12_NP	RG_RIVER	WS	No	12/16/2021	10:00	G	7	X	X	X	X	X	X	X
10	RG_FBLANK_WS_2021-12_NP	RG_FBLANK (Field Blank NOT lab-pre filled)	WS	No	12/16/2021	10:00	G	7	X	X	X	X	X	X	X

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

ALS PO 748510

RELINQUISHED BY/AFFILIATION | **DATE/TIME** | **ACCEPTED BY/AFFILIATION**

12/17 8:40

TURNAROUND/DESCRIPTION

Regular (default)	x
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature		Date/Time	December 16, 2021 / 15:00

Environmental Division
Calgary
Work Order Reference
CG2106911

Telephone: +1 403 407 1800

BROOKS APPLIED LABS
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November 2, 2021

Teck Resources Limited - Vancouver
Carlie Meyer
421 Pine Avenue
Sparwood, B.C. CANADA V0B2G0
carlie.meyer@teck.com

Re: REP

Revision 1:
Following the submission of the original report on July 9, 2021, it was determined that the **sys_loc_code** values and **Sample ID** values for samples 2106283-01, 2106283-02, and 2106283-03 were incorrect. In this revised report, the **sys_loc_code** values and **Sample ID** values for 2106283-01, 2106283-02, and 2106283-03 have been amended for reporting, according to the client's instructions. Specifically, the "***RG_UFRI***" terms have been changed to "***RG_UFR1***". The number "***1***" is used instead of the letter "***I***". No other changes were made in this revised report, with respect to the initial report issued on July 9, 2021

Dear Carlie Meyer,

On June 24, 2021, 2021, Brooks Applied Labs (BAL) received thirty-eight (38) aqueous samples. The samples were logged-in for total recoverable selenium [*Se*], dissolved Se [*Se*], and Se speciation analyses, according to the chain-of-custody (COC) forms.

A request was made by the client to amend the **Sample ID** values for 2106283-25 and 2106283-43. The changes requested are described in the table below.

Laboratory ID	**Sample ID (on COC form)**	**Sample ID Requested for Reporting**	**Analytical Parameter**
2106283-25	RG_FO22_WS_2021-06-18_0843_N_NAL	RG_FO22_WS_2021-06-18_0843_N	Se Speciation
2106283-43	RG_FOBKS_WS_2021-06-16_1350_N_NAL	RG_FOBKS_WS_2021-06-16_1350_N	Se Speciation

Per client request, 2106283-25 and 2106283-43 are reported using the **Sample ID** values described in column 3 of the table above.

A request was made by the client to amend the **Sample ID** values for 2106283-01, 2106283-02, and 2106283-03. The changes requested are described in the table below.

Laboratory ID	Sample ID (on COC form)	Sample ID Requested for Reporting	Analytical Parameter
2106283-01	RG_UFRI_WS_2021-06-15_1000_N	RG_UFR1_WS_2021-06-15_1000_N	Se Speciation
2106283-02	RG_UFRI_WS_2021-06-15_1000_N _NAL	RG_UFR1_WS_2021-06-15_1000_N _NAL	Total Recoverable Se
2106283-03	RG_UFRI_WS_2021-06-15_1000_N _NAL	RG_UFR1_WS_2021-06-15_1000_N _NAL	Dissolved Se

Per client request, 2106283-01, 2106283-02, and 2106283-03 are reported using the **Sample ID** values described in column 3 of the table above. Specifically, the number "***1***" is used instead of the letter "***I***" in the UFR1 term.

The sample fractions logged in for Se speciation and dissolved Se had been field-filtered prior to receipt at BAL; sample fractions for total recoverable and dissolved Se had also been preserved by the client prior to receipt. All samples were stored according to BAL SOPs.

Total Recoverable and Dissolved Se
Each aqueous sample fraction for total recoverable or dissolved Se was digested in a closed vessel (bomb) with nitric and hydrochloric acids. The resulting digests were analyzed for Se content via inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS instrumentation uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com.

The dissolved Se result (2106283-30) was greater than the corresponding total recoverable Se result (2106283-29) for sample *RG_FOUEW_WS_2021-06-18_1100_N_NAL*. Re-analyses confirmed the results. Container labels were checked and there was no indication of samples miss-labeled. Consequently, no additional corrective actions are necessary. The reported results are deemed representative of the submitted containers.

Se Speciation
Each aqueous sample was analyzed for Se speciation using ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Selenium species are chromatographically separated on an ion exchange column and then quantified using inductively coupled plasma collision reaction cell mass spectrometry (ICP-CRC-MS); for more information on this determinative technique, please visit the *Interference Reduction Technology* section on our website. The chromatographic method applied for the analyses provides greater retention of methylseleninic acid and selenomethionine, allowing for more definitive quantitation of these species.

In accordance with the quotation issued for this project, Se speciation was defined as dissolved selenite [*Se(IV)*], selenate [*Se(VI)*], selenocyanate [*SeCN*], methylseleninic acid [*MeSe(IV)*], methaneselenonic acid [*MeSe(VI)*], selenomethionine [*SeMet*], selenosulfate [$SeSO_3$], and dimethylselenoxide [*DMSeO*]. Unknown Se species was defined as the total concentration of all unknown Se species observed during the analysis. This item is identified on the report as [*Unk Se Sp*].

DMSeO elutes early in the chromatographic run due to the nature of the molecule and the applied chromatographic separation method. Since this species elutes near the dead volume, additional Se species may coelute. Alternate methods can be applied, upon client request, to increase the separation of DMSeO from potentially co-eluting Se species.

Chromatographic interference, as indicated by an elevated baseline or co-eluting peak, was observed for selenosulfate in several client samples. Due to potential bias in the obtained results, the affected data have been qualified as estimated (**J-1**). Upon client request, Brooks Applied Labs can apply a higher dilution to these samples to potentially mitigate the chromatographic interferences, but a higher dilution would elevate the detection limits for selenomethionine [SeMet] above the client's requested limit of 0.010µg/L.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOPs and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific method detection limits (MDLs), MRLs, and other details.

In instances when a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample concentration, the recoveries, and the relative percent difference (RPD) are not considered valid indicators of data quality. In such instances, the recoveries of the laboratory fortified blanks (BS) and/or standard reference materials (SRM) demonstrate the accuracy of the applied methods. When the spiking level was less than 25% of the native sample concentration, the spike recovery was not reported (**NR**) and the RPD of the MS/MSD set was not calculated (**N/C**).

Except for items noted above, and aside from concentration qualifiers, all data were reported without qualification. All associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited met all NELAP requirements. For more information, please see the Report Information page.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Brooks Applied Labs
Jeremy@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 3/23/2020)

E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Please see narrative for explanation.
J Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1 Estimated value. A full explanation is presented in the narrative.
M Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 27, 2020; Valid to: June 30, 2021
Certificate Number: E87982-35

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Ag, As, Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4200	Non-Potable Waters	Se(IV), Se(VI)
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2), and DoD/DOE (3)

Issued by: ANAB

Issued on: November 20, 2020; Valid to: March 20, 2022

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)	DoD/DOE Accredited Analytes
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn	Ag, Al, As, Ba, Ca, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Ni, Sb, Se, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)	Not Accredited
EPA 1640 Mod	Non-Potable Waters	Ag, As, Cd, Cu, Pb, Ni, Zn Cr, Co, Se, Tl, V (ISO Only)	Not Accredited
EPA 1631E Mod BAL-3100 (waters)	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury	Methyl Mercury (excluding Solids/Chemicals)
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic, As(III) (ISO Only)	Not Accredited
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)	Not Accredited
AOAC 2015.01 Mod BAL-5000 by BAL-5040	Food	As, Cd, Hg, Pb	Not Accredited
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs	Not Accredited
	Biological by BAL-4115	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4101	Food by BAL-4116	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet	Not Accredited
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)	Not Accredited
SM2340B	Non-Potable Waters	Hardness	Hardness
SM 2540G EPA 160.3 BAL-0501	Solids/Chemicals & Biological	% Dry Weight	% Dry Weight

(1) ISO/IEC 17025:2017 – Certificate Number ADE-1447.2

(2) Non-Governmental NELAC Institute 2016 Standard – Certificate Number ADE-1447.1

(3) Department of Defense/Energy Consolidated Quality Systems Manual v. 5.3 – Certificate Numbers ADE-1447 for DoD, ADE-1447.3 for DOE.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_UFR1_WS_2021-06-15_1000_N	2106283-01	WS	Sample	06/15/2021	06/24/2021
RG_UFR1_WS_2021-06-15_1000_N_NAL	2106283-02	WS	Sample	06/15/2021	06/24/2021
RG_UFR1_WS_2021-06-15_1000_N_NAL	2106283-03	WS	Sample	06/15/2021	06/24/2021
RG_FODHE_WS_2021-06-14_1420_N	2106283-04	WS	Sample	06/14/2021	06/24/2021
RG_FODHE_WS_2021-06-14_1420_N_NAL	2106283-05	WS	Sample	06/14/2021	06/24/2021
RG_FODHE_WS_2021-06-14_1420_N_NAL	2106283-06	WS	Sample	06/14/2021	06/24/2021
RG_FOUCL_WS_2021-06-14_1320_N	2106283-07	WS	Sample	06/14/2021	06/24/2021
RG_FOUCL_WS_2021-06-14_1320_N_NAL	2106283-08	WS	Sample	06/14/2021	06/24/2021
RG_FOUCL_WS_2021-06-14_1320_N_NAL	2106283-09	WS	Sample	06/14/2021	06/24/2021
RG_FOUNGD_WS_2021-06-15_1246_N	2106283-10	WS	Sample	06/15/2021	06/24/2021
RG_FOUNGD_WS_2021-06-15_1246_N_NAL	2106283-11	WS	Sample	06/15/2021	06/24/2021
RG_FOUNGD_WS_2021-06-15_1246_N_NAL	2106283-12	WS	Sample	06/15/2021	06/24/2021
RG_FODNGD_WS_2021-06-16_1317_N	2106283-13	WS	Sample	06/16/2021	06/24/2021
RG_FODNGD_WS_2021-06-16_1317_N_NAL	2106283-14	WS	Sample	06/16/2021	06/24/2021
RG_FODNGD_WS_2021-06-16_1317_N_NAL	2106283-15	WS	Sample	06/16/2021	06/24/2021
RG_SCOUTDS_WS_2021-06-16_1000_N	2106283-16	WS	Sample	06/16/2021	06/24/2021
RG_SCOUTDS_WS_2021-06-16_1000_N_NAL	2106283-17	WS	Sample	06/16/2021	06/24/2021
RG_SCOUTDS_WS_2021-06-16_1000_N_NAL	2106283-18	WS	Sample	06/16/2021	06/24/2021
RG_FOBCP_WS_2021-06-17_0945_N	2106283-19	WS	Sample	06/17/2021	06/24/2021
RG_FOBCP_WS_2021-06-17_0945_N_NAL	2106283-20	WS	Sample	06/17/2021	06/24/2021
RG_FOBCP_WS_2021-06-17_0945_N_NAL	2106283-21	WS	Sample	06/17/2021	06/24/2021
RG_FRUPO_WS_2021-06-18_1300_N	2106283-22	WS	Sample	06/18/2021	06/24/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FRUPO_WS_2021-06-18_1300_N_NAL	2106283-23	WS	Sample	06/18/2021	06/24/2021
RG_FRUPO_WS_2021-06-18_1300_N_NAL	2106283-24	WS	Sample	06/18/2021	06/24/2021
RG_FO22_WS_2021-06-18_0843_N	2106283-25	WS	Sample	06/18/2021	06/24/2021
RG_FO22_WS_2021-06-18_0843_N_NAL	2106283-26	WS	Sample	06/18/2021	06/24/2021
RG_FO22_WS_2021-06-18_0843_N_NAL	2106283-27	WS	Sample	06/18/2021	06/24/2021
RG_FOUEW_WS_2021-06-18_1100_N	2106283-28	WS	Sample	06/18/2021	06/24/2021
RG_FOUEW_WS_2021-06-18_1100_N_NAL	2106283-29	WS	Sample	06/18/2021	06/24/2021
RG_FOUEW_WS_2021-06-18_1100_N_NAL	2106283-30	WS	Sample	06/18/2021	06/24/2021
RG_FRCP1SW_WS_2021-06-17_1156_N	2106283-31	WS	Sample	06/17/2021	06/24/2021
RG_FRCP1SW_WS_2021-06-17_1156_N_NAL	2106283-32	WS	Sample	06/17/2021	06/24/2021
RG_FRCP1SW_WS_2021-06-17_1156_N_NAL	2106283-33	WS	Sample	06/17/2021	06/24/2021
RG_FODPO_WS_2021-06-17_1500_N	2106283-34	WS	Sample	06/17/2021	06/24/2021
RG_FODPO_WS_2021-06-17_1500_N_NAL	2106283-35	WS	Sample	06/17/2021	06/24/2021
RG_FODPO_WS_2021-06-17_1500_N_NAL	2106283-36	WS	Sample	06/17/2021	06/24/2021
RG_MP1_WS_2021-06-14_1530_N	2106283-37	WS	Sample	06/14/2021	06/24/2021
RG_MP1_WS_2021-06-14_1530_N_NAL	2106283-38	WS	Sample	06/14/2021	06/24/2021
RG_MP1_WS_2021-06-14_1530_N_NAL	2106283-39	WS	Sample	06/14/2021	06/24/2021
RG_FOUSH_WS_2021-06-15_1136_N	2106283-40	WS	Sample	06/15/2021	06/24/2021
RG_FOUSH_WS_2021-06-15_1136_N_NAL	2106283-41	WS	Sample	06/15/2021	06/24/2021
RG_FOUSH_WS_2021-06-15_1136_N_NAL	2106283-42	WS	Sample	06/15/2021	06/24/2021
RG_FOBKS_WS_2021-06-16_1350_N	2106283-43	WS	Sample	06/16/2021	06/24/2021
RG_FOBKS_WS_2021-06-16_1350_N_NAL	2106283-44	WS	Sample	06/16/2021	06/24/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FOBKS_WS_2021-06-16_1350_N_NAL	2106283-45	WS	Sample	06/16/2021	06/24/2021
RG_HENUP_WS_2021-06-16_0840_N	2106283-46	WS	Sample	06/16/2021	06/24/2021
RG_HENUP_WS_2021-06-16_0840_N_NAL	2106283-47	WS	Sample	06/16/2021	06/24/2021
RG_HENUP_WS_2021-06-16_0840_N_NAL	2106283-48	WS	Sample	06/16/2021	06/24/2021
RG_FOBSC_WS_2021-06-17_1330_N	2106283-49	WS	Sample	06/17/2021	06/24/2021
RG_FOBSC_WS_2021-06-17_1330_N_NAL	2106283-50	WS	Sample	06/17/2021	06/24/2021
RG_FOBSC_WS_2021-06-17_1330_N_NAL	2106283-51	WS	Sample	06/17/2021	06/24/2021
RG_FOUKI_WS_2021-06-17_0815_N	2106283-52	WS	Sample	06/17/2021	06/24/2021
RG_FOUKI_WS_2021-06-17_0815_N_NAL	2106283-53	WS	Sample	06/17/2021	06/24/2021
RG_FOUKI_WS_2021-06-17_0815_N_NAL	2106283-54	WS	Sample	06/17/2021	06/24/2021
RG_FO26_WS_2021-06-14_10:00_N	2106283-55	WS	Sample	06/14/2021	06/24/2021
RG_FO26_WS_2021-06-14_10:00_N_NAL	2106283-56	WS	Sample	06/14/2021	06/24/2021
RG_FO26_WS_2021-06-14_10:00_N_NAL	2106283-57	WS	Sample	06/14/2021	06/24/2021

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
DMSeO	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
MeSe(IV)	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
MeSe(VI)	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
Se	Water	EPA 1638 Mod	06/28/2021	07/01/2021	B211744	S210750
Se	Water	EPA 1638 Mod	07/02/2021	07/07/2021	B211810	S210764
Se(IV)	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
Se(VI)	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
SeCN	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
SeMet	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
SeSO3	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724
Unk Se Sp	Water	SOP BAL-4201	06/23/2021	06/26/2021	B211730	S210724

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_UFR1_WS_2021-06-15_1000_N										
2106283-01	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-01	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-01	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-01	Se(IV)	WS	D	0.040	J	0.010	0.075	µg/L	B211730	S210724
2106283-01	Se(VI)	WS	D	0.392		0.010	0.055	µg/L	B211730	S210724
2106283-01	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-01	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-01	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-01	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_UFR1_WS_2021-06-15_1000_N_NAL										
2106283-02	Se	WS	TR	1.13		0.165	0.528	µg/L	B211744	S210750
RG_UFR1_WS_2021-06-15_1000_N_NAL										
2106283-03	Se	WS	D	1.05		0.165	0.528	µg/L	B211744	S210750
RG_FODHE_WS_2021-06-14_1420_N										
2106283-04	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-04	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-04	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-04	Se(IV)	WS	D	0.046	J	0.010	0.075	µg/L	B211730	S210724
2106283-04	Se(VI)	WS	D	4.20		0.010	0.055	µg/L	B211730	S210724
2106283-04	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-04	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-04	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-04	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FODHE_WS_2021-06-14_1420_N_NAL										
2106283-05	Se	WS	TR	4.86		0.165	0.528	µg/L	B211744	S210750
RG_FODHE_WS_2021-06-14_1420_N_NAL										
2106283-06	Se	WS	D	5.26		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUCL_WS_2021-06-14_1320_N										
2106283-07	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-07	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-07	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-07	Se(IV)	WS	D	0.050	J	0.010	0.075	µg/L	B211730	S210724
2106283-07	Se(VI)	WS	D	6.90		0.010	0.055	µg/L	B211730	S210724
2106283-07	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-07	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-07	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-07	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOUCL_WS_2021-06-14_1320_N_NAL										
2106283-08	Se	WS	TR	7.59		0.165	0.528	µg/L	B211744	S210750
RG_FOUCL_WS_2021-06-14_1320_N_NAL										
2106283-09	Se	WS	D	7.70		0.165	0.528	µg/L	B211744	S210750
RG_FOUNGD_WS_2021-06-15_1246_N										
2106283-10	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-10	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-10	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-10	Se(IV)	WS	D	0.061	J	0.010	0.075	µg/L	B211730	S210724
2106283-10	Se(VI)	WS	D	8.52		0.010	0.055	µg/L	B211730	S210724
2106283-10	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-10	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-10	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-10	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOUNGD_WS_2021-06-15_1246_N_NAL										
2106283-11	Se	WS	TR	9.55		0.165	0.528	µg/L	B211744	S210750
RG_FOUNGD_WS_2021-06-15_1246_N_NAL										
2106283-12	Se	WS	D	9.25		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FODNGD_WS_2021-06-16_1317_N										
2106283-13	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-13	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-13	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-13	Se(IV)	WS	D	0.066	J	0.010	0.075	µg/L	B211730	S210724
2106283-13	Se(VI)	WS	D	10.0		0.010	0.055	µg/L	B211730	S210724
2106283-13	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-13	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-13	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-13	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FODNGD_WS_2021-06-16_1317_N_NAL										
2106283-14	Se	WS	TR	10.8		0.165	0.528	µg/L	B211744	S210750
RG_FODNGD_WS_2021-06-16_1317_N_NAL										
2106283-15	Se	WS	D	10.9		0.165	0.528	µg/L	B211744	S210750
RG_SCOUTDS_WS_2021-06-16_1000_N										
2106283-16	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-16	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-16	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-16	Se(IV)	WS	D	0.124		0.010	0.075	µg/L	B211730	S210724
2106283-16	Se(VI)	WS	D	18.7		0.010	0.055	µg/L	B211730	S210724
2106283-16	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-16	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-16	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-16	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_SCOUTDS_WS_2021-06-16_1000_N_NAL										
2106283-17	Se	WS	TR	18.5		0.165	0.528	µg/L	B211744	S210750
RG_SCOUTDS_WS_2021-06-16_1000_N_NAL										
2106283-18	Se	WS	D	17.9		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBCP_WS_2021-06-17_0945_N										
2106283-19	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-19	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-19	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-19	Se(IV)	WS	D	0.111		0.010	0.075	µg/L	B211730	S210724
2106283-19	Se(VI)	WS	D	38.7		0.010	0.055	µg/L	B211730	S210724
2106283-19	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-19	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-19	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-19	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOBCP_WS_2021-06-17_0945_N_NAL										
2106283-20	Se	WS	TR	37.0		0.165	0.528	µg/L	B211744	S210750
RG_FOBCP_WS_2021-06-17_0945_N_NAL										
2106283-21	Se	WS	D	37.6		0.165	0.528	µg/L	B211744	S210750
RG_FRUPO_WS_2021-06-18_1300_N										
2106283-22	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-22	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-22	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-22	Se(IV)	WS	D	0.105		0.010	0.075	µg/L	B211730	S210724
2106283-22	Se(VI)	WS	D	58.9		0.010	0.055	µg/L	B211730	S210724
2106283-22	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-22	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-22	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-22	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FRUPO_WS_2021-06-18_1300_N_NAL										
2106283-23	Se	WS	TR	55.3		0.165	0.528	µg/L	B211744	S210750
RG_FRUPO_WS_2021-06-18_1300_N_NAL										
2106283-24	Se	WS	D	55.4		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FO22_WS_2021-06-18_0843_N										
2106283-25	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-25	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-25	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-25	Se(IV)	WS	D	0.107		0.010	0.075	µg/L	B211730	S210724
2106283-25	Se(VI)	WS	D	49.5		0.010	0.055	µg/L	B211730	S210724
2106283-25	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-25	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-25	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-25	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FO22_WS_2021-06-18_0843_N_NAL										
2106283-26	Se	WS	TR	48.4		0.165	0.528	µg/L	B211744	S210750
RG_FO22_WS_2021-06-18_0843_N_NAL										
2106283-27	Se	WS	D	48.4		0.165	0.528	µg/L	B211744	S210750
RG_FOUEW_WS_2021-06-18_1100_N										
2106283-28	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-28	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-28	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-28	Se(IV)	WS	D	0.100		0.010	0.075	µg/L	B211730	S210724
2106283-28	Se(VI)	WS	D	42.9		0.010	0.055	µg/L	B211730	S210724
2106283-28	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-28	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-28	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-28	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOUEW_WS_2021-06-18_1100_N_NAL										
2106283-29	Se	WS	TR	33.0		0.165	0.528	µg/L	B211744	S210750
RG_FOUEW_WS_2021-06-18_1100_N_NAL										
2106283-30	Se	WS	D	40.7		0.165	0.528	µg/L	B211744	S210750

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Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FRCP1SW_WS_2021-06-17_1156_N										
2106283-31	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-31	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-31	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-31	Se(IV)	WS	D	0.114		0.010	0.075	µg/L	B211730	S210724
2106283-31	Se(VI)	WS	D	38.2		0.010	0.055	µg/L	B211730	S210724
2106283-31	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-31	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-31	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-31	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FRCP1SW_WS_2021-06-17_1156_N_NAL										
2106283-32	Se	WS	TR	38.8		0.165	0.528	µg/L	B211744	S210750
RG_FRCP1SW_WS_2021-06-17_1156_N_NAL										
2106283-33	Se	WS	D	36.4		0.165	0.528	µg/L	B211744	S210750
RG_FODPO_WS_2021-06-17_1500_N										
2106283-34	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-34	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-34	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-34	Se(IV)	WS	D	0.112		0.010	0.075	µg/L	B211730	S210724
2106283-34	Se(VI)	WS	D	50.9		0.010	0.055	µg/L	B211730	S210724
2106283-34	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-34	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-34	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-34	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FODPO_WS_2021-06-17_1500_N_NAL										
2106283-35	Se	WS	TR	48.7		0.165	0.528	µg/L	B211744	S210750
RG_FODPO_WS_2021-06-17_1500_N_NAL										
2106283-36	Se	WS	D	50.8		0.165	0.528	µg/L	B211810	S210764

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_MP1_WS_2021-06-14_1530_N										
2106283-37	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-37	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-37	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-37	Se(IV)	WS	D	0.111		0.010	0.075	µg/L	B211730	S210724
2106283-37	Se(VI)	WS	D	15.1		0.010	0.055	µg/L	B211730	S210724
2106283-37	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-37	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-37	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-37	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_MP1_WS_2021-06-14_1530_N_NAL										
2106283-38	Se	WS	TR	14.7		0.165	0.528	µg/L	B211744	S210750
RG_MP1_WS_2021-06-14_1530_N_NAL										
2106283-39	Se	WS	D	14.4		0.165	0.528	µg/L	B211744	S210750
RG_FOUSH_WS_2021-06-15_1136_N										
2106283-40	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-40	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-40	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-40	Se(IV)	WS	D	0.115		0.010	0.075	µg/L	B211730	S210724
2106283-40	Se(VI)	WS	D	12.3		0.010	0.055	µg/L	B211730	S210724
2106283-40	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-40	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-40	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-40	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOUSH_WS_2021-06-15_1136_N_NAL										
2106283-41	Se	WS	TR	11.8		0.165	0.528	µg/L	B211744	S210750
RG_FOUSH_WS_2021-06-15_1136_N_NAL										
2106283-42	Se	WS	D	11.9		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBKS_WS_2021-06-16_1350_N										
2106283-43	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-43	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-43	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-43	Se(IV)	WS	D	0.129		0.010	0.075	µg/L	B211730	S210724
2106283-43	Se(VI)	WS	D	14.0		0.010	0.055	µg/L	B211730	S210724
2106283-43	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-43	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-43	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-43	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOBKS_WS_2021-06-16_1350_N_NAL										
2106283-44	Se	WS	TR	13.7		0.165	0.528	µg/L	B211744	S210750
RG_FOBKS_WS_2021-06-16_1350_N_NAL										
2106283-45	Se	WS	D	12.9		0.165	0.528	µg/L	B211744	S210750
RG_HENUP_WS_2021-06-16_0840_N										
2106283-46	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-46	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-46	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-46	Se(IV)	WS	D	0.021	J	0.010	0.075	µg/L	B211730	S210724
2106283-46	Se(VI)	WS	D	0.305		0.010	0.055	µg/L	B211730	S210724
2106283-46	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-46	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-46	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-46	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_HENUP_WS_2021-06-16_0840_N_NAL										
2106283-47	Se	WS	TR	0.789		0.165	0.528	µg/L	B211744	S210750
RG_HENUP_WS_2021-06-16_0840_N_NAL										
2106283-48	Se	WS	D	0.824		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBSC_WS_2021-06-17_1330_N										
2106283-49	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-49	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-49	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-49	Se(IV)	WS	D	0.112		0.010	0.075	µg/L	B211730	S210724
2106283-49	Se(VI)	WS	D	52.2		0.010	0.055	µg/L	B211730	S210724
2106283-49	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-49	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-49	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-49	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOBSC_WS_2021-06-17_1330_N_NAL										
2106283-50	Se	WS	TR	48.3		0.165	0.528	µg/L	B211744	S210750
RG_FOBSC_WS_2021-06-17_1330_N_NAL										
2106283-51	Se	WS	D	49.3		0.165	0.528	µg/L	B211744	S210750
RG_FOUKI_WS_2021-06-17_0815_N										
2106283-52	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-52	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-52	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-52	Se(IV)	WS	D	0.127		0.010	0.075	µg/L	B211730	S210724
2106283-52	Se(VI)	WS	D	15.7		0.010	0.055	µg/L	B211730	S210724
2106283-52	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-52	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-52	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B211730	S210724
2106283-52	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FOUKI_WS_2021-06-17_0815_N_NAL										
2106283-53	Se	WS	TR	16.0		0.165	0.528	µg/L	B211744	S210750
RG_FOUKI_WS_2021-06-17_0815_N_NAL										
2106283-54	Se	WS	D	14.2		0.165	0.528	µg/L	B211744	S210750

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FO26_WS_2021-06-14_10:00_N										
2106283-55	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-55	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-55	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-55	Se(IV)	WS	D	0.019	J	0.010	0.075	µg/L	B211730	S210724
2106283-55	Se(VI)	WS	D	0.424		0.010	0.055	µg/L	B211730	S210724
2106283-55	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B211730	S210724
2106283-55	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B211730	S210724
2106283-55	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B211730	S210724
2106283-55	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B211730	S210724
RG_FO26_WS_2021-06-14_10:00_N_NAL										
2106283-56	Se	WS	TR	0.989		0.165	0.528	µg/L	B211744	S210750
RG_FO26_WS_2021-06-14_10:00_N_NAL										
2106283-57	Se	WS	D	0.876		0.165	0.528	µg/L	B211744	S210750

Accuracy & Precision Summary

Batch: B211730
Lab Matrix: Water
Method: SOP BAL-4201

Sample	Analyte	Native	Spike	Result	Units	REC	REC Limits	RPD	RPD Limits
B211730-BS1	**Blank Spike, (2124033)**								
	MeSe(IV)		5.095	5.386	µg/L	106%	75-125		
	Se(IV)		5.000	4.887	µg/L	98%	75-125		
	Se(VI)		5.000	4.640	µg/L	93%	75-125		
	SeCN		5.015	5.108	µg/L	102%	75-125		
	SeMet		4.932	4.791	µg/L	97%	75-125		
B211730-DUP4	**Duplicate, (2106283-34)**								
	DMSeO	ND		ND	µg/L			N/C	25
	MeSe(IV)	ND		ND	µg/L			N/C	25
	MeSe(VI)	ND		ND	µg/L			N/C	25
	Se(IV)	0.112		0.121	µg/L			7%	25
	Se(VI)	50.86		51.65	µg/L			2%	25
	SeCN	ND		ND	µg/L			N/C	25
	SeMet	ND		ND	µg/L			N/C	25
	SeSO3	ND		ND	µg/L			N/C	25
	Unk Se Sp	ND		ND	µg/L			N/C	25
B211730-MS4	**Matrix Spike, (2106283-34)**								
	Se(IV)	0.112	4.900	5.251	µg/L	105%	75-125		
	Se(VI)	50.86	5.100	57.78	µg/L	NR	75-125		
	SeCN	ND	1.962	1.996	µg/L	102%	75-125		
	SeMet	ND	1.977	2.050	µg/L	104%	75-125		
B211730-MSD4	**Matrix Spike Duplicate, (2106283-34)**								
	Se(IV)	0.112	4.900	5.328	µg/L	106%	75-125	1%	25
	Se(VI)	50.86	5.100	57.44	µg/L	NR	75-125	N/C	25
	SeCN	ND	1.962	2.040	µg/L	104%	75-125	2%	25
	SeMet	ND	1.977	1.982	µg/L	100%	75-125	3%	25

Accuracy & Precision Summary

Batch: B211744
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B211744-BS1	**Blank Spike, (2104074)**								
	Se		200.0	202.2	µg/L	101%	75-125		
B211744-BS2	**Blank Spike, (2104074)**								
	Se		200.0	203.6	µg/L	102%	75-125		
B211744-BS3	**Blank Spike, (2104074)**								
	Se		200.0	195.2	µg/L	98%	75-125		
B211744-BS4	**Blank Spike, (2104074)**								
	Se		200.0	193.4	µg/L	97%	75-125		
B211744-BS5	**Blank Spike, (2104074)**								
	Se		200.0	200.7	µg/L	100%	75-125		
B211744-SRM1	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	14.31	µg/L	100%	75-125		
B211744-SRM2	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	14.08	µg/L	98%	75-125		
B211744-SRM3	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	14.01	µg/L	98%	75-125		
B211744-SRM4	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	13.63	µg/L	95%	75-125		
B211744-SRM5	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	14.14	µg/L	99%	75-125		
B211744-DUP1	**Duplicate, (2106283-14)**								
	Se	10.83		10.89	µg/L			0.6%	20

Accuracy & Precision Summary

Batch: B211744
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B211744-MS1	**Matrix Spike, (2106283-14)**								
	Se	10.83	220.0	220.9	µg/L	95%	75-125		
B211744-MSD1	**Matrix Spike Duplicate, (2106283-14)**								
	Se	10.83	220.0	230.9	µg/L	100%	75-125	4%	20
B211744-DUP2	**Duplicate, (2106283-32)**								
	Se	38.83		37.25	µg/L			4%	20
B211744-MS2	**Matrix Spike, (2106283-32)**								
	Se	38.83	220.0	245.8	µg/L	94%	75-125		
B211744-MSD2	**Matrix Spike Duplicate, (2106283-32)**								
	Se	38.83	220.0	242.0	µg/L	92%	75-125	2%	20
B211744-DUP3	**Duplicate, (2106283-56)**								
	Se	0.989		0.809	µg/L			20%	20
B211744-MS3	**Matrix Spike, (2106283-56)**								
	Se	0.989	220.0	204.6	µg/L	93%	75-125		
B211744-MSD3	**Matrix Spike Duplicate, (2106283-56)**								
	Se	0.989	220.0	206.8	µg/L	94%	75-125	1%	20

Accuracy & Precision Summary

Batch: B211810
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B211810-BS1	**Blank Spike, (2104074)**								
	Se		200.0	197.0	µg/L	98%	75-125		
B211810-BS2	**Blank Spike, (2104074)**								
	Se		200.0	196.7	µg/L	98%	75-125		
B211810-SRM1	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	13.60	µg/L	95%	75-125		
B211810-SRM2	**Reference Material (2041021, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	13.51	µg/L	95%	75-125		
B211810-DUP1	**Duplicate, (2106341-02)**								
	Se	4.298		4.749	µg/L			10%	20
B211810-MS1	**Matrix Spike, (2106341-02)**								
	Se	4.298	220.0	227.0	µg/L	101%	75-125		
B211810-MSD1	**Matrix Spike Duplicate, (2106341-02)**								
	Se	4.298	220.0	228.4	µg/L	102%	75-125	0.6%	20

Method Blanks & Reporting Limits

Batch: B211730
Matrix: Water
Method: SOP BAL-4201
Analyte: DMSeO

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(IV)

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(VI)

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: Se(IV)

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Analyte: Se(VI)

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: SeCN

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.010 **MRL:** 0.010

Analyte: SeMet

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: SeSO3

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: Unk Se Sp

Sample	Result	Units
B211730-BLK1	0.00	µg/L
B211730-BLK2	0.00	µg/L
B211730-BLK3	0.00	µg/L
B211730-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Method Blanks & Reporting Limits

Batch: B211744
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B211744-BLK1	0.411	µg/L
B211744-BLK2	0.405	µg/L
B211744-BLK3	0.407	µg/L
B211744-BLK4	0.399	µg/L
B211744-BLK5	0.347	µg/L

Average: 0.394
Limit: 0.480

MDL: 0.150
MRL: 0.480

Method Blanks & Reporting Limits

Batch: B211810
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B211810-BLK1	0.022	µg/L
B211810-BLK2	0.049	µg/L
B211810-BLK3	0.029	µg/L
B211810-BLK4	0.053	µg/L

Average: 0.038
Limit: 0.480

MDL: 0.150
MRL: 0.480

Sample Containers

Lab ID: 2106283-01
Sample: RG_UFR1_WS_2021-06-15_1000_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-02
Sample: RG_UFR1_WS_2021-06-15_1000_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-03
Sample: RG_UFR1_WS_2021-06-15_1000_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-04
Sample: RG_FODHE_WS_2021-06-14_1420_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Sample Containers

Lab ID: 2106283-05
Sample: RG_FODHE_WS_2021-06-14_1420_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-06
Sample: RG_FODHE_WS_2021-06-14_1420_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-07
Sample: RG_FOUCL_WS_2021-06-14_1320_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-08
Sample: RG_FOUCL_WS_2021-06-14_1320_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-09
Sample: RG_FOUCL_WS_2021-06-14_1320_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-10
Sample: RG_FOUNGD_WS_2021-06-15_1246_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-11
Sample: RG_FOUNGD_WS_2021-06-15_1246_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-12
Sample: RG_FOUNGD_WS_2021-06-15_1246_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-13
Sample: RG_FODNGD_WS_2021-06-16_1317_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-14
Sample: RG_FODNGD_WS_2021-06-16_1317_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-15
Sample: RG_FODNGD_WS_2021-06-16_1317_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-16
Sample: RG_SCOUTDS_WS_2021-06-16_1000_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Sample Containers

Lab ID: 2106283-17
Sample: RG_SCOUTDS_WS_2021-06-16_1000_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-18
Sample: RG_SCOUTDS_WS_2021-06-16_1000_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-19
Sample: RG_FOBCP_WS_2021-06-17_0945_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-20
Sample: RG_FOBCP_WS_2021-06-17_0945_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-21
Sample: RG_FOBCP_WS_2021-06-17_0945_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-22
Sample: RG_FRUPO_WS_2021-06-18_1300_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-23
Sample: RG_FRUPO_WS_2021-06-18_1300_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-24
Sample: RG_FRUPO_WS_2021-06-18_1300_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-25
Sample: RG_FO22_WS_2021-06-18_0843_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-26
Sample: RG_FO22_WS_2021-06-18_0843_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-27
Sample: RG_FO22_WS_2021-06-18_0843_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-28
Sample: RG_FOUEW_WS_2021-06-18_1100_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Sample Containers

Lab ID: 2106283-29
Sample: RG_FOUEW_WS_2021-06-18_1100_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-30
Sample: RG_FOUEW_WS_2021-06-18_1100_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/18/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-31
Sample: RG_FRCP1SW_WS_2021-06-17_1156_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-32
Sample: RG_FRCP1SW_WS_2021-06-17_1156_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-33
Sample: RG_FRCP1SW_WS_2021-06-17_1156_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-34
Sample: RG_FODPO_WS_2021-06-17_1500_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-35
Sample: RG_FODPO_WS_2021-06-17_1500_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Lab ID: 2106283-36
Sample: RG_FODPO_WS_2021-06-17_1500_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #3 - 2106283

Sample Containers

Lab ID: 2106283-37
Sample: RG_MP1_WS_2021-06-14_1530_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-38
Sample: RG_MP1_WS_2021-06-14_1530_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-39
Sample: RG_MP1_WS_2021-06-14_1530_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-40
Sample: RG_FOUSH_WS_2021-06-15_1136_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Sample Containers

Lab ID: 2106283-41
Sample: RG_FOUSH_WS_2021-06-15_1136_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-42
Sample: RG_FOUSH_WS_2021-06-15_1136_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/15/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-43
Sample: RG_FOBKS_WS_2021-06-16_1350_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-44
Sample: RG_FOBKS_WS_2021-06-16_1350_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Sample Containers

Lab ID: 2106283-45
Sample: RG_FOBKS_WS_2021-06-16_1350_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-46
Sample: RG_HENUP_WS_2021-06-16_0840_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-47
Sample: RG_HENUP_WS_2021-06-16_0840_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-48
Sample: RG_HENUP_WS_2021-06-16_0840_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/16/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Sample Containers

Lab ID: 2106283-49
Sample: RG_FOBSC_WS_2021-06-17_1330_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-50
Sample: RG_FOBSC_WS_2021-06-17_1330_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-51
Sample: RG_FOBSC_WS_2021-06-17_1330_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-52
Sample: RG_FOUKI_WS_2021-06-17_0815_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Sample Containers

Lab ID: 2106283-53
Sample: RG_FOUKI_WS_2021-06-17_0815_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-54
Sample: RG_FOUKI_WS_2021-06-17_0815_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/17/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-55
Sample: RG_FO26_WS_2021-06-14_10:00_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2106283

Lab ID: 2106283-56
Sample: RG_FO26_WS_2021-06-14_10:00_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Lab ID: 2106283-57
Sample: RG_FO26_WS_2021-06-14_10:00_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 06/14/2021
Received: 06/24/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2052022	<2	Styrofoam Cooler #5 - 2106283

Shipping Containers

Styrofoam Cooler #3 - 2106283

Received: June 24, 2021 8:00
Tracking No: na via Courier
Coolant Type: Blue Ice
Temperature: 1.9 °C

Description: Styrofoam Cooler #3
Damaged in transit? No
Returned to client? No
Comments: IR# 31, Ice + Blue Ice

Custody seals present? No
Custody seals intact? No
COC present? No

Styrofoam Cooler #4 - 2106283

Received: June 24, 2021 8:00
Tracking No: na via Courier
Coolant Type: Blue Ice
Temperature: 0.4 °C

Description: Styrofoam Cooler #4
Damaged in transit? No
Returned to client? No
Comments: IR# 31

Custody seals present? No
Custody seals intact? No
COC present? No

Styrofoam Cooler #5 - 2106283

Received: June 24, 2021 8:00
Tracking No: na via Courier
Coolant Type: Blue Ice
Temperature: 0.3 °C

Description: Styrofoam Cooler #5
Damaged in transit? No
Returned to client? No
Comments: IR# 31, Ice + Blue Ice

Custody seals present? No
Custody seals intact? No
COC present? No

COC ID:	Se Speciation 21-11 FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Carlie Meyer		
Email	carlie.meyer@teck.com		
Address	421 Pine Avenue		
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Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8441		

LABORATORY

Lab Name	Brooks Applied Labs		
Lab Contact	Ben Wozniak		
Email	ben@brooksapplied.com		
Address	18804 North Creek Parkway		
City	Bothell	Province	WA
Postal Code	98011	Country	USA
Phone Number	206-632-6206		

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	teckcoal@equisonline.com			x
Email 2:	pschnurr@minnow.ca	x	x	x
Email 3:	jings@minnow.ca	x	x	x
Email 4:	Cait.Good@teck.com	x	x	x
Email 5:				
PO number	690100			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium (FIL: N; PRESERV: HNO3)	Dissolved Selenium (FIL: F; PRESERV: HNO3)	Selenium Speciation (FIL: F; PRESERV: N)
RG_UFR1_WS_2021-06-15_1000_N	RG_UFR1	WS	No	15-Jun-21	8:15	G	1			X
RG_UFR1_WS_2021-06-15_1000_N_NAL	RG_UFR1	WS	No	15-Jun-21	8:15	G	2	X	X	
RG_FODHE_WS_2021-06-14_1420_N	RG_FODHE	WS	No	14-Jun-21	14:20	G	1			X
RG_FODHE_WS_2021-06-14_1420_N_NAL	RG_FODHE	WS	No	14-Jun-21	14:20	G	2	X	X	
RG_FOUCL_WS_2021-06-14_1320_N	RG_FOUCL	WS	No	14-Jun-21	13:20	G	1			X
RG_FOUCL_WS_2021-06-14_1320_N_NAL	RG_FOUCL	WS	No	14-Jun-21	13:20	G	2	X	X	
RG_FOUNGD_WS_2021-06-15_1246_N	RG_FOUNGD	WS	No	15-Jun-21	12:46	G	1			X
RG_FOUNGD_WS_2021-06-15_1246_N_NAL	RG_FOUNGD	WS	No	15-Jun-21	12:46	G	2	X	X	
RG_FODNGD_WS_2021-06-16_1317_N	RG_FODNGD	WS	No	16-Jun-21	13:17	G	1			X
RG_FODNGD_WS_2021-06-16_1317_N_NAL	RG_FODNGD	WS	No	16-Jun-21	13:17	G	2	X	X	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Samples for total selenium have been preserved in the field. Dissolved selenium have been filtered and preserved. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
P. Schnurr	23 June 21	BAL	6/24/21 0800

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature		Date/Time	June 22, 2021

Teck

Page 2 of 4

COC ID:	Se Speciation 21-11 FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Carlie Meyer
Email	carlie.meyer@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-425-8441

LABORATORY

Lab Name	Brooks Applied Labs
Lab Contact	Ben Wozniak
Email	ben@brooksapplied.com
Address	18804 North Creek Parkway
City	Bothell
Province	WA
Postal Code	98011
Country	USA
Phone Number	206-632-6206

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	teckcoal@equisonline.com			x
Email 2:	pschnurr@minnow.ca	x	x	x
Email 3:	jings@minnow.ca	x	x	x
Email 4:	Cait.Good@teck.com	x	x	x
Email 5:				
PO number	690100			

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium	Selenium Speciation
Filtered								N	F	F
Preserved								HNO3	HNO3	N
RG_SCOUTDS_WS_2021-06-16_1000_N	RG_SCOUTDS	WS	No	16-Jun-21	10:00	G	1			X
RG_SCOUTDS_WS_2021-06-16_1000_N_NAL	RG_SCOUTDS	WS	No	16-Jun-21	10:00	G	2	X	X	
RG_FOBCP_WS_2021-06-17_0945_N	RG_FOBCP	WS	No	17-Jun-21	9:45	G	1			X
RG_FOBCP_WS_2021-06-17_0945_N_NAL	RG_FOBCP	WS	No	17-Jun-21	9:45	G	2	X	X	
RG_FRUPO_WS_2021-06-18_1300_N	RG_FRUPO	WS	No	18-Jun-21	13:00	G	1			X
RG_FRUPO_WS_2021-06-18_1300_N_NAL	RG_FRUPO	WS	No	18-Jun-21	13:00	G	2	X	X	
RG_FO22_WS_2021-06-18_0843_N_NAL	RG_FO22	WS	No	18-Jun-21	8:43	G	1			X
RG_FO22_WS_2021-06-18_0843_N_NAL	RG_FO22	WS	No	18-Jun-21	8:43	G	2	X	X	
RG_FOUEW_WS_2021-06-18_1100_N	RG_FOUEW	WS	No	18-Jun-21	11:00	G	1			X
RG_FOUEW_WS_2021-06-18_1100_N_NAL	RG_FOUEW	WS	No	18-Jun-21	11:00	G	2	X	X	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Samples for total selenium have been preserved in the field. Dissolved selenium have been filtered and preserved. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
[signature]	23 June 21	[signature] BAL	6/24/21 0800

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature	[signature]	Date/Time	June 22, 2021

Teck

Page 3 of 4

COC ID:	Se Speciation 21-11 FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Carlie Meyer		
Email	carlie.meyer@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8441		

LABORATORY

Lab Name	Brooks Applied Labs		
Lab Contact	Ben Wozniak		
Email	ben@brooksapplied.com		
Address	18804 North Creek Parkway		
City	Bothell	Province	WA
Postal Code	98011	Country	USA
Phone Number	206-632-6206		

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	teckcoal@equisonline.com			x
Email 2:	pschnurr@minnow.ca	x	x	x
Email 3:	jings@minnow.ca	x	x	x
Email 4:	Cait.Good@teck.com	x	x	x
Email 5:				
PO number	690100			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium	Selenium Speciation
FIL.								N	F	F
PRESERV.								HNO3	HNO3	N
RG_FRCP1SW_WS_2021-06-17_1156_N	RG_FRCP1SW	WS	No	17-Jun-21	11:56	G	1			X
RG_FRCP1SW_WS_2021-06-17_1156_N_NAL	RG_FRCP1SW	WS	No	17-Jun-21	11:56	G	2	X	X	
RG_FODPO_WS_2021-06-17_1500_N	RG_FODPO	WS	No	17-Jun-21	15:00	G	1			X
RG_FODPO_WS_2021-06-17_1500_N_NAL	RG_FODPO	WS	No	17-Jun-21	15:00	G	2	X	X	
RG_MP1_WS_2021-06-14_1530_N	RG_MP1	WS	No	14-Jun-21	15:30	G	1			X
RG_MP1_WS_2021-06-14_1530_N_NAL	RG_MP1	WS	No	14-Jun-21	15:30	G	2	X	X	
RG_FOUSH_WS_2021-06-15_1136_N	RG_FOUSH	WS	No	15-Jun-21	11:36	G	1			X
RG_FOUSH_WS_2021-06-15_1136_N_NAL	RG_FOUSH	WS	No	15-Jun-21	11:36	G	2	X	X	
RG_FOBKS_WS_2021-06-16_1350_N_NAL	RG_FOBKS	WS	No	16-Jun-21	13:50	G	1			X
RG_FOBKS_WS_2021-06-16_1350_N_NAL	RG_FOBKS	WS	No	16-Jun-21	13:50	G	2	X	X	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Samples for total selenium have been preserved in the field. Dissolved selenium have been filtered and preserved. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
J. Gentile	23 June 21	[signature] BAL	6/24/21 0800

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature	[signature]	Date/Time	June 22, 2021

Teck

Page 4 of 4

COC ID:	Se Speciation 21-11 FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Carlie Meyer		
Email	carlie.meyer@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-425-8441		

LABORATORY

Lab Name	Brooks Applied Labs		
Lab Contact	Ben Wozniak		
Email	ben@brooksapplied.com		
Address	18804 North Creek Parkway		
City	Bothell	Province	WA
Postal Code	98011	Country	USA
Phone Number	206-632-6206		

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	teckcoal@equisonline.com			x
Email 2:	pschnurr@minnow.ca	x	x	x
Email 3:	jings@minnow.ca	x	x	x
Email 4:	Cait.Good@teck.com	x	x	x
Email 5:				
PO number	690100			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium (N; HNO3)	Dissolved Selenium (F; HNO3)	Selenium Speciation (F; N)
RG_HENUP_WS_2021-06-16_0840_N	RG_HENUP	WS	No	16-Jun-21	8:40	G	1			X
RG_HENUP_WS_2021-06-16_0840_N_NAL	RG_HENUP	WS	No	16-Jun-21	8:40	G	2	X	X	
RG_FOBSC_WS_2021-06-17_1330_N	RG_FOBSC	WS	No	17-Jun-21	13:30	G	1			X
RG_FOBSC_WS_2021-06-17_1330_N_NAL	RG_FOBSC	WS	No	17-Jun-21	13:30	G	2	X	X	
RG_FOUKI_WS_2021-06-17_0815_N	RG_FOUKI	WS	No	17-Jun-21	8:15	G	1			X
RG_FOUKI_WS_2021-06-17_0815_N_NAL	RG_FOUKI	WS	No	17-Jun-21	8:15	G	2	X	X	
RG_FO26_WS_2021-06-14_10:00_N	RG_FO26	WS	No	14-Jun-21	8:43	G	1			X
RG_FO26_WS_2021-06-14_10:00_N_NAL	RG_FO26	WS	No	14-Jun-21	8:43	G	2	X	X	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Samples for total selenium have been preserved in the field. Dissolved selenium have been filtered and preserved. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
[signature]	23 June 21	[signature] BAL	6/24/21 0800

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Sampler's Signature	[signature]	Date/Time	June 22, 2021

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 86214

Sparwood, BC · Terrace, BC · Red Deer, AB · Vancouver, BC · Calgary, AB · Montreal, QC · Prince George, BC · Edmonton, AB · Spokane, WA · Elkford, BC · Ft. McMurray, AB · Shelby, MT · Tumbler Ridge, BC · Hinton, AB · Gillette, WY

INVOICE TO	DATE June 23 21
BILL OF LADING #	PURCHASE ORDER NUMBER
SHIPPER (FROM) Teck Coal Ltd	CONSIGNEE (TO) Brooks Applied Labs
STREET West Line Creek Treatment	STREET 18804 N. Creek Parkway
CITY/PROVINCE Sparwood, BC / POSTAL CODE	CITY/PROVINCE Bothell, WA / POSTAL CODE 98011

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
4	Coolers - Water Samples	140 LBS

PAPS# RWHV86214

FREIGHT CHARGES
SHIPPER TO CHECK
☐ PREPAID ☐ COLLECT
If not indicated, shipping will automatically move collect.

FEE
WAITING
XPU
CHARGES
FSC
US
SUB TOTAL
GST
TOTAL $
IF AT OWNER'S RISK, WRITE ORD HERE

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY	PICK UP TIME	DRIVER'S SIGNATURE - DELIVERY BY	FINISH TIME
		Branden C	0800

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, oin the case of failure to make delivery within nine (9) months from the date of shipment. (b) The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consignee at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT	CONSIGNEE PRINT Chelsea Van Engelghem	DATE 6-24-21
SHIPPER SIGN	CONSIGNEE SIGN [signature]	TIME 0800
		NUMBER OF PIECES RECEIVED 4

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROD: Shipper GST # 864546398RT0001

AMIGOS PRINTING

Cooler ID: Styrofoam Cooler #3 COC (Y/N) Temperature: 5.9 (T/D) 1.9 (SP) IR: 31

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	RG		WL							
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	120mL 60mL			125mL						

Opened By: SP **Date:** 6/24/21

2106283

Effective 7/29/20

Revision 004

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 86214

Sparwood, BC | Terrace, BC | Red Deer, AB
Vancouver, BC | Calgary, AB | Montreal, QC
Prince George, BC | Edmonton, AB | Spokane, WA
Elkford, BC | Ft. McMurray, AB | Shelby, MT
Tumbler Ridge, BC | Hinton, AB | Gillette, WY

INVOICE TO

DATE June 23 21

BILL OF LADING #

PURCHASE ORDER NUMBER

SHIPPER (FROM) Teck Coal Ltd

STREET West Line Creek Treatment

CITY/PROVINCE Sparwood BC

POSTAL CODE

CONSIGNEE (TO) Brooks Applied Labs

STREET 18804 N. Creek Parkway

CITY/PROVINCE Bothell, WA

POSTAL CODE 98011

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
4	Coolers - Water Samples	40 LBS
	PAPS# RWHV86214	

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY

PICK UP TIME

DRIVER'S SIGNATURE - DELIVERY BY Landen W

FINISH TIME 0816

FREIGHT CHARGES
SHIPPER TO CHECK
☐PREPAID ☐COLLECT
If not indicated, shipping will automatically move collect.

FEE
WAITING
XPU
CHARGES
FSC
US
SUB TOTAL
GST
TOTAL $
IF AT OWNER'S RISK, WRITE ORD HERE

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, oin the case of failure to make delivery within nine (9) months from the date of shipment. (b)The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consigned at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT

SHIPPER SIGN

CONSIGNEE PRINT Andrea Van Slageren

CONSIGNEE SIGN

DATE 6-24-21

TIME 0820

NUMBER OF PIECES RECEIVED 4

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper GST # 864546398RT0001

AMIGOS PRINTING

~~Cooler ID:~~ Styrofoam Cooler #4 ~~COC (Y/N)~~ ~~Temperature:~~ 0.4 ~~IR:~~ 31

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	LC		~~Ba~~ BG							
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	120mL			60mL 120mL						

Opened By: CVL **Date:** 6/24/21

COPY

Effective 7/29/20 Revision 004

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 86216

Sparwood, BC
Terrace, BC
Red Deer, AB

Vancouver, BC
Calgary, AB
Montreal, QC

Prince George, BC
Edmonton, AB
Spokane, WA

Elkford, BC
Ft. McMurray, AB
Shelby, MT

Tumbler Ridge, BC
Hinton, AB
Gillette, WY

INVOICE TO	DATE June 23-21
BILL OF LADING #	PURCHASE ORDER NUMBER
SHIPPER (FROM) Teck Coal Ltd	CONSIGNEE (TO) Brooks Applied Labs
STREET Fording River - Eagle 4	STREET 18804 N. Creek Parkway
CITY/PROVINCE Elkford BC — POSTAL CODE	CITY/PROVINCE Bothell WA — POSTAL CODE 98011

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
1	Cooler - Water Samples	27.5 LBS
	PAPS # RWHV86214	

FREIGHT CHARGES
SHIPPER TO CHECK
☐PREPAID ☐COLLECT
If not indicated, shipping will automatically move collect.

FEE
WAITING
XPU
CHARGES
FSC
US
SUB TOTAL
GST
TOTAL $
IF AT OWNER'S RISK, WRITE ORD HERE

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY	PICK UP TIME	DRIVER'S SIGNATURE - DELIVERY BY	FINISH TIME
		Drucken W	0800

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, or in the case of failure to make delivery within nine (9) months from the date of shipment. (b)The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consigned at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT	CONSIGNEE PRINT Chelsea Van Landuyt	DATE 6-24-21
SHIPPER SIGN	CONSIGNEE SIGN	TIME 0800

NUMBER OF PIECES RECEIVED 1

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROD: Shipper GST # 864540398RT0001

Cooler ID: Styrofoam Cooler # 5 COC (Y/N) Temperature: 0.3 IR: 31

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	BG		LC							
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	60mL			120mL						

Opened By: CVL Date: 6/24/21

COPY

Effective 7/29/20 Revision 004

From: Jeremy Maute
To: Peter Schnurr; Carlie.Meyer@teck.com; cait.good@teck.com; Jennifer Ings
Cc: Amy Goodall
Subject: RE: Brooks - Samples Received - Work order (2106283) REP, Privileged and Confidential
Date: Tuesday, June 29, 2021 9:52:00 AM
Attachments: image001.jpg
image002.png

Thanks Peter. Per your request, we will amend all Se speciation sample ID so that that they have the "_N_NAL" ending.

Have a great afternoon.

Regards,

Jeremy Maute
Senior Project Manager
206-753-6116
email: jeremy@brooksapplied.com

BROOKS APPLIED LABS

Meaningful Metals Data and Advanced Speciation Solutions

P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

From: Peter Schnurr <PSchnurr@minnow.ca>
Sent: Monday, June 28, 2021 5:53 PM
To: Jeremy Maute <Jeremy@brooksapplied.com>; Carlie.Meyer@teck.com; cait.good@teck.com; Jennifer Ings <JIngs@minnow.ca>
Cc: Amy Goodall <amy@brooksapplied.com>
Subject: RE: Brooks - Samples Received - Work order (2106283) REP, Privileged and Confidential

Hi Jeremy,

Thanks for catching that – yes, these were transcription errors and each selenium speciation sample (including FO22 and FOBKS) should not have the "_N_NAL" ending, but rather, only the "_N" so that all sample locations/IDs are consistent.

Please let me know if you need further clarification.

Thanks,
Peter

Peter Schnurr, Ph.D., R.P.Bio.
Aquatic Scientist

Minnow_TrinityCo logo_CO

Minnow Environmental Inc. (A Trinity Consultants Company)
2 Lamb Street | Georgetown, Ontario L7G 3M9
905.873.3371 ext. 323

From: Jeremy Maute <Jeremy@brooksapplied.com>
Sent: Monday, June 28, 2021 6:32 PM
To: Carlie.Meyer@teck.com; cait.good@teck.com; Peter Schnurr <PSchnurr@minnow.ca>; Jennifer Ings <JIngs@minnow.ca>
Cc: Amy Goodall <amy@brooksapplied.com>
Subject: RE: Brooks - Samples Received - Work order (2106283) REP, Privileged and Confidential

I thought I should mention that the chain of custody (COC) forms list a field ID of (*RG_FO22_WS_2021-06-18_0843_N_NAL*, 6/18/2021 08:43) for the 2106283-25 selenium speciation fraction. Other Se speciation fractions in this work order have "***_N"*** ending terms in the field IDs, not "***_N-NAL"***. Is this a transcription error on the COC form? For now we have logged in 2106283-25 according to the COC form. Let me know if you would have us do otherwise.

The same is true for 2106283-43 selenium speciation fraction. The chain of custody (COC) form lists a field ID of (*RG_FOBKS_WS_2021-06-16_1350_N_NAL*, 6/16/2021 13:50). Other Se speciation fractions in this work order have "***_N"*** ending terms in the field IDs, not "***_N-NAL"***. Let us know if this was intended or if it was an error on the COC forms.

Regards,

Jeremy Maute
Senior Project Manager
206-753-6116
email: jeremy@brooksapplied.com

BROOKS APPLIED LABS

Meaningful Metals Data and Advanced Speciation Solutions

P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

From: Amy Goodall <amy@brooksapplied.com>
Sent: Monday, June 28, 2021 11:46 AM
To: Carlie.Meyer@teck.com; cait.good@teck.com; pschnurr@minnow.ca; jings@minnow.ca
Cc: Jeremy Maute <Jeremy@brooksapplied.com>
Subject: Brooks - Samples Received - Work order (2106283) REP, Privileged and Confidential

Good afternoon,

This is confirmation that samples from the REP project were received at Brooks Applied Labs on June 24, 2021. Samples arrived intact and in a cooler with an acceptable temperature. Samples were logged in for the following TAT:

2106283 – Regular TAT (5-9 business days)

I've attached a copy of the COC for your reference. Please let us know if you have any questions.

Thank you,
Amy

Amy Goodall
Project Manager
206-632-6206, ext. 110
amy@brooksapplied.com

BAL's Coronavirus (COVID-19) Update

BROOKS APPLIED LABS
Meaningful Metals Data and Advanced Speciation Solutions
P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

From: Peter Schnurr
To: Jeremy Maute; Carlie.Meyer@teck.com; Jennifer Ings; cait.good@teck.com
Cc: teck.lab.results@teck.com
Subject: RE: Brooks Final Report/EDD, WO 2106283: REP, REP Project - Confidential
Date: Tuesday, November 2, 2021 11:41:29 AM

Hi Jeremy,

We have a new database for managing our data and that is sensitive to lab report formats and the spelling of our sample IDs. As such, can you please update the report associated with this email (#2106283) so that the spelling of RG_UFR1 is correct? In your report the last character of the sample ID was an 'l' rather than a '1'

Please let me know if you have any questions and send the updated report at your earliest convenience.

Thanks,
Peter

From: Jeremy Maute <Jeremy@brooksapplied.com>
Sent: Friday, July 9, 2021 6:51 PM
To: Carlie.Meyer@teck.com; Peter Schnurr <PSchnurr@minnow.ca>; Jennifer Ings <JIngs@minnow.ca>; cait.good@teck.com
Cc: teck.lab.results@teck.com
Subject: Brooks Final Report/EDD, WO 2106283: REP, REP Project - Confidential

Attached are the report and EDD for COC ID ***Se Speciation 21-11 FRO LAEMP***, associated with the REP project.

A request was made to amend the **Sample ID** values for 2106283-25 and 2106283-43. The changes requested are described in the table below.

Laboratory ID	Sample ID (on COC form)	Sample ID Requested for Reporting	Analytical Parameter
2106283-25	RG_FO22_WS_2021-06-18_0843_N_NAL	RG_FO22_WS_2021-06-18_0843_N	Se Speciation
2106283-43	RG_FOBKS_WS_2021-06-16_1350_N_NAL	RG_FOBKS_WS_2021-06-16_1350_N	Se Speciation

2106283-25 and 2106283-43 are reported using the **Sample ID** values described in column 3 of the table above.

The dissolved Se result (2106283-30) was greater than the corresponding total recoverable Se result (2106283-29) for sample *RG_FOUEW_WS_2021-06-18_1100_N_NAL*. Re-analyses confirmed the results. Container labels were checked and there was no indication of samples miss-labeled. Consequently, no additional corrective actions are necessary. The reported results are deemed representative of the submitted containers.

Chromatographic interference, as indicated by an elevated baseline or co-eluting peak, was observed for selenosulfate in several client samples. Due to potential bias in the obtained results, the affected data have been qualified as estimated (**J-1**). Upon client request, Brooks Applied Labs can apply a higher dilution to these samples to potentially mitigate the chromatographic interferences, but a higher dilution would elevate the detection limits for selenomethionine [SeMet] above the client's requested limit of 0.010µg/L.

As always, please contact us if there are any questions about this data.

Best regards,

Jeremy Maute
Senior Project Manager
206-753-6116
email: jeremy@brooksapplied.com

BROOKS APPLIED LABS

Meaningful Metals Data and Advanced Speciation Solutions

P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

November 4, 2021

Teck Resources Limited - Vancouver
Mike Pope
421 Pine Avenue
Sparwood, B.C. CANADA V0B2G0
mike.pope@teck.com

Re: REP

Revision 1:
Following the submission of the original report on October 14, 2021, it was determined that the **Sample ID** values for samples 2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23 were incorrect. In this revised report, the **Sample ID** values for (2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23) have been amended for reporting, according to the client's instructions. Specifically, the "***FRO-2021_09***" terms in the field IDs have been changed to "***FRO-2021-09***". No other changes were made in this revised report, with respect to the initial report issued on October 14, 2021.

Revision 2:
Following the submission of the revised report on November 4, 2021, it was determined that the **Sample ID** values for samples 2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23 were incorrect. In this revised report, the **Sample ID** values for (2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23) have been amended for reporting, according to the client's instructions. Specifically, the "***FRO-2021-09***" terms in the field IDs have been changed to "***FRO_2021-09***". No other changes were made in this revised report, with respect to the revised report on November 4, 2021.

Dear Mike Pope,

On September 16, 2021, Brooks Applied Labs (BAL) received sixteen (16) aqueous samples. The samples were logged-in for total recoverable selenium [*Se*], dissolved Se, and Se speciation analyses, according to the chain-of-custody (COC) forms.

Sample ID values listed on the chain-of-custody (COC) forms did not exactly match the corresponding **Sample ID** values listed on container labels several samples in this work order. The discrepancies are described in the table below.

Laboratory ID	**Sample ID** ***(From COC form)***	**Sample ID** ***(Listed on container label)***
2109234-17	RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FODHE_WS_LAEMP_FRO_2021-09-N_NAL
2109234-18	RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FODHE_WS_LAEMP_FRO_2021-09-N_NAL

Per client request, the samples described the table above were logged and reported in using the **Sample IDs** listed on the COC forms.

The containers for samples 2109234-01 through 2109234-12 and 2109234-19 through 2109234-23 did not list field IDs on the container labels. Rather, the samples were identified by matching the **Sample Location** values and **Date/Time Collected** values on the containers to information on the COC forms. With this information, there was no ambiguity in field ID assignments.

An additional sample, not described on the COC forms, was received with the sample shipment and logged into this work order under laboratory ID 2109234-24. The extra sample is described in the table below.

Laboratory ID	Sample ID *(Listed on container label)*	Date/Time Collected	Analytical Parameter
2109234-24	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N	09/13/2021 08:30	Se Speciation

The Se speciation fraction 2109234-24 corresponds to the total recoverable Se and dissolved Se fractions 2109234-22 and 2109234-23.

A request was made by the client to amend the **Sample ID** values for 2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23. The changes requested are described in the table below.

Laboratory ID	Sample ID (on COC form)	Sample ID Requested for Reporting	Analytical Parameter
2109234-10	RG_FO22_WS_LAEMP_FRO-2021_09-12_N	RG_FO22_WS_LAEMP_FRO_2021-09-12_N	Se Speciation
2109234-11	RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL	RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL	Total Recoverable Se
2109234-12	RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL	RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL	Dissolved Se
2109234-21	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N	Se Speciation
2109234-22	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL	Total Recoverable Se
2109234-23	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL	RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL	Dissolved Se

Per client request, 2109234-10, 2109234-11, 2109234-12, 2109234-21, 2109234-22, and 2109234-23 are reported using the **Sample ID** values described in column 3 of the table above. Specifically, the "***FRO-2021_09***" terms in the field IDs have been changed to "***FRO_2021-09***".

The sample fractions logged in for Se speciation and dissolved Se had been field-filtered prior to receipt at BAL. All samples were stored according to BAL SOPs.

<u>Total Recoverable and Dissolved Se</u>
Each aqueous sample fraction for total recoverable or dissolved Se was digested in a closed vessel (bomb) with nitric and hydrochloric acids. The resulting digests were analyzed for Se content via inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS instrumentation uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com.

<u>Se Speciation</u>
Each aqueous sample was analyzed for Se speciation using ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Selenium species are chromatographically separated on an ion exchange column and then quantified using inductively coupled plasma collision reaction cell mass spectrometry (ICP-CRC-MS); for more information on this determinative technique, please visit the *Interference Reduction Technology* section on our website. The chromatographic method applied for the analyses provides greater retention of methylseleninic acid and selenomethionine, allowing for more definitive quantitation of these species.

In accordance with the quotation issued for this project, selenium speciation was defined as dissolved selenite [Se(IV)], selenate [Se(VI)], selenocyanate [SeCN], methylseleninic acid [MeSe(IV)], methaneselenonic acid [MeSe(VI)], selenomethionine [SeMet], selenosulfate [SeSO3], and dimethylselenoxide [DMSeO]. Unknown Se species was defined as the total concentration of all unknown Se species observed during the analysis. This item is identified on the report as [Unk Se Sp].

DMSeO elutes early in the chromatographic run due to the nature of the molecule and the applied chromatographic separation method. Since this species elutes near the dead volume, additional Se species may coelute. Alternate methods can be applied, upon client request, to increase the separation of DMSeO from potentially co-eluting Se species.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOPs and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

In instances when a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample concentration, the recoveries and the relative percent difference (RPD) are not considered valid indicators of data quality. In such instances, the recoveries of the laboratory fortified blanks (BS) and/or standard reference materials (SRM) demonstrate the accuracy of the applied methods. When the spiking level was less than 25% of the native sample concentration, the spike recovery was not reported (NR) and the RPD of the MS/MSD set was not calculated (N/C).

Except for concentration qualifiers, all data were reported without qualification. All associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited met all NELAP requirements. For more information, please see the *Report Information* page.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Brooks Applied Labs
Jeremy@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 3/23/2020)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

<table>
<tr><th>Method</th><th>Matrix</th><th>TNI Accredited Analyte(s)</th></tr>
<tr><td>EPA 1638</td><td>Non-Potable Waters</td><td>Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn</td></tr>
<tr><td>EPA 200.8</td><td>Non-Potable Waters</td><td>Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn</td></tr>
<tr><td rowspan="2">EPA 6020</td><td>Non-Potable Waters</td><td>Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn</td></tr>
<tr><td>Solids/Chemicals & Biological</td><td>Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn</td></tr>
<tr><td rowspan="3">BAL-5000</td><td>Non-Potable Waters</td><td>Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness</td></tr>
<tr><td>Solids/Chemicals</td><td>Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn</td></tr>
<tr><td>Biological</td><td>Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn</td></tr>
<tr><td>EPA 1640</td><td>Non-Potable Waters</td><td>Cd, Cu, Pb, Ni, Zn</td></tr>
<tr><td>EPA 1631E</td><td>Non-Potable Waters,
Solids/Chemicals & Biological</td><td>Total Mercury</td></tr>
<tr><td>EPA 1630</td><td>Non-Potable Waters</td><td>Methyl Mercury</td></tr>
<tr><td>BAL-3200</td><td>Solids/Chemicals & Biological</td><td>Methyl Mercury</td></tr>
<tr><td>BAL-4100</td><td>Non-Potable Waters</td><td>As(III), As(V), DMAs, MMAs</td></tr>
<tr><td>BAL-4201</td><td>Non-Potable Waters</td><td>Se(IV), Se(VI)</td></tr>
<tr><td>BAL-4300</td><td>Non-Potable Waters
Solid/Chemicals</td><td>Cr(VI)</td></tr>
<tr><td>SM2340B</td><td>Non-Potable Waters</td><td>Hardness</td></tr>
</table>

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2), and DoD/DOE (3)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)	DoD/DOE Accredited Analytes
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn	Ag, Al, As, Ba, Ca, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Ni, Sb, Se, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)	Not Accredited
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)	Not Accredited
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury	Methyl Mercury (excluding Solids/Chemicals)
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)	Not Accredited
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)	Not Accredited
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb	Not Accredited
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs	Not Accredited
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet	Not Accredited
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)	Not Accredited
SM2340B	Non-Potable Waters	Hardness	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight	% Dry Weight

(1) ISO/IEC 17025:2017 – Certificate Number ADE-1447.02

(2) Non-Governmental NELAC Institute 2016 Standard – Certificate Number ADE-1447.01

(3) Department of Defense/Energy Consolidated Quality Systems Manual v. 5.3 – Certificate Numbers ADE-1447 for DoD, ADE-1447.03 for DOE.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N	2109234-01	WS	Sample	09/09/2021	09/16/2021
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL	2109234-02	WS	Sample	09/09/2021	09/16/2021
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL	2109234-03	WS	Sample	09/09/2021	09/16/2021
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N	2109234-04	WS	Sample	09/11/2021	09/16/2021
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL	2109234-05	WS	Sample	09/11/2021	09/16/2021
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL	2109234-06	WS	Sample	09/11/2021	09/16/2021
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N	2109234-07	WS	Sample	09/11/2021	09/16/2021
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL	2109234-08	WS	Sample	09/11/2021	09/16/2021
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL	2109234-09	WS	Sample	09/11/2021	09/16/2021
RG_FO22_WS_LAEMP_FRO_2021-09-12_N	2109234-10	WS	Sample	09/12/2021	09/16/2021
RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL	2109234-11	WS	Sample	09/12/2021	09/16/2021
RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL	2109234-12	WS	Sample	09/12/2021	09/16/2021
RG_FOUCL_WS_LAEMP_FRO_2021-09-13	2109234-13	WS	Sample	09/13/2021	09/16/2021
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-14	WS	Sample	09/13/2021	09/16/2021
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-15	WS	Sample	09/13/2021	09/16/2021
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N	2109234-16	WS	Sample	09/13/2021	09/16/2021
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-17	WS	Sample	09/13/2021	09/16/2021
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-18	WS	Sample	09/13/2021	09/16/2021
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-19	WS	Sample	09/13/2021	09/16/2021
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-20	WS	Sample	09/13/2021	09/16/2021
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N	2109234-21	WS	Sample	09/13/2021	09/16/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-22	WS	Sample	09/13/2021	09/16/2021
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL	2109234-23	WS	Sample	09/13/2021	09/16/2021
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N	2109234-24	WS	Sample	09/13/2021	09/16/2021

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
DMSeO	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
MeSe(IV)	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
MeSe(VI)	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
Se	Water	EPA 1638 Mod	09/21/2021	09/22/2021	B212615	S211084
Se(IV)	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
Se(VI)	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
SeCN	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
SeMet	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
SeSO3	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101
Unk Se Sp	Water	SOP BAL-4201	09/21/2021	09/22/2021	B212646	S211101

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N										
2109234-01	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-01	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-01	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-01	Se(IV)	WS	D	0.267		0.010	0.075	µg/L	B212646	S211101
2109234-01	Se(VI)	WS	D	43.8		0.010	0.055	µg/L	B212646	S211101
2109234-01	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-01	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-01	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-01	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL										
2109234-02	Se	WS	TR	43.7		0.165	0.528	µg/L	B212615	S211084
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL										
2109234-03	Se	WS	D	43.3		0.165	0.528	µg/L	B212615	S211084
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N										
2109234-04	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-04	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-04	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-04	Se(IV)	WS	D	0.184		0.010	0.075	µg/L	B212646	S211101
2109234-04	Se(VI)	WS	D	84.3		0.010	0.055	µg/L	B212646	S211101
2109234-04	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-04	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-04	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-04	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL										
2109234-05	Se	WS	TR	79.4		0.165	0.528	µg/L	B212615	S211084
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL										
2109234-06	Se	WS	D	82.5		0.165	0.528	µg/L	B212615	S211084

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N										
2109234-07	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-07	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-07	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-07	Se(IV)	WS	D	0.245		0.010	0.075	µg/L	B212646	S211101
2109234-07	Se(VI)	WS	D	79.2		0.010	0.055	µg/L	B212646	S211101
2109234-07	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-07	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-07	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-07	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL										
2109234-08	Se	WS	TR	75.0		0.165	0.528	µg/L	B212615	S211084
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL										
2109234-09	Se	WS	D	74.3		0.165	0.528	µg/L	B212615	S211084
RG_FO22_WS_LAEMP_FRO_2021-09-12_N										
2109234-10	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-10	MeSe(IV)	WS	D	0.012	J	0.010	0.025	µg/L	B212646	S211101
2109234-10	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-10	Se(IV)	WS	D	0.194		0.010	0.075	µg/L	B212646	S211101
2109234-10	Se(VI)	WS	D	87.4		0.010	0.055	µg/L	B212646	S211101
2109234-10	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-10	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-10	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-10	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL										
2109234-11	Se	WS	TR	82.7		0.165	0.528	µg/L	B212615	S211084
RG_FO22_WS_LAEMP_FRO_2021-09-12_NNAL										
2109234-12	Se	WS	D	83.9		0.165	0.528	µg/L	B212615	S211084

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUCL_WS_LAEMP_FRO_2021-09-13										
2109234-13	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-13	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-13	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-13	Se(IV)	WS	D	0.080		0.010	0.075	µg/L	B212646	S211101
2109234-13	Se(VI)	WS	D	16.8		0.010	0.055	µg/L	B212646	S211101
2109234-13	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-13	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-13	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-13	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-14	Se	WS	TR	15.7		0.165	0.528	µg/L	B212615	S211084
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-15	Se	WS	D	14.9		0.165	0.528	µg/L	B212615	S211084
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N										
2109234-16	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-16	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-16	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-16	Se(IV)	WS	D	0.075	J	0.010	0.075	µg/L	B212646	S211101
2109234-16	Se(VI)	WS	D	13.6		0.010	0.055	µg/L	B212646	S211101
2109234-16	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-16	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-16	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-16	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-17	Se	WS	TR	12.2		0.165	0.528	µg/L	B212615	S211084
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-18	Se	WS	D	12.6		0.165	0.528	µg/L	B212615	S211084
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-19	Se	WS	TR	70.5		0.165	0.528	µg/L	B212615	S211084
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL										
2109234-20	Se	WS	D	73.4		0.165	0.528	µg/L	B212615	S211084

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N										
2109234-21	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-21	MeSe(IV)	WS	D	0.016	J	0.010	0.025	µg/L	B212646	S211101
2109234-21	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-21	Se(IV)	WS	D	0.383		0.010	0.075	µg/L	B212646	S211101
2109234-21	Se(VI)	WS	D	79.7		0.010	0.055	µg/L	B212646	S211101
2109234-21	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-21	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-21	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-21	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NNAL										
2109234-22	Se	WS	TR	74.8		0.165	0.528	µg/L	B212615	S211084
RG_FOBCP_WS_LAEMP_FRO_2021-09-13_NNAL										
2109234-23	Se	WS	D	71.1		0.165	0.528	µg/L	B212615	S211084
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N										
2109234-24	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-24	MeSe(IV)	WS	D	0.014	J	0.010	0.025	µg/L	B212646	S211101
2109234-24	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-24	Se(IV)	WS	D	0.512		0.010	0.075	µg/L	B212646	S211101
2109234-24	Se(VI)	WS	D	83.2		0.010	0.055	µg/L	B212646	S211101
2109234-24	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212646	S211101
2109234-24	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212646	S211101
2109234-24	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212646	S211101
2109234-24	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212646	S211101

Accuracy & Precision Summary

Batch: B212615
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits
B212615-BS1	**Blank Spike, (2104075)**							
	Se		200.0	190.9	µg/L	95%	75-125	
B212615-BS2	**Blank Spike, (2104075)**							
	Se		200.0	193.3	µg/L	97%	75-125	
B212615-BS3	**Blank Spike, (2104075)**							
	Se		200.0	188.6	µg/L	94%	75-125	
B212615-BS4	**Blank Spike, (2104075)**							
	Se		200.0	191.9	µg/L	96%	75-125	
B212615-BS5	**Blank Spike, (2104075)**							
	Se		200.0	188.0	µg/L	94%	75-125	
B212615-BS6	**Blank Spike, (2104075)**							
	Se		200.0	186.7	µg/L	93%	75-125	
B212615-BS7	**Blank Spike, (2104075)**							
	Se		200.0	188.4	µg/L	94%	75-125	
B212615-SRM1	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**							
	Se		14.30	15.15	µg/L	106%	75-125	
B212615-SRM2	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**							
	Se		14.30	14.39	µg/L	101%	75-125	
B212615-SRM3	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**							
	Se		14.30	14.63	µg/L	102%	75-125	
B212615-SRM4	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**							
	Se		14.30	13.99	µg/L	98%	75-125	

Accuracy & Precision Summary

Batch: B212615
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B212615-SRM5	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**								
	Se		14.30	14.00	µg/L	98%	75-125		
B212615-SRM6	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**								
	Se		14.30	14.15	µg/L	99%	75-125		
B212615-SRM7	**Reference Material (2110006, TMDA 51.5 Reference Standard - Bottle 6 - SRM)**								
	Se		14.30	13.77	µg/L	96%	75-125		
B212615-DUP2	**Duplicate, (2109234-02)**								
	Se	43.67		42.92	µg/L			2%	20
B212615-MS2	**Matrix Spike, (2109234-02)**								
	Se	43.67	220.0	260.5	µg/L	99%	75-125		
B212615-MSD2	**Matrix Spike Duplicate, (2109234-02)**								
	Se	43.67	220.0	259.5	µg/L	98%	75-125	0.4%	20
B212615-DUP3	**Duplicate, (2109234-19)**								
	Se	70.47		71.85	µg/L			2%	20
B212615-MS3	**Matrix Spike, (2109234-19)**								
	Se	70.47	220.0	287.0	µg/L	98%	75-125		
B212615-MSD3	**Matrix Spike Duplicate, (2109234-19)**								
	Se	70.47	220.0	279.0	µg/L	95%	75-125	3%	20

Accuracy & Precision Summary

Batch: B212646
Lab Matrix: Water
Method: SOP BAL-4201

Sample	Analyte	Native	Spike	Result	Units	REC	REC Limits	RPD	RPD Limits
B212646-BS1	**Blank Spike, (2124033)**								
	MeSe(IV)		5.095	5.618	µg/L	110%	75-125		
	Se(IV)		5.000	5.126	µg/L	103%	75-125		
	Se(VI)		5.000	4.881	µg/L	98%	75-125		
	SeCN		5.015	5.110	µg/L	102%	75-125		
	SeMet		4.932	5.110	µg/L	104%	75-125		
B212646-DUP3	**Duplicate, (2109234-10)**								
	DMSeO	ND		ND	µg/L			N/C	25
	MeSe(IV)	0.012		ND	µg/L			N/C	25
	MeSe(VI)	ND		ND	µg/L			N/C	25
	Se(IV)	0.194		0.186	µg/L			5%	25
	Se(VI)	87.41		87.49	µg/L			0.09%	25
	SeCN	ND		ND	µg/L			N/C	25
	SeMet	ND		ND	µg/L			N/C	25
	SeSO3	ND		ND	µg/L			N/C	25
	Unk Se Sp	ND		ND	µg/L			N/C	25
B212646-MS3	**Matrix Spike, (2109234-10)**								
	Se(IV)	0.194	4.900	5.607	µg/L	110%	75-125		
	Se(VI)	87.41	5.100	97.35	µg/L	NR	75-125		
	SeCN	ND	1.962	2.075	µg/L	106%	75-125		
	SeMet	ND	1.977	2.186	µg/L	111%	75-125		
B212646-MSD3	**Matrix Spike Duplicate, (2109234-10)**								
	Se(IV)	0.194	4.900	5.783	µg/L	114%	75-125	3%	25
	Se(VI)	87.41	5.100	98.58	µg/L	NR	75-125	N/C	25
	SeCN	ND	1.962	2.088	µg/L	106%	75-125	0.6%	25
	SeMet	ND	1.977	2.199	µg/L	111%	75-125	0.6%	25

Method Blanks & Reporting Limits

Batch: B212615
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B212615-BLK1	0.130	µg/L
B212615-BLK2	0.191	µg/L
B212615-BLK3	0.098	µg/L
B212615-BLK4	0.107	µg/L
B212615-BLK5	0.157	µg/L
B212615-BLK6	0.136	µg/L
B212615-BLK7	0.192	µg/L
Average:	0.144	
Limit:	0.480	

MDL: 0.150
MRL: 0.480

Method Blanks & Reporting Limits

Batch: B212646
Matrix: Water
Method: SOP BAL-4201
Analyte: DMSeO

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(IV)

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(VI)

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: Se(IV)

Sample	Result	Units
B212646-BLK1	0.008	µg/L
B212646-BLK2	0.003	µg/L
B212646-BLK3	0.002	µg/L
B212646-BLK4	0.003	µg/L

Average: 0.004 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Analyte: Se(VI)

Sample	Result	Units
B212646-BLK1	0.002	µg/L
B212646-BLK2	0.001	µg/L
B212646-BLK3	0.0006	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.001 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: SeCN

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.010 **MRL:** 0.010

Analyte: SeMet

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: SeSO3

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: Unk Se Sp

Sample	Result	Units
B212646-BLK1	0.00	µg/L
B212646-BLK2	0.00	µg/L
B212646-BLK3	0.00	µg/L
B212646-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Sample Containers

Lab ID: 2109234-01
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/09/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-02
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/09/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-03
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/09/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-04
Sample: RG_FODPO_WS_LAEMP_FRO_2021-09-11_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-05
Sample: RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-06
Sample: RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-07
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-08
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-09
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/11/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-10
Sample: RG_FO22_WS_LAEMP_FRO_2021-09-12_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/12/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-11
Sample: RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/12/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-12
Sample: RG_FO22_WS_LAEMP_FRO_2021-09-12_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/12/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-13
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-09-13
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-14
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-15
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-16
Sample: RG_FODHE_WS_LAEMP_FRO_2021-09-13_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-17
Sample: RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-18
Sample: RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-19
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-20
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-21
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Sample Containers

Lab ID: 2109234-22
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-23
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-09-13_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #1 - 2109234

Lab ID: 2109234-24
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/13/2021
Received: 09/16/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #1 - 2109234

Shipping Containers

Styrofoam Cooler #1 - 2109234

Received: September 16, 2021 6:41
Tracking No: PAPS#RWHV87364 via Courier
Coolant Type: Ice
Temperature: 0.8 °C

Description: Styrofoam Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#30

Custody seals present? No
Custody seals intact? No
COC present? No

Confidential

Teck

COC ID:	September FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	mike.pope@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-910-8755		

LABORATORY

Lab Name	Brooks Applied Labs		
Lab Contact	Ben Wozniak		
Email	ben@brooksapplied.com		
Address	18804 North Creek Parkway		
City	Bothell	Province	WA
Postal Code	98011	Country	USA
Phone Number	206-632-6206		

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	mike.pope@teck.com	X	X	X
Email 2:	teckcoal@equisonline.com			X
Email 3:	jessica.ritz@teck.com	X	X	X
Email 4:	lbowron@minnow.ca	X	X	X
Email 5:	pschnurr@minnow.ca	X	X	X
Email 5:				
PO number	VPO00748540			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium (F)	Selenium Speciation (F)
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N	RG_FOBKS	WS	No	09/09/2021	1015	G	1			1
RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL	RG_FOBKS	WS	No	09/09/2021	1015	G	2	1	1	
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N	RG_FODPO	WS	No	9/11/2021	1322	G	1			1
RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL	RG_FODPO	WS	No	9/11/2021	1322	G	2	1	1	
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N	RG_FOUEW	WS	No	9/11/2021	815	G	1			1
RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL	RG_FOUEW	WS	No	9/11/2021	815	G	2	1	1	
RG_FO22_WS_LAEMP_FRO-2021_09-12_N	RG_FO22	WS	No	9/12/2021	845	G	1			1
RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL	RG_FO22	WS	No	9/12/2021	845	G	2	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Total and dissolved selenium samples have NOT been preserved. Dissolved selenium have been filtered. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Jennifer Ings/Minnow	September 14, 2021	Shich Russell	9/16/21 6:41

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature	Jennifer Ings	Date/Time	September 14, 2021

78 39

Teck

COC ID:	September FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Mike Pope
Email	mike.pope@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-910-8755

LABORATORY

Lab Name	Brooks Applied Labs
Lab Contact	Ben Wozniak
Email	ben@brooksapplied.com
Address	18804 North Creek Parkway
City	Bothell
Province	WA
Postal Code	98011
Country	USA
Phone Number	206-632-6206

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	mike.pope@teck.com	x	x	x
Email 2:	teckcoal@equisonline.com			x
Email 3:	jessica.ritz@teck.com	x	x	x
Email 4:	lbowron@minnow.ca	x	x	x
Email 5:	pschnurr@minnow.ca	x	x	x
Email 5:				
PO number	VPO00748540			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium (F)	Selenium Speciation (F)
RG_FOUCL_WS_LAEMP_FRO_2021-09-13	RG_FOUCL	WS	No	9/13/2021	1200	G	1			1
RG_FOUCL_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FOUCL	WS	No	9/13/2021	1200	G	2	1	1	
RG_FODHE_WS_LAEMF_FRO_2021-09-13_N	RG_FODHE	WS	No	9/13/2021	835	G	1			1
RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FODHE	WS	No	9/13/2021	835	G	2	1	1	
RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FOBSC	WS	No	9/13/2021	830	G	2	1	1	
RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N	RG_FOBCP	WS	No	9/13/2021	1230	G	1			1
RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL	RG_FOBCP	WS	No	9/13/2021	1230	G	2	1	1	

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Total and dissolved selenium samples have NOT been preserved. Dissolved selenium have been filtered. Speciation samples have been filtered and frozen.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Jennifer Ings/Minnow	September 14, 2021	Shala Russalla	9/16/21 6:41

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X
Priority (2-3 business days) - 50% surcharge	
Emergency (1 Business Day) - 100% surcharge	
For Emergency <1 Day, ASAP or Weekend - Contact ALS	

Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Sampler's Signature		Date/Time	September 14, 2021

86 42

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 87364

Sparwood, BC
Terrace, BC
Red Deer, AB

Vancouver, BC
Calgary, AB
Montreal, QC

Prince George, BC
Edmonton, AB
Spokane, WA

Elkford, BC
Ft. McMurray, AB
Shelby, MT

Tumbler Ridge, BC
Hinton, AB
Gillette, WY

DATE Sept 15-21

INVOICE TO

PURCHASE ORDER NUMBER

BILL OF LADING #

CONSIGNEE (TO) Brooks Applied Labs

SHIPPER (FROM) Teck Coal Ltd

STREET 18804 N. Creek Parkway

POSTAL CODE 98011

STREET West Line Creek Treatment

POSTAL CODE

CITY/PROVINCE Bothell, WA

CITY/PROVINCE Sparwood, BC

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
5	Coolers - Water Samples	100 LBS
PAPS#RWHV87364		

FREIGHT CHARGES
SHIPPER TO CHECK
☐ PREPAID ☐ COLLECT
If not indicated, shipping will automatically move collect.

FEE

WAITING

XPU

CHARGES

FSC

US

SUB TOTAL

GST

TOTAL $

IF AT OWNER'S RISK, WRITE ORD HERE

DATE 9/16/21

TIME

NUMBER OF PIECES RECEIVED 7 5

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY

PICK UP TIME

DRIVER'S SIGNATURE - DELIVERY BY

FINISH TIME

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, or in the case of failure to make delivery within nine (9) months from the date of shipment. (b) The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consigned at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT Jason Thorpe

CONSIGNEE PRINT Sean Zech (BAL)

CONSIGNEE SIGN

SHIPPER SIGN

GST # 864540398RT0001

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper

ABACUS PRINTING

Cooler ID: Styrofoam Cooler #1 **COC (Y/N)** **Temperature:** 0.8 **IR:** 30

Coolant Type: Ice Blue Ice Ambient

2109234

Notes:

Sampling Locations:	BG		EV		GH					
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	40mL	60ml		60mL	40mL	60mL				

Opened By: CVL **Date:** 9/16/21

COPY

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 87364

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

Sparwood, BC
Terrace, BC
Red Deer, AB

Vancouver, BC
Calgary, AB
Montreal, QC

Prince George, BC
Edmonton, AB
Spokane, WA

Elkford, BC
Ft. McMurray, AB
Shelby, MT

Tumbler Ridge, BC
Hinton, AB
Gillette, WY

DATE Sept 15-21

INVOICE TO

PURCHASE ORDER NUMBER

BILL OF LADING #

CONSIGNEE (TO) Brooks Applied Labs
STREET 18804 N. Creek Parkway
POSTAL CODE 98011
CITY/PROVINCE Bothell WA

SHIPPER (FROM) Teck Coal Ltd
STREET West Line Creek Treatment
POSTAL CODE
CITY/PROVINCE Sparwood, BC

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
5	Coolers - Water Samples	100 LBS
	PAPS#RWHV87364	

FREIGHT CHARGES
SHIPPER TO CHECK
☐PREPAID ☐COLLECT
If not indicated, shipping will automatically move "collect"

FEE

WAITING

XPU

CHARGES

FSC

US

SUB TOTAL

GST

TOTAL $

IF AT OWNER'S RISK, WRITE ORD HERE

DATE

TIME

NUMBER OF PIECES RECEIVED 5

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY

PICK UP TIME

DRIVER'S SIGNATURE - DELIVERY BY

FINISH TIME

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, or, in the case of failure to make delivery within nine (9) months from the date of shipment. (b) The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consignee at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. The date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the time and place of shipment and is subject to the conditions set out in such conditions. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT Jason Zworth

SHIPPER SIGN [signature]

CONSIGNEE PRINT Erik Zeck (BAL) 9/16/21

CONSIGNEE SIGN [signature]

GST # 864540398RT0001

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper

AMDOS PRINTING

Cooler ID: Styrofoam Cooler #2 COC (Y/N) Temperature: T/D: 5.6°C IR: 30
Sp: 1.1°C

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	LC		RG							
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	40mL		40mL	60mL						

Opened By: SP Date: 9/16/21

COPY

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

No. 87364

Sparwood, BC
Terrace, BC
Red Deer, AB

Vancouver, BC
Calgary, AB
Montreal, QC

Prince George, BC
Edmonton, AB
Spokane, WA

Elkford, BC
Ft. McMurray, AB
Shelby, MT

Tumbler Ridge, BC
Hinton, AB
Gillette, WY

DATE Sept 15-21

INVOICE TO

PURCHASE ORDER NUMBER

BILL OF LADING #

CONSIGNEE (TO) Brooks Applied Labs

SHIPPER (FROM) Teck Coal Ltd

STREET 18804 N. Creek Parkway

POSTAL CODE 98011

STREET West Line Creek Treatment

POSTAL CODE

CITY/PROVINCE Bothell WA

CITY/PROVINCE Sparwood, BC

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
5	Coolers - Water Samples	100 LBS

PAPS# RWHV87364

FREIGHT CHARGES
SHIPPER TO CHECK
☐ PREPAID ☐ COLLECT
If not indicated, shipping will automatically move collect.

FEE
WAITING
XPU
CHARGES
FSC
US
SUB TOTAL
GST
TOTAL $

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY

PICK UP TIME

DRIVER'S SIGNATURE - DELIVERY BY

FINISH TIME

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, or in the case of failure to make delivery within nine (9) months from the date of shipment. (b) The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consignee at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

IF AT OWNER'S RISK, WRITE OR HERE

SHIPPER PRINT Jason Zworth

SHIPPER SIGN

CONSIGNEE PRINT Sean Zisch (BAL)

CONSIGNEE SIGN

DATE 9/16/21

TIME 7:47

NUMBER OF PIECES RECEIVED 5

GST # 864540398RT0001

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper

AMIGOS PRINTING

Cooler ID: Styrofoam Cooler #3 **COC** (Y/N) **Temperature:** T/D: 6.0°C Sp: 0.4°C **IR:** 30

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	RG		EV		LC-					
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	40mL	60mL	40mL			60mL				

Opened By: SP **Date:** 9/16/21

COPY

From: Peter Schnurr
To: Jeremy Maute
Subject: RE: Updating sample IDs on previous report
Date: Thursday, November 4, 2021 12:36:04 PM

Shoot, I just realized that I failed to advise on another part of the sample ID that is incorrect.

There should also be an '_' between 'FRO' and '2021' as well on each of those samples. Can you please update that as well and resent? Let me know if you need clarification.

Thanks,
Peter

From: Jeremy Maute <Jeremy@brooksapplied.com>
Sent: Thursday, November 4, 2021 3:27 PM
To: Peter Schnurr <PSchnurr@minnow.ca>
Subject: RE: Updating sample IDs on previous report

Hi Peter,

The revised report has been submitted with the changes you requested below. The revised EDD (***2109234 R1.REP.Teck_EZEDD***) has been successfully submitted into the EQUIS database.

Let me know if anything else is needed.

Regards,

Jeremy Maute
Senior Project Manager
206-753-6116
email: jeremy@brooksapplied.com

BROOKS APPLIED LABS

Meaningful Metals Data and Advanced Speciation Solutions

P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

From: Peter Schnurr <PSchnurr@minnow.ca>
Sent: Thursday, November 4, 2021 9:11 AM
To: Jeremy Maute <Jeremy@brooksapplied.com>
Subject: Updating sample IDs on previous report

Hi Jeremy,

Our database detected incorrect sample IDs on two other samples from our September sampling. Please find attached the report that we would like to have updated. Specifics of the update are below:

RG_FO22_WS_LAEMP_FRO-2021_09-12_N
RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL

Both of these sample ID names should have a '-' between '2021' and '09' instead of a '_'

RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N
RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL

Both of these sample ID names should have a '-' between '2021' and '09' instead of a '_'

Could you please update the report and re-send?

Thanks,
Peter

From: Peter Schnurr
To: Chelsea Van Landeghen; mike.pope@teck.com; jessica.ritz@teck.com; Lisa Bowron
Cc: Jeremy Maute; Mariyeh Moradnazhad
Subject: RE: Received - WO 2109234, REP - Privileged and Confidential
Date: Friday, September 17, 2021 6:00:06 PM
Attachments: image001.jpg
image002.png

Hi Chealsea,

RG_FODHE was sampled on September 13th, so please report accordingly.

Thanks,
Peter

Peter Schnurr, Ph.D., R.P.Bio.
Aquatic Scientist

Minnow_TrinityCo logo_CO

Minnow Environmental Inc. (A Trinity Consultants Company)
2 Lamb Street | Georgetown, Ontario L7G 3M9
905.873.3371 ext. 323

From: Chelsea Van Landeghen <chelsea@brooksapplied.com>
Sent: Friday, September 17, 2021 7:21 PM
To: mike.pope@teck.com; jessica.ritz@teck.com; Lisa Bowron <LBowron@minnow.ca>; Peter Schnurr <PSchnurr@minnow.ca>
Cc: Jeremy Maute <Jeremy@brooksapplied.com>; Mariyeh Moradnazhad <mariyeh@brooksapplied.com>
Subject: Re: Received - WO 2109234, REP - Privileged and Confidential

Hello!

My apologies, I did not include the non-conformance that we noticed when receiving the samples in my original email.

The **Sample ID** value listed on the chain-of-custody (COC) form did not exactly match the corresponding **Sample ID** term listed on container label for samples in WO *21092345*. The issue is described in the table below:

Laboratory ID	Sample ID *(From COC form)*	Sample ID *(From Container Labels)*	Analytical Parameter

2109234-01	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N	*No Sample ID**	Se Speciation
2109234-02	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_NAL	*No Sample ID**	Total Se
2109234-03	RG_FOBKS_WS_LAEMP_FRO_2021-09-09_N_Nal	*No Sample ID**	Dissolved Se
2109234-04	RG_FODPO_WS_LAEMP_FRO_2021-09-11_N	*No Sample ID**	Se Speciation
2109234-05	RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL	*No Sample ID**	Total Se
2109234-06	RG_FODPO_WS_LAEMP_FRO_2021-09-11_N_NAL	*No Sample ID**	Dissolved Se
2109234-07	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N	*No Sample ID**	Se Speciation
2109234-08	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL	*No Sample ID**	Total Se
2109234-09	RG_FOUEW_WS_LAEMP_FRO_2021-09-11_N_NAL	*No Sample ID**	Dissolved Se
2109234-10	RG_FO22_WS_LAEMP_FRO-2021_09-12_N	*No Sample ID**	Se Speciation
2109234-11	RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL	*No Sample ID**	Total Se
2109234-12	RG_FO22_WS_LAEMP_FRO-2021_09-12_N_NAL	*No Sample ID**	Dissolved Se
2109234-17	RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FODHE_WS_LAEMP_FRO_2021-09-N_NAL	Total Se
2109234-18	RG_FODHE_WS_LAEMP_FRO_2021-09-13_N_NAL	RG_FODHE_WS_LAEMP_FRO_2021-09-N_NAL	Dissolved Se
2109234-19	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL	*No Sample ID**	Total Se
2109234-20	RG_FOBSC_WS_LAEMP_FRO_2021-09-13_N_NAL	*No Sample ID**	Dissolved Se
2109234-21	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N	*No Sample ID**	Se Speciation
2109234-22	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL	*No Sample ID**	Total Se
2109234-23	RG_FOBCP_WS_LAEMP_FRO-2021_09-13_N_NAL	*No Sample ID**	Dissolved Se

* The samples that did not have sample IDs listed on the container *did* have the Sample Location, Sample Date, and Sample Time on the container.

The samples described the table above were logged in according to the **Sample ID** value listed on the COC form.

Thank you,
Chelsea

From: Chelsea Van Landeghen
Sent: Friday, September 17, 2021 3:54 PM
To: mike.pope@teck.com <mike.pope@teck.com>; jessica.ritz@teck.com <jessica.ritz@teck.com>; lbowron@minnow.ca <lbowron@minnow.ca>; pschnurr@minnow.ca <pschnurr@minnow.ca>
Cc: Jeremy Maute <Jeremy@brooksapplied.com>; Mariyeh Moradnazhad <mariyeh@brooksapplied.com>
Subject: Received - WO 2109234, REP - Privileged and Confidential

Good afternoon!

This is confirmation that samples from the REP project were received at Brooks Applied Labs on September 16, 2021. The samples were logged in for the following turnaround time (TAT):

WO 2109234 – (5-9 business day) TAT

I've attached a copy of the COC form. If you have any questions, please contact the project manager, Jeremy Maute.

Best,
Chelsea

Chelsea Van Landeghen
Sample Control Specialist

email: chelsea@brooksapplied.com

BROOKS APPLIED LABS
Meaningful Metals Data and Advanced Speciation Solutions
P: 206-632-6206 | F: 206-632-6017 | **18804 North Creek Parkway, Suite 100, Bothell, WA 98011, USA**

BrooksAppliedLabs
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

October 22, 2021

Teck Resources Limited - Vancouver
Mike Pope
421 Pine Avenue
Sparwood, B.C. CANADA V0B2G0
mike.pope@teck.com

Re: REP

Revision 1:
Following the submission of the original report on October 22, 2021, it was determined that the **sys_loc_code** values and **Sample ID** values for samples 2109306-19, 2109306-20, and 2109306-21 were incorrect. In this revised report, the **sys_loc_code** values and **Sample ID** values for 2109306-19, 2109306-20, and 2109306-21 have been amended for reporting, according to the client's instructions. Specifically, the "***RG_UFRI***" terms have been changed to "***RG_UFR1***". The number "***1***" is used instead of the letter "***I***". No other changes were made in this revised report, with respect to the initial report issued on October 22, 2021.

Dear Mike Pope,

On September 23, 2021, Brooks Applied Labs (BAL) received twenty-eight (28) aqueous samples. The samples were logged-in for total recoverable selenium [*Se*], dissolved Se, and Se speciation analyses, according to the chain-of-custody (COC) forms.

Additional samples, not described on the COC forms, were received with the sample shipment and logged into this work order under laboratory ID 2109036-40, 2109036-41, and 2109036-42. The extra samples are described in the table below.

Laboratory ID	Sample ID *(Listed on container label)*	Date/Time Collected	Analytical Parameter
2109036-40	RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL	09/17/2021 14:30	Total Recoverable Se
2109306-41	RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL	09/17/2021 14:30	Dissolved Se
2109306-42	RG_FOUSH_WS_LAEMP_FRO_2021-09-17_NP	09/17/2021 14:30	Se Speciation

Results are reported for 2109036-40, 2109036-41, and 2109036-42.

The sample fractions logged in for Se speciation and dissolved Se had been field-filtered prior to receipt at BAL. All samples were stored according to BAL SOPs.

Total Recoverable and Dissolved Se

Each aqueous sample fraction for total recoverable or dissolved Se was digested in a closed vessel (bomb) with nitric and hydrochloric acids. The resulting digests were analyzed for Se content via inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS instrumentation uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com.

Se Speciation

Each aqueous sample was analyzed for Se speciation using ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Selenium species are chromatographically separated on an ion exchange column and then quantified using inductively coupled plasma collision reaction cell mass spectrometry (ICP-CRC-MS); for more information on this determinative technique, please visit the *Interference Reduction Technology* section on our website. The chromatographic method applied for the analyses provides greater retention of methylseleninic acid and selenomethionine, allowing for more definitive quantitation of these species.

In accordance with the quotation issued for this project, selenium speciation was defined as dissolved selenite [Se(IV)], selenate [Se(VI)], selenocyanate [SeCN], methylseleninic acid [MeSe(IV)], methaneselenonic acid [MeSe(VI)], selenomethionine [SeMet], selenosulfate [SeSO3], and dimethylselenoxide [DMSeO]. Unknown Se species was defined as the total concentration of all unknown Se species observed during the analysis. This item is identified on the report as [Unk Se Sp].

DMSeO elutes early in the chromatographic run due to the nature of the molecule and the applied chromatographic separation method. Since this species elutes near the dead volume, additional Se species may coelute. Alternate methods can be applied, upon client request, to increase the separation of DMSeO from potentially co-eluting Se species.

Chromatographic interference, as indicated by an elevated baseline, or co-eluting peak, was observed for selenosulfate in 2109306-28. Due to potential bias, the affected result has been qualified as estimated (**J-1**). Upon client request, Brooks Applied Labs can apply a higher dilution to this sample to potentially mitigate the chromatographic interferences, but a higher dilution would elevate the detection limit for SeMet above the client's requested limit of 0.010µg/L.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOPs and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

In instances when a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample concentration, the recoveries and the relative percent difference (RPD) are not considered valid indicators of data quality. In such instances, the recoveries of the laboratory fortified blanks (BS) and/or standard reference materials (SRM) demonstrate the accuracy of the applied methods. When the spiking level was less than 25% of the native sample concentration, the spike recovery was not reported (NR) and the RPD of the MS/MSD set was not calculated (N/C).

Except for concentration qualifiers and the item noted above, all data were reported without qualification. All associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited met all NELAP requirements. For more information, please see the *Report Information* page.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Brooks Applied Labs
Jeremy@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 3/23/2020)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2), and DoD/DOE (3)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)	DoD/DOE Accredited Analytes
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn	Ag, Al, As, Ba, Ca, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Ni, Sb, Se, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)	Not Accredited
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)	Not Accredited
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury	Methyl Mercury (excluding Solids/Chemicals)
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)	Not Accredited
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)	Not Accredited
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb	Not Accredited
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs	Not Accredited
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet	Not Accredited
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)	Not Accredited
SM2340B	Non-Potable Waters	Hardness	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight	% Dry Weight

(1) ISO/IEC 17025:2017 – Certificate Number ADE-1447.02

(2) Non-Governmental NELAC Institute 2016 Standard – Certificate Number ADE-1447.01

(3) Department of Defense/Energy Consolidated Quality Systems Manual v. 5.3 – Certificate Numbers ADE-1447 for DoD, ADE-1447.03 for DOE.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FO26_WS_LAEMP_FRO_2021-09-15_N	2109306-01	WS	Sample	09/15/2021	09/23/2021
RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-02	WS	Sample	09/15/2021	09/23/2021
RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-03	WS	Sample	09/15/2021	09/23/2021
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N	2109306-04	WS	Sample	09/16/2021	09/23/2021
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL	2109306-05	WS	Sample	09/16/2021	09/23/2021
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL	2109306-06	WS	Sample	09/16/2021	09/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N	2109306-07	WS	Sample	09/16/2021	09/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL	2109306-08	WS	Sample	09/16/2021	09/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL	2109306-09	WS	Sample	09/16/2021	09/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N	2109306-10	WS	Sample	09/17/2021	09/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL	2109306-11	WS	Sample	09/17/2021	09/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL	2109306-12	WS	Sample	09/17/2021	09/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N	2109306-13	WS	Sample	09/19/2021	09/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL	2109306-14	WS	Sample	09/19/2021	09/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL	2109306-15	WS	Sample	09/19/2021	09/23/2021
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N	2109306-16	WS	Sample	09/19/2021	09/23/2021
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NAL	2109306-17	WS	Sample	09/19/2021	09/23/2021
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NAL	2109306-18	WS	Sample	09/19/2021	09/23/2021
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N	2109306-19	WS	Sample	09/20/2021	09/23/2021
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL	2109306-20	WS	Sample	09/20/2021	09/23/2021
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL	2109306-21	WS	Sample	09/20/2021	09/23/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N	2109306-22	WS	Sample	09/20/2021	09/23/2021
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL	2109306-23	WS	Sample	09/20/2021	09/23/2021
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL	2109306-24	WS	Sample	09/20/2021	09/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N	2109306-25	WS	Sample	09/14/2021	09/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL	2109306-26	WS	Sample	09/14/2021	09/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL	2109306-27	WS	Sample	09/14/2021	09/23/2021
RG_KICK_WS_LAEMP_FRO_2021-09-14_N	2109306-28	WS	Sample	09/14/2021	09/23/2021
RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL	2109306-29	WS	Sample	09/14/2021	09/23/2021
RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL	2109306-30	WS	Sample	09/14/2021	09/23/2021
RG_MP1_WS_LAEMP_FRO_2021-09-15_N	2109306-31	WS	Sample	09/15/2021	09/23/2021
RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-32	WS	Sample	09/15/2021	09/23/2021
RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-33	WS	Sample	09/15/2021	09/23/2021
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N	2109306-34	WS	Sample	09/15/2021	09/23/2021
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-35	WS	Sample	09/15/2021	09/23/2021
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-36	WS	Sample	09/15/2021	09/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N	2109306-37	WS	Sample	09/15/2021	09/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-38	WS	Sample	09/15/2021	09/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL	2109306-39	WS	Sample	09/15/2021	09/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL	2109306-40	WS	Sample	09/17/2021	09/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL	2109306-41	WS	Sample	09/17/2021	09/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_NP	2109306-42	WS	Sample	09/17/2021	09/23/2021

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
DMSeO	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
MeSe(IV)	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
MeSe(VI)	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
Se	Water	EPA 1638 Mod	09/27/2021	09/28/2021	B212663	S211115
Se(IV)	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
Se(VI)	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
SeCN	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
SeMet	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
SeSO3	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081
Unk Se Sp	Water	SOP BAL-4201	09/22/2021	09/24/2021	B212622	S211081

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FO26_WS_LAEMP_FRO_2021-09-15_N										
2109306-01	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-01	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-01	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-01	Se(IV)	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
2109306-01	Se(VI)	WS	D	0.411		0.010	0.055	µg/L	B212622	S211081
2109306-01	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-01	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-01	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-01	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-02	Se	WS	TR	0.654		0.165	0.528	µg/L	B212663	S211115
RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-03	Se	WS	D	0.800		0.165	0.528	µg/L	B212663	S211115
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N										
2109306-04	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-04	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-04	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-04	Se(IV)	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
2109306-04	Se(VI)	WS	D	1.18		0.010	0.055	µg/L	B212622	S211081
2109306-04	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-04	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-04	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-04	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL										
2109306-05	Se	WS	TR	1.09		0.165	0.528	µg/L	B212663	S211115
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL										
2109306-06	Se	WS	D	1.13		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N										
2109306-07	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-07	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-07	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-07	Se(IV)	WS	D	0.116		0.010	0.075	µg/L	B212622	S211081
2109306-07	Se(VI)	WS	D	37.8		0.010	0.055	µg/L	B212622	S211081
2109306-07	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-07	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-07	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-07	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL										
2109306-08	Se	WS	TR	32.8		0.165	0.528	µg/L	B212663	S211115
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL										
2109306-09	Se	WS	D	33.8		0.165	0.528	µg/L	B212663	S211115
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N										
2109306-10	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-10	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-10	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-10	Se(IV)	WS	D	0.131		0.010	0.075	µg/L	B212622	S211081
2109306-10	Se(VI)	WS	D	40.9		0.010	0.055	µg/L	B212622	S211081
2109306-10	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-10	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-10	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-10	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL										
2109306-11	Se	WS	TR	36.2		0.165	0.528	µg/L	B212663	S211115
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL										
2109306-12	Se	WS	D	37.2		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N										
2109306-13	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-13	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-13	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-13	Se(IV)	WS	D	0.104		0.010	0.075	µg/L	B212622	S211081
2109306-13	Se(VI)	WS	D	107		0.010	0.055	µg/L	B212622	S211081
2109306-13	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-13	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-13	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-13	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL										
2109306-14	Se	WS	TR	100		0.165	0.528	µg/L	B212663	S211115
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL										
2109306-15	Se	WS	D	97.9		0.165	0.528	µg/L	B212663	S211115
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N										
2109306-16	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-16	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-16	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-16	Se(IV)	WS	D	0.125		0.010	0.075	µg/L	B212622	S211081
2109306-16	Se(VI)	WS	D	112		0.010	0.055	µg/L	B212622	S211081
2109306-16	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-16	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-16	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-16	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NAL										
2109306-17	Se	WS	TR	96.0		0.165	0.528	µg/L	B212663	S211115
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NAL										
2109306-18	Se	WS	D	95.0		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N										
2109306-19	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-19	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-19	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-19	Se(IV)	WS	D	0.025	J	0.010	0.075	µg/L	B212622	S211081
2109306-19	Se(VI)	WS	D	0.685		0.010	0.055	µg/L	B212622	S211081
2109306-19	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-19	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-19	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-19	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL										
2109306-20	Se	WS	TR	0.589		0.165	0.528	µg/L	B212663	S211115
RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL										
2109306-21	Se	WS	D	0.732		0.165	0.528	µg/L	B212663	S211115
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N										
2109306-22	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-22	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-22	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-22	Se(IV)	WS	D	0.479		0.010	0.075	µg/L	B212622	S211081
2109306-22	Se(VI)	WS	D	40.0		0.010	0.055	µg/L	B212622	S211081
2109306-22	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-22	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-22	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-22	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL										
2109306-23	Se	WS	TR	38.1		0.165	0.528	µg/L	B212663	S211115
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL										
2109306-24	Se	WS	D	37.9		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N										
2109306-25	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-25	MeSe(IV)	WS	D	0.012	J	0.010	0.025	µg/L	B212622	S211081
2109306-25	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-25	Se(IV)	WS	D	0.398		0.010	0.075	µg/L	B212622	S211081
2109306-25	Se(VI)	WS	D	72.3		0.010	0.055	µg/L	B212622	S211081
2109306-25	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-25	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-25	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-25	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL										
2109306-26	Se	WS	TR	75.3		0.165	0.528	µg/L	B212663	S211115
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL										
2109306-27	Se	WS	D	71.1		0.165	0.528	µg/L	B212663	S211115
RG_KICK_WS_LAEMP_FRO_2021-09-14_N										
2109306-28	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-28	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-28	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-28	Se(IV)	WS	D	0.071	J	0.010	0.075	µg/L	B212622	S211081
2109306-28	Se(VI)	WS	D	140		0.010	0.055	µg/L	B212622	S211081
2109306-28	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-28	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-28	SeSO3	WS	D	≤ 0.010	J-1 U	0.010	0.055	µg/L	B212622	S211081
2109306-28	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL										
2109306-29	Se	WS	TR	154		0.165	0.528	µg/L	B212663	S211115
RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL										
2109306-30	Se	WS	D	128		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_MP1_WS_LAEMP_FRO_2021-09-15_N										
2109306-31	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-31	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-31	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-31	Se(IV)	WS	D	0.235		0.010	0.075	µg/L	B212622	S211081
2109306-31	Se(VI)	WS	D	49.6		0.010	0.055	µg/L	B212622	S211081
2109306-31	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-31	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-31	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-31	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-32	Se	WS	TR	53.1		0.165	0.528	µg/L	B212663	S211115
RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-33	Se	WS	D	45.4		0.165	0.528	µg/L	B212663	S211115
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N										
2109306-34	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-34	MeSe(IV)	WS	D	0.015	J	0.010	0.025	µg/L	B212622	S211081
2109306-34	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-34	Se(IV)	WS	D	0.384		0.010	0.075	µg/L	B212622	S211081
2109306-34	Se(VI)	WS	D	76.2		0.010	0.055	µg/L	B212622	S211081
2109306-34	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-34	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-34	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-34	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-35	Se	WS	TR	69.8		0.165	0.528	µg/L	B212663	S211115
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-36	Se	WS	D	67.9		0.165	0.528	µg/L	B212663	S211115

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N										
2109306-37	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-37	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-37	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-37	Se(IV)	WS	D	0.085		0.010	0.075	µg/L	B212622	S211081
2109306-37	Se(VI)	WS	D	87.1		0.010	0.055	µg/L	B212622	S211081
2109306-37	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-37	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-37	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-37	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-38	Se	WS	TR	81.2		0.165	0.528	µg/L	B212663	S211115
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL										
2109306-39	Se	WS	D	93.6		0.165	0.528	µg/L	B212663	S211115
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL										
2109306-40	Se	WS	TR	36.9		0.165	0.528	µg/L	B212663	S211115
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL										
2109306-41	Se	WS	D	36.9		0.165	0.528	µg/L	B212663	S211115
RG_FOUSH_WS_LAEMP_FRO_2021-09-17_NP										
2109306-42	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-42	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-42	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-42	Se(IV)	WS	D	0.375		0.010	0.075	µg/L	B212622	S211081
2109306-42	Se(VI)	WS	D	40.7		0.010	0.055	µg/L	B212622	S211081
2109306-42	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B212622	S211081
2109306-42	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B212622	S211081
2109306-42	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B212622	S211081
2109306-42	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B212622	S211081

Accuracy & Precision Summary

Batch: B212622
Lab Matrix: Water
Method: SOP BAL-4201

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B212622-BS1	**Blank Spike, (2124033)**								
	MeSe(IV)		5.095	5.615	µg/L	110%	75-125		
	Se(IV)		5.000	4.997	µg/L	100%	75-125		
	Se(VI)		5.000	5.149	µg/L	103%	75-125		
	SeCN		5.015	5.067	µg/L	101%	75-125		
	SeMet		4.932	5.109	µg/L	104%	75-125		
B212622-DUP6	**Duplicate, (2109306-42)**								
	DMSeO	ND		ND	µg/L			N/C	25
	MeSe(IV)	ND		ND	µg/L			N/C	25
	MeSe(VI)	ND		ND	µg/L			N/C	25
	Se(IV)	0.375		0.375	µg/L			0.1%	25
	Se(VI)	40.70		40.58	µg/L			0.3%	25
	SeCN	ND		ND	µg/L			N/C	25
	SeMet	ND		ND	µg/L			N/C	25
	SeSO3	ND		ND	µg/L			N/C	25
	Unk Se Sp	ND		ND	µg/L			N/C	25
B212622-MS6	**Matrix Spike, (2109306-42)**								
	Se(IV)	0.375	4.900	5.126	µg/L	97%	75-125		
	Se(VI)	40.70	5.100	47.06	µg/L	NR	75-125		
	SeCN	ND	1.962	1.902	µg/L	97%	75-125		
	SeMet	ND	1.977	1.909	µg/L	97%	75-125		
B212622-MSD6	**Matrix Spike Duplicate, (2109306-42)**								
	Se(IV)	0.375	4.900	5.143	µg/L	97%	75-125	0.3%	25
	Se(VI)	40.70	5.100	46.88	µg/L	NR	75-125	N/C	25
	SeCN	ND	1.962	1.870	µg/L	95%	75-125	2%	25
	SeMet	ND	1.977	1.920	µg/L	97%	75-125	0.6%	25

Accuracy & Precision Summary

Batch: B212663
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B212663-BS1	**Blank Spike, (2104075)**								
	Se		200.0	175.6	µg/L	88%	75-125		
B212663-BS2	**Blank Spike, (2104075)**								
	Se		200.0	173.3	µg/L	87%	75-125		
B212663-SRM1	**Reference Material (2110008, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	12.47	µg/L	87%	75-125		
B212663-SRM2	**Reference Material (2110008, TMDA 51.5 Reference Standard - Bottle 8 - SRM)**								
	Se		14.30	12.52	µg/L	88%	75-125		
B212663-DUP1	**Duplicate, (2109306-02)**								
	Se	0.654		0.747	µg/L			13%	20
B212663-MS1	**Matrix Spike, (2109306-02)**								
	Se	0.654	220.0	203.7	µg/L	92%	75-125		
B212663-MSD1	**Matrix Spike Duplicate, (2109306-02)**								
	Se	0.654	220.0	202.7	µg/L	92%	75-125	0.5%	20
B212663-DUP2	**Duplicate, (2109306-23)**								
	Se	38.06		37.36	µg/L			2%	20
B212663-MS2	**Matrix Spike, (2109306-23)**								
	Se	38.06	220.0	238.1	µg/L	91%	75-125		
B212663-MSD2	**Matrix Spike Duplicate, (2109306-23)**								
	Se	38.06	220.0	271.3	µg/L	106%	75-125	13%	20

Method Blanks & Reporting Limits

Batch: B212622
Matrix: Water
Method: SOP BAL-4201
Analyte: DMSeO

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(IV)

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(VI)

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: Se(IV)

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Analyte: Se(VI)

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: SeCN

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.010 **MRL:** 0.010

Analyte: SeMet

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: SeSO3

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: Unk Se Sp

Sample	Result	Units
B212622-BLK1	0.00	µg/L
B212622-BLK2	0.00	µg/L
B212622-BLK3	0.00	µg/L
B212622-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Method Blanks & Reporting Limits

Batch: B212663
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B212663-BLK1	0.023	µg/L
B212663-BLK2	0.052	µg/L
B212663-BLK3	0.010	µg/L
B212663-BLK4	-0.054	µg/L

Average: 0.008
Limit: 0.480

MDL: 0.150
MRL: 0.480

Sample Containers

Lab ID: 2109306-01
Sample: RG_FO26_WS_LAEMP_FRO_2021-09-15_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-02
Sample: RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-03
Sample: RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-04
Sample: RG_HENUP_WS_LAEMP_FRO_2021-09-16_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Sample Containers

Lab ID: 2109306-05
Sample: RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-06
Sample: RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-07
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-08
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-09
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/16/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-10
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-11
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-12
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-13
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-14
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-15
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-16
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-17
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NA L
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-18
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NA L
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/19/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-19
Sample: RG_UFR1_WS_LAEMP_FRO_2021-09-20_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-20
Sample: RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-21
Sample: RG_UFR1_WS_LAEMP_FRO_2021-09-20_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-22
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Sample Containers

Lab ID: 2109306-23
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-24
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/20/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-25
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-26
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-27
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-28
Sample: RG_KICK_WS_LAEMP_FRO_2021-09-14_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-29
Sample: RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-30
Sample: RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/14/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-31
Sample: RG_MP1_WS_LAEMP_FRO_2021-09-15_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-32
Sample: RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-33
Sample: RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-34
Sample: RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Sample Containers

Lab ID: 2109306-35
Sample: RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-36
Sample: RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-37
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Lab ID: 2109306-38
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Sample Containers

Lab ID: 2109306-39
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/15/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-40
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-41
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-09-17_N_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2127026	<2	Styrofoam Cooler #3 - 2109306

Lab ID: 2109306-42
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-09-17_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 09/17/2021
Received: 09/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
B	XTRA_VOL	15 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306
C	XTRA_VOL	60 mL	na	none	na	na	Styrofoam Cooler #4 - 2109306

Shipping Containers

Styrofoam Cooler #3 - 2109306

Received: September 23, 2021 7:15
Tracking No: PAPS#RWHV87409 via Courier
Coolant Type: Blue Ice
Temperature: 6.6 °C

Description: Styrofoam Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#30

Custody seals present? No
Custody seals intact? No
COC present? Yes

Styrofoam Cooler #4 - 2109306

Received: September 23, 2021 7:15
Tracking No: PAPS#RWHV87409 via Courier
Coolant Type: Blue Ice
Temperature: 0.5 °C

Description: Styrofoam Cooler
Damaged in transit? No
Returned to client? No
Comments: IR#31

Custody seals present? No
Custody seals intact? No
COC present? Yes

COC ID: September FRO LAEMP

TURNAROUND TIME: Regular

PROJECT/CLIENT INFO			
Facility Name / Job#	REP		
Project Manager	Mike Pope		
Email	mike.pope@teck.com		
Address	421 Pine Avenue		
City	Sparwood	Province	BC
Postal Code	V0B 2G0	Country	Canada
Phone Number	250-910-8755		

LABORATORY			
Lab Name	Brooks Applied Labs		
Lab Contact	Ben Wozniak		
Email	ben@brooksapplied.com		
Address	18804 North Creek Parkway		
City	Bothell	Province	WA
Postal Code	98011	Country	USA
Phone Number	206-632-6206		

OTHER INFO				
Report Format / Distribution		Excel	PDF	EDD
Email 1:	mike.pope@teck.com	X	X	X
Email 2:	teckcoal@equisonline.com			X
Email 3:	jessica.fitz@teck.com	X	X	X
Email 4:	tbowron@minnow.ca	X	X	X
Email 5:	pschnurr@minnow.ca	X	X	X
Email 5:				
PO number	VPO00748540			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium	Selenium Speciation
FIL.										
PRESERV.									F	F
RG_FO26_WS_LAEMP_FRO_2021-09-15_N	RG_FO26	WS	No	September 15, 2021	1015	G	1			1
RG_FO26_WS_LAEMP_FRO_2021-09-15_N_NAL	RG_FO26	WS	No	September 15, 2021	1015	G	2	1	1	
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N	RG_HENUP	WS	No	9/16/2021	915	G	1			1
RG_HENUP_WS_LAEMP_FRO_2021-09-16_N_NAL	RG_HENUP	WS	No	9/16/2021	915	G	2	1	1	
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N	RG_FOUNGD	WS	No	9/16/2021	1535	G	1			1
RG_FOUNGD_WS_LAEMP_FRO_2021-09-16_N_NAL	RG_FOUNGD	WS	No	9/16/2021	1535	G	2	1	1	
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N	RG_FODNGD	WS	No	9/17/2021	1340	G	1			1
RG_FODNGD_WS_LAEMP_FRO_2021-09-17_N_NAL	RG_FODNGD	WS	No	9/17/2021	1340	G	2	1	1	
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N	RG_FRGHSC	WS	No	9/19/2021	1500	G	1			1
RG_FRGHSC_WS_LAEMP_FRO_2021-09-19_N_NAL	RG_FRGHSC	WS	No	9/19/2021	1500	G	2	1	1	
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N	RG_FRUPO	WS	No	9/19/2021	900	G	1			1
RG_FRUPO_WS_LAEMP_FRO_2021-09-19_N_NAL	RG_FRUPO	WS	No	9/19/2021	900	G	2	1	1	
RG_UFRI_WS_LAEMP_FRO_2021-09-20_N	RG_UFRI	WS	No	9/20/2021	900	G	1			1
RG_UFRI_WS_LAEMP_FRO_2021-09-20_N_NAL	RG_UFRI	WS	No	9/20/2021	900	G	2	1	1	
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N	RG_FOUKI	WS	No	9/20/2021	1115	G	1			1
RG_FOUKI_WS_LAEMP_FRO_2021-09-20_N_NAL	RG_FOUKI	WS	No	9/20/2021	1115	G	2	1	1	
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N	RG_SCOUTDS	WS	No	9/14/2021	800	G	1			1
RG_SCOUTDS_WS_LAEMP_FRO_2021-09-14_N_NAL	RG_SCOUTDS	WS	No	9/14/2021	800	G	2	1	1	
RG_KICK_WS_LAEMP_FRO_2021-09-14_N	RG_KICK	WS	No	9/14/2021	1215	G	1			1
RG_KICK_WS_LAEMP_FRO_2021-09-14_N_NAL	RG_KICK	WS	No	9/14/2021	1215	G	2	1	1	
RG_MP1_WS_LAEMP_FRO_2021-09-15_N	RG_MP1	WS	No	9/15/2021	1430	G	1			1
RG_MP1_WS_LAEMP_FRO_2021-09-15_N_NAL	RG_MP1	WS	No	9/15/2021	1430	G	2	1	1	
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N	RG_FRCP1SW	WS	No	9/15/2021	1100	G	1			1
RG_FRCP1SW_WS_LAEMP_FRO_2021-09-15_N_NAL	RG_FRCP1SW	WS	No	9/15/2021	1100	G	2	1	1	

RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N	RG_FRSCH2	WS	No	9/15/2021	800	G	1				1									
RG_FRSCH2_WS_LAEMP_FRO_2021-09-15_N_NAL	RG_FRSCH2	WS	No	9/15/2021	800	G	2		1	1										

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Total and dissolved selenium samples have NOT been preserved. Dissolved selenium have been filtered. Speciation samples have been filtered and frozen.	Jennifer Ings/Minnow	September 21, 2021	S. Z. (BAL)	9/23/21 0715

SERVICE REQUEST (rush - subject to availability)						
Regular (default)	X	Sampler's Name	Jennifer Ings	Mobile #	519-500-3444
Priority (2-3 business days) - 50% surcharge					
Emergency (1 Business Day) - 100% surcharge		Sampler's Signature	[signature]	Date/Time	September 21, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 87409

Sparwood, BC · Terrace, BC · Red Deer, AB · Vancouver, BC · Calgary, AB · Montreal, QC · Prince George, BC · Edmonton, AB · Spokane, WA · Elkford, BC · Ft. McMurray, AB · Shelby, MT · Tumbler Ridge, BC · Hinton, AB · Gillette, WY

INVOICE TO	DATE Sept 22 21
BILL OF LADING #	PURCHASE ORDER NUMBER
SHIPPER (FROM) Teck Coal Ltd	CONSIGNEE (TO) Brooks Applied Labs
STREET West Line Creek Treatment	STREET 18804 N Creek Parkway
CITY/PROVINCE Sparwood, BC · POSTAL CODE	CITY/PROVINCE Bothell WA · POSTAL CODE 98011
SPECIAL INSTRUCTIONS	

PIECES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
4	Coolers - Water Samples	97 LBS
	PAPS# RWHV87409	

FREIGHT CHARGES
SHIPPER TO CHECK ☐PREPAID ☐COLLECT
RATE · WAITING · XPU · CHARGES · FSC · US · SUB TOTAL · GST · TOTAL $

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY · PICK UP TIME · DRIVER'S SIGNATURE - DELIVERY BY · FINISH TIME

SHIPPER PRINT Rob Bencze
SHIPPER SIGN [signature]
CONSIGNEE PRINT SEAN ZIGAM
CONSIGNEE SIGN [signature]
DATE 09/23/21
TIME 7:15
NUMBER OF PIECES RECEIVED 4

GST # 864540390RT0001

WHITE: Office · YELLOW: Carrier · PINK: Consignee · GOLDENROD: Shipper

Cooler ID: Styrofoam Cooler # 3 **COC** Y/N **Temperature:** 6.6 **IR:** 30

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	RG		EV		GH					
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	40mL Glass		40mL Glass	40mL Glass	40mL Glass					

Opened By: S. Z. 9/23/21 **Date:** 9/23/21

COPY

Effective 7/29/20

2109306

STRAIGHT BILL OF LADING NOT NEGOTIABLE

RW HOT SHOT SERVICE INC. 250-425-7447

24 Hour Hot Shot Service

No. 87409

Sparwood, BC / Terrace, BC / Red Deer, AB — Vancouver, BC / Calgary, AB / Montreal, QC — Prince George, BC / Edmonton, AB / Spokane, WA — Elkford, BC / Ft. McMurray, AB / Shelby, MT — Tumbler Ridge, BC / Hinton, AB / Gillette, WY

INVOICE TO:

DATE: Sept 22-21

BILL OF LADING#:

PURCHASE ORDER NUMBER:

SHIPPER (FROM): Teck Coal Ltd.

STREET: West Line Creek Treatment

CITY/PROVINCE: Sparwood, BC

POSTAL CODE:

CONSIGNEE (TO): Brooks Applied Labs

STREET: 18804 N. Creek Parkway

CITY/PROVINCE: Bothell, WA

POSTAL CODE: 98011

SPECIAL INSTRUCTIONS:

PIECES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
4	Coolers - Water Samples	97 LBS

PAPS# RWHV87409

FREIGHT CHARGES SHIPPER TO CHECK: PREPAID / COLLECT

FEE / WAITING / XPU / CHARGES / FSC / UN / SUB TOTAL / GST / TOTAL $

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY | PICK UP TIME | DRIVER'S SIGNATURE - DELIVERY BY | FINISH TIME

CONSIGNEE PRINT: SEAN ZIGAM

CONSIGNEE SIGN:

DATE: 09/23/21

TIME: 7:15

NUMBER OF PIECES RECEIVED: 4

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROD: Shipper

GST #

Cooler ID: Styrofoam Cooler #4 **COC (Y/N):** Y **Temperature:** 0.5 **IR:** 31

Coolant Type: Ice **Blue Ice** Ambient

Notes:

Sampling Locations:	RG		GH		EV					
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:		60mL		60mL		60mL				

Opened By: CVL **Date:** 9/23/21

COPY

Effective 7/29/20 Revision 004

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

January 12, 2022

Teck Resources Limited - Vancouver
Mike Pope
421 Pine Avenue
Sparwood, B.C. CANADA V0B2G0
mike.pope@teck.com

Re: REP

Dear Mike Pope,

On December 23, 2021, Brooks Applied Labs (BAL) received thirty-six (36) aqueous samples. The samples were logged-in for total recoverable selenium [*Se*], dissolved Se [*Se*], and Se speciation analyses, according to the chain-of-custody (COC) forms.

The **Sampling Time** values listed on the chain-of-custody (COC) form did not exactly match the corresponding **Sampling Time** terms listed on container labels for samples 2112275 -01, 2112275 -02, and 2112275 -03. The discrepancies are described in the table below.

Sample ID	Sample Name (From COC)	Sample Time (From COC)	Sample Time (From Container Label)	Analysis
2112275 -01	RG_UFR1_WS_LAEMP_FRO_2021-12-NP	10:30	10:00	Se Speciation
2112275 -02	RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL	10:30	10:00	Total Recoverable Se
2112275 -03	RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL	10:30	10:00	Dissolved Recoverable Se

The samples described in the table above were logged and reported in using the **Sampling Time** listed on the COC form.

The total recoverable selenium fractions for samples *RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL* (2112275-14) and *RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL* (2112275-44) arrived in broken containers. The containers for 2112275-14 and 2112275-44 were still intact, however, the containers were compromised, and some volume had escaped. Containers for 2112275-14 and 2112275-44 were enclosed in the plastic bags used for secondary containment; there was minimal risk of cross contamination. Volume from 2112275-14 and 2112275-44 was transferred to a new glass containers used to support total recoverable selenium analyses. Since it is unclear how the selenium content in samples 2112275-14 and 2112275-44 was impacted, the total recoverable selenium results for 2112275-14 and 2112275-44 have been qualified as estimated (**J-1**).

The total recoverable selenium fraction for sample *RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL* (2112275-32) was received in an empty container. There was no sample volume available for quantitation. Total recoverable Se is not reported for *RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL* (2112275-32). The dissolved Se counterpart (2112275-33) was received, and results are reported for this fraction.

The sample fractions logged in for Se speciation and dissolved Se had been field-filtered prior to receipt at BAL; sample fractions for total recoverable Se and dissolved Se had also been preserved by the client prior to receipt. All samples were stored according to BAL SOPs.

Total Recoverable Se and Dissolved Se
Each aqueous sample fraction for dissolved Se was digested in a closed vessel (bomb) with nitric and hydrochloric acids. The resulting digests were analyzed for Se content via inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS instrumentation uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com.

Total recoverable selenium results for 2112275-14 and 2112275-44 have been qualified as estimated (**J-1**) due to broken/damaged containers during shipment.

Selenium Speciation
Each aqueous sample was analyzed for selenium speciation using ion chromatography inductively coupled plasma collision reaction cell mass spectrometry (IC-ICP-CRC-MS). Selenium species are chromatographically separated on an ion exchange column and then quantified using inductively coupled plasma collision reaction cell mass spectrometry (ICP-CRC-MS); for more information on this determinative technique, please visit the *Interference Reduction Technology* section on our website. The chromatographic method applied for the analyses provides greater retention of methylseleninic acid and selenomethionine, allowing for more definitive quantitation of these species.

In accordance with the quotation issued for this project, selenium speciation was defined as dissolved selenite [*Se(IV)*], selenate [*Se(VI)*], selenocyanate [*SeCN*], methylseleninic acid [*MeSe(IV)*], methaneselenonic acid [*MeSe(VI)*], selenomethionine [*SeMet*], selenosulfate [$SeSO_3$], and dimethylselenoxide [*DMSeO*]. Unknown Se species was defined as the total concentration of all unknown Se species observed during the analysis. This item is identified on the report as [*Unk Se Sp*].

DMSeO elutes early in the chromatographic run due to the nature of the molecule and the applied chromatographic separation method. Since this species elutes near the dead volume, additional selenium species may coelute. Alternate methods can be applied, upon client request, to increase the separation of DMSeO from potentially co-eluting selenium species.

Poor mass balance was observed in the *RG_FOUCL_WS_LAEMP_FRO_2021-12_NP* sample when Se speciation results (2112275-13) were compared to corresponding the corresponding dissolved Se (2112275-15) result. Container labels were checked and there was no indication of samples mis-labeled. Re-analyses confirmed the results, suggesting sampling heterogeneity. Consequently, no additional corrective actions are necessary. The reported results are deemed representative of the submitted containers.

The results were not method blank corrected, as described in the calculations section of the relevant BAL SOPs and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

In instances where a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample concentration, the recoveries and the relative percent difference (RPD) are not considered valid indicators of data quality. In such instances, the recoveries of the laboratory fortified blanks (BS) and/or standard reference materials (SRM) demonstrate the accuracy of the applied methods. When the spiking level was less than 25% of the native sample concentration, the spike recovery was not reported (**NR**) and the relative percent difference (RPD) of the MS/MSD set was not calculated (**N/C**).

In cases when either the native sample concentration was non-detectable (reported as less than or equal to the MDL) and/or the corresponding DUP result was also non-detectable, the RPD between the two values was not calculated (**N/C**).

Except for concentration qualifiers and items noted above, all data were reported without qualification. All associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information, please see the *Report Information* page.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Jeremy Maute
Senior Project Manager
Jeremy@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/> or review Tables 1 and 2 in our Accreditation Information. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	**MS**	matrix spike
BAL	Brooks Applied Labs	**MSD**	matrix spike duplicate
BLK	method blank	**ND**	non-detect
BS	blank spike	**NR**	non-reportable
CAL	calibration standard	**N/C**	not calculated
CCB	continuing calibration blank	**PS**	post preparation spike
CCV	continuing calibration verification	**REC**	percent recovery
COC	chain of custody record	**RPD**	relative percent difference
D	dissolved fraction	**SCV**	secondary calibration verification
DUP	duplicate	**SOP**	standard operating procedure
IBL	instrument blank	**SRM**	reference material
ICV	initial calibration verification	**T**	total fraction
MDL	method detection limit	**TR**	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

(Effective 3/23/2020)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Accreditation Information

Table 1. Accredited method/matrix/analytes for TNI

Issued by: State of Florida Dept. of Health (The NELAC Institute 2016 Standard)
Issued on: July 1, 2021; Valid to: June 30, 2022
Certificate Number: E87982-37

Method	Matrix	TNI Accredited Analyte(s)
EPA 1638	Non-Potable Waters	Ag, Cd, Cu, Ni, Pb, Sb, Se, Tl, Zn
EPA 200.8	Non-Potable Waters	Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
EPA 6020	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, U, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Tl, V, Zn
BAL-5000	Non-Potable Waters	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn, Hardness
	Solids/Chemicals	Ag, As, B, Be, Cd, Co, Cr, Cu, Pb, Mo, Ni, Sb, Se, Sn, Sr, Tl, V, Zn
	Biological	Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Tl, V, Zn
EPA 1640	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn
EPA 1631E	Non-Potable Waters, Solids/Chemicals & Biological	Total Mercury
EPA 1630	Non-Potable Waters	Methyl Mercury
BAL-3200	Solids/Chemicals & Biological	Methyl Mercury
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs
BAL-4201	Non-Potable Waters	Se(IV), Se(VI)
BAL-4300	Non-Potable Waters Solid/Chemicals	Cr(VI)
SM2340B	Non-Potable Waters	Hardness

Accreditation Information

Table 2. Accredited method/matrix/analytes for ISO (1), Non-Governmental TNI (2), and DoD/DOE (3)

Issued by: ANAB

Issued on: September 21, 2021; Valid to: March 30, 2024

Method	Matrix	ISO and Non-Gov. TNI Accredited Analyte(s)	DoD/DOE Accredited Analytes
EPA 1638 Mod EPA 200.8 Mod EPA 6020 Mod BAL-5000	Non-Potable Waters	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, U, V, Zn	Ag, Al, As, Ba, Ca, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Ni, Sb, Se, V, Zn
	Solids/Chemicals & Biological	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sn, Sr, Tl, V, Zn Hg (Biological Only)	Not Accredited
EPA 1640 Mod	Non-Potable Waters	Cd, Cu, Pb, Ni, Zn Ag, As, Cr, Co, Se, Tl, V (ISO Only)	Not Accredited
EPA 1631E Mod BAL-3100	Non-Potable Waters, Solids/Chemicals & Biological/Food	Total Mercury	Total Mercury
EPA 1630 Mod BAL-3200	Non-Potable Waters, Solids/Chemicals Biological	Methyl Mercury	Methyl Mercury (excluding Solids/Chemicals)
EPA 1632A Mod BAL-3300	Non-Potable Waters	Inorganic Arsenic (ISO Only)	Not Accredited
	Biological/Food Solids/Chemicals	Inorganic Arsenic (ISO Only)	Not Accredited
AOAC 2015.01 Mod BAL-5000	Food	As, Cd, Hg, Pb	Not Accredited
BAL-4100	Non-Potable Waters	As(III), As(V), DMAs, MMAs	Not Accredited
	Biological by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4101	Food by BAL-4117	Inorganic Arsenic, DMAs, MMAs (ISO Only)	Not Accredited
BAL-4201	Non-Potable Waters	Se(IV), Se(VI), SeCN, SeMet	Not Accredited
BAL-4300	Non-Potable Waters, Solid/Chemicals	Cr(VI)	Cr(VI)
SM 3500-Fe BAL-4500	Non-Potable Waters	Fe, Fe(II) (ISO Only)	Not Accredited
SM2340B	Non-Potable Waters	Hardness	Hardness
SM 2540G BAL-0501	Solids/Chemicals & Biological	% Dry Weight	% Dry Weight

(1) ISO/IEC 17025:2017 – Certificate Number ADE-1447.02

(2) Non-Governmental NELAC Institute 2016 Standard – Certificate Number ADE-1447.01

(3) Department of Defense/Energy Consolidated Quality Systems Manual v. 5.3 – Certificate Numbers ADE-1447 for DoD, ADE-1447.03 for DOE.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_UFR1_WS_LAEMP_FRO_2021-12-NP	2112275-01	WS	Sample	12/16/2021	12/23/2021
RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL	2112275-02	WS	Sample	12/16/2021	12/23/2021
RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL	2112275-03	WS	Sample	12/16/2021	12/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	2112275-04	WS	Sample	12/14/2021	12/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL	2112275-05	WS	Sample	12/14/2021	12/23/2021
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL	2112275-06	WS	Sample	12/14/2021	12/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	2112275-07	WS	Sample	12/13/2021	12/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL	2112275-08	WS	Sample	12/13/2021	12/23/2021
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL	2112275-09	WS	Sample	12/13/2021	12/23/2021
RG_FODHE_WS_LAEMP_FRO_2021-12_NP	2112275-10	WS	Sample	12/15/2021	12/23/2021
RG_FODHE_WS_LAEMP_FRO_2021-12_NAL	2112275-11	WS	Sample	12/15/2021	12/23/2021
RG_FODHE_WS_LAEMP_FRO_2021-12_NAL	2112275-12	WS	Sample	12/15/2021	12/23/2021
RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	2112275-13	WS	Sample	12/15/2021	12/23/2021
RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL	2112275-14	WS	Sample	12/15/2021	12/23/2021
RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL	2112275-15	WS	Sample	12/15/2021	12/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	2112275-16	WS	Sample	12/15/2021	12/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL	2112275-17	WS	Sample	12/15/2021	12/23/2021
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL	2112275-18	WS	Sample	12/15/2021	12/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	2112275-19	WS	Sample	12/15/2021	12/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL	2112275-20	WS	Sample	12/15/2021	12/23/2021
RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL	2112275-21	WS	Sample	12/15/2021	12/23/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_MP1_WS_LAEMP_FRO_2021-12_NP	2112275-22	WS	Sample	12/15/2021	12/23/2021
RG_MP1_WS_LAEMP_FRO_2021-12_NAL	2112275-23	WS	Sample	12/15/2021	12/23/2021
RG_MP1_WS_LAEMP_FRO_2021-12_NAL	2112275-24	WS	Sample	12/15/2021	12/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	2112275-25	WS	Sample	12/15/2021	12/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL	2112275-26	WS	Sample	12/15/2021	12/23/2021
RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL	2112275-27	WS	Sample	12/15/2021	12/23/2021
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	2112275-28	WS	Sample	12/14/2021	12/23/2021
RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL	2112275-29	WS	Sample	12/14/2021	12/23/2021
RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL	2112275-30	WS	Sample	12/14/2021	12/23/2021
RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	2112275-31	WS	Sample	12/14/2021	12/23/2021
RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL	2112275-32	WS	Sample	12/14/2021	12/23/2021
RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL	2112275-33	WS	Sample	12/14/2021	12/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	2112275-34	WS	Sample	12/09/2021	12/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL	2112275-35	WS	Sample	12/09/2021	12/23/2021
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL	2112275-36	WS	Sample	12/09/2021	12/23/2021
RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	2112275-37	WS	Sample	12/09/2021	12/23/2021
RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL	2112275-38	WS	Sample	12/09/2021	12/23/2021
RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL	2112275-39	WS	Sample	12/09/2021	12/23/2021
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	2112275-40	WS	Sample	12/14/2021	12/23/2021
RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL	2112275-41	WS	Sample	12/14/2021	12/23/2021
RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL	2112275-42	WS	Sample	12/14/2021	12/23/2021

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	2112275-43	WS	Sample	12/13/2021	12/23/2021
RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL	2112275-44	WS	Sample	12/13/2021	12/23/2021
RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL	2112275-45	WS	Sample	12/13/2021	12/23/2021
RG_FODPO_WS_LAEMP_FRO_2021-12_NP	2112275-46	WS	Sample	12/14/2021	12/23/2021
RG_FODPO_WS_LAEMP_FRO_2021-12_NAL	2112275-47	WS	Sample	12/14/2021	12/23/2021
RG_FODPO_WS_LAEMP_FRO_2021-12_NAL	2112275-48	WS	Sample	12/14/2021	12/23/2021
RG_FO22_WS_LAEMP_FRO_2021-12_NP	2112275-49	WS	Sample	12/13/2021	12/23/2021
RG_FO22_WS_LAEMP_FRO_2021-12_NAL	2112275-50	WS	Sample	12/13/2021	12/23/2021
RG_FO22_WS_LAEMP_FRO_2021-12_NAL	2112275-51	WS	Sample	12/13/2021	12/23/2021
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	2112275-52	WS	Sample	12/13/2021	12/23/2021
RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL	2112275-53	WS	Sample	12/13/2021	12/23/2021
RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL	2112275-54	WS	Sample	12/13/2021	12/23/2021

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
DMSeO	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
DMSeO	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
MeSe(IV)	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
MeSe(IV)	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
MeSe(VI)	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
MeSe(VI)	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
Se	Water	EPA 1638 Mod	12/29/2021	01/04/2022	B213541	S220006
Se	Water	EPA 1638 Mod	01/05/2022	01/06/2022	B220020	S220028
Se(IV)	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
Se(IV)	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
Se(VI)	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
Se(VI)	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
SeCN	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
SeCN	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
SeMet	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
SeMet	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
SeSO3	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
SeSO3	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008
Unk Se Sp	Water	SOP BAL-4201	12/29/2021	12/30/2021	B213526	S211465
Unk Se Sp	Water	SOP BAL-4201	12/29/2021	01/08/2022	B213526	S220008

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_UFR1_WS_LAEMP_FRO_2021-12-NP										
2112275-01	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-01	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-01	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-01	Se(IV)	WS	D	0.045	J	0.010	0.075	µg/L	B213526	S211465
2112275-01	Se(VI)	WS	D	0.758		0.010	0.055	µg/L	B213526	S211465
2112275-01	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-01	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-01	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-01	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL										
2112275-02	Se	WS	TR	1.02		0.165	0.528	µg/L	B213541	S220006
RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL										
2112275-03	Se	WS	D	0.946		0.165	0.528	µg/L	B213541	S220006
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP										
2112275-04	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-04	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-04	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-04	Se(IV)	WS	D	0.068	J	0.010	0.075	µg/L	B213526	S211465
2112275-04	Se(VI)	WS	D	86.2		0.010	0.055	µg/L	B213526	S211465
2112275-04	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-04	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-04	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-04	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL										
2112275-05	Se	WS	TR	87.4		0.165	0.528	µg/L	B213541	S220006
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL										
2112275-06	Se	WS	D	84.3		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP										
2112275-07	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-07	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-07	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-07	Se(IV)	WS	D	0.095		0.010	0.075	µg/L	B213526	S211465
2112275-07	Se(VI)	WS	D	99.6		0.010	0.055	µg/L	B213526	S211465
2112275-07	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-07	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-07	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-07	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL										
2112275-08	Se	WS	TR	91.7		0.165	0.528	µg/L	B213541	S220006
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL										
2112275-09	Se	WS	D	91.2		0.165	0.528	µg/L	B213541	S220006
RG_FODHE_WS_LAEMP_FRO_2021-12_NP										
2112275-10	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-10	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-10	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-10	Se(IV)	WS	D	0.096		0.010	0.075	µg/L	B213526	S211465
2112275-10	Se(VI)	WS	D	34.2		0.010	0.055	µg/L	B213526	S211465
2112275-10	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-10	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-10	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-10	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FODHE_WS_LAEMP_FRO_2021-12_NAL										
2112275-11	Se	WS	TR	31.7		0.165	0.528	µg/L	B213541	S220006
RG_FODHE_WS_LAEMP_FRO_2021-12_NAL										
2112275-12	Se	WS	D	31.1		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUCL_WS_LAEMP_FRO_2021-12_NP										
2112275-13	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-13	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-13	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-13	Se(IV)	WS	D	0.050	J	0.010	0.075	µg/L	B213526	S211465
2112275-13	Se(VI)	WS	D	11.9		0.010	0.055	µg/L	B213526	S211465
2112275-13	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-13	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-13	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-13	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL										
2112275-14	Se	WS	TR	30.4	J-1	0.165	0.528	µg/L	B213541	S220006
RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL										
2112275-15	Se	WS	D	28.4		0.165	0.528	µg/L	B213541	S220006
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP										
2112275-16	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-16	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-16	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-16	Se(IV)	WS	D	0.177		0.010	0.075	µg/L	B213526	S211465
2112275-16	Se(VI)	WS	D	57.2		0.010	0.055	µg/L	B213526	S211465
2112275-16	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-16	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-16	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-16	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL										
2112275-17	Se	WS	TR	56.0		0.165	0.528	µg/L	B213541	S220006
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL										
2112275-18	Se	WS	D	51.4		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FODNGD_WS_LAEMP_FRO_2021-12_NP										
2112275-19	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-19	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-19	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-19	Se(IV)	WS	D	0.387		0.010	0.075	µg/L	B213526	S211465
2112275-19	Se(VI)	WS	D	70.3		0.010	0.055	µg/L	B213526	S211465
2112275-19	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-19	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-19	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-19	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL										
2112275-20	Se	WS	TR	65.6		0.165	0.528	µg/L	B213541	S220006
RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL										
2112275-21	Se	WS	D	67.3		0.165	0.528	µg/L	B213541	S220006
RG_MP1_WS_LAEMP_FRO_2021-12_NP										
2112275-22	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-22	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-22	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-22	Se(IV)	WS	D	0.280		0.010	0.075	µg/L	B213526	S211465
2112275-22	Se(VI)	WS	D	63.8		0.010	0.055	µg/L	B213526	S211465
2112275-22	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-22	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-22	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-22	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_MP1_WS_LAEMP_FRO_2021-12_NAL										
2112275-23	Se	WS	TR	64.3		0.165	0.528	µg/L	B213541	S220006
RG_MP1_WS_LAEMP_FRO_2021-12_NAL										
2112275-24	Se	WS	D	63.4		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOUSH_WS_LAEMP_FRO_2021-12_NP										
2112275-25	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-25	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-25	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-25	Se(IV)	WS	D	0.319		0.010	0.075	µg/L	B213526	S211465
2112275-25	Se(VI)	WS	D	67.1		0.010	0.055	µg/L	B213526	S211465
2112275-25	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-25	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-25	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-25	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL										
2112275-26	Se	WS	TR	62.9		0.165	0.528	µg/L	B213541	S220006
RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL										
2112275-27	Se	WS	D	64.4		0.165	0.528	µg/L	B213541	S220006
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP										
2112275-28	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-28	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-28	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-28	Se(IV)	WS	D	0.289		0.010	0.075	µg/L	B213526	S211465
2112275-28	Se(VI)	WS	D	62.6		0.010	0.055	µg/L	B213526	S211465
2112275-28	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-28	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-28	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-28	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL										
2112275-29	Se	WS	TR	58.8		0.165	0.528	µg/L	B213541	S220006
RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL										
2112275-30	Se	WS	D	61.4		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBKS_WS_LAEMP_FRO_2021-12_NP										
2112275-31	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-31	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-31	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-31	Se(IV)	WS	D	0.280		0.010	0.075	µg/L	B213526	S211465
2112275-31	Se(VI)	WS	D	62.6		0.010	0.055	µg/L	B213526	S211465
2112275-31	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-31	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-31	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-31	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL										
2112275-33	Se	WS	D	56.5		0.165	0.528	µg/L	B220020	S220028
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP										
2112275-34	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-34	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-34	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-34	Se(IV)	WS	D	0.416		0.010	0.075	µg/L	B213526	S211465
2112275-34	Se(VI)	WS	D	74.9		0.010	0.055	µg/L	B213526	S211465
2112275-34	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-34	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-34	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-34	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL										
2112275-35	Se	WS	TR	91.2		0.165	0.528	µg/L	B213541	S220006
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL										
2112275-36	Se	WS	D	89.4		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FOBSC_WS_LAEMP_FRO_2021-12_NP										
2112275-37	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-37	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-37	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-37	Se(IV)	WS	D	0.407		0.010	0.075	µg/L	B213526	S211465
2112275-37	Se(VI)	WS	D	77.9		0.010	0.055	µg/L	B213526	S211465
2112275-37	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-37	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-37	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-37	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL										
2112275-38	Se	WS	TR	84.6		0.165	0.528	µg/L	B213541	S220006
RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL										
2112275-39	Se	WS	D	86.3		0.165	0.528	µg/L	B213541	S220006
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP										
2112275-40	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-40	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-40	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-40	Se(IV)	WS	D	0.369		0.010	0.075	µg/L	B213526	S211465
2112275-40	Se(VI)	WS	D	101		0.010	0.055	µg/L	B213526	S211465
2112275-40	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-40	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-40	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-40	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL										
2112275-41	Se	WS	TR	95.7		0.165	0.528	µg/L	B213541	S220006
RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL										
2112275-42	Se	WS	D	95.5		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP										
2112275-43	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-43	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-43	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-43	Se(IV)	WS	D	0.116		0.010	0.075	µg/L	B213526	S211465
2112275-43	Se(VI)	WS	D	95.6		0.010	0.055	µg/L	B213526	S211465
2112275-43	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-43	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-43	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-43	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL										
2112275-44	Se	WS	TR	93.0	J-1	0.165	0.528	µg/L	B213541	S220006
RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL										
2112275-45	Se	WS	D	89.9		0.165	0.528	µg/L	B213541	S220006
RG_FODPO_WS_LAEMP_FRO_2021-12_NP										
2112275-46	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-46	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-46	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-46	Se(IV)	WS	D	0.083		0.010	0.075	µg/L	B213526	S211465
2112275-46	Se(VI)	WS	D	88.3		0.010	0.055	µg/L	B213526	S211465
2112275-46	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S211465
2112275-46	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S211465
2112275-46	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S211465
2112275-46	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S211465
RG_FODPO_WS_LAEMP_FRO_2021-12_NAL										
2112275-47	Se	WS	TR	82.6		0.165	0.528	µg/L	B213541	S220006
RG_FODPO_WS_LAEMP_FRO_2021-12_NAL										
2112275-48	Se	WS	D	84.2		0.165	0.528	µg/L	B213541	S220006

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
RG_FO22_WS_LAEMP_FRO_2021-12_NP										
2112275-49	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-49	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-49	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-49	Se(IV)	WS	D	0.169		0.010	0.075	µg/L	B213526	S220008
2112275-49	Se(VI)	WS	D	105		0.010	0.055	µg/L	B213526	S220008
2112275-49	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S220008
2112275-49	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-49	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S220008
2112275-49	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S220008
RG_FO22_WS_LAEMP_FRO_2021-12_NAL										
2112275-50	Se	WS	TR	83.8		0.165	0.528	µg/L	B213541	S220006
RG_FO22_WS_LAEMP_FRO_2021-12_NAL										
2112275-51	Se	WS	D	84.2		0.165	0.528	µg/L	B213541	S220006
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP										
2112275-52	DMSeO	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-52	MeSe(IV)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-52	MeSe(VI)	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-52	Se(IV)	WS	D	0.181		0.010	0.075	µg/L	B213526	S220008
2112275-52	Se(VI)	WS	D	95.1		0.010	0.055	µg/L	B213526	S220008
2112275-52	SeCN	WS	D	≤ 0.010	U	0.010	0.050	µg/L	B213526	S220008
2112275-52	SeMet	WS	D	≤ 0.010	U	0.010	0.025	µg/L	B213526	S220008
2112275-52	SeSO3	WS	D	≤ 0.010	U	0.010	0.055	µg/L	B213526	S220008
2112275-52	Unk Se Sp	WS	D	≤ 0.010	U	0.010	0.075	µg/L	B213526	S220008
RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL										
2112275-53	Se	WS	TR	76.0		0.165	0.528	µg/L	B213541	S220006
RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL										
2112275-54	Se	WS	D	74.8		0.165	0.528	µg/L	B213541	S220006

Accuracy & Precision Summary

Batch: B213526
Lab Matrix: Water
Method: SOP BAL-4201

Sample	Analyte	Native	Spike	Result	Units	REC	REC Limits	RPD	RPD Limits
B213526-BS1	**Blank Spike, (2124033)**								
	MeSe(IV)		5.095	5.499	µg/L	108%	75-125		
	Se(IV)		5.000	5.089	µg/L	102%	75-125		
	Se(VI)		5.000	4.850	µg/L	97%	75-125		
	SeCN		5.015	4.851	µg/L	97%	75-125		
	SeMet		4.932	4.941	µg/L	100%	75-125		
B213526-DUP1	**Duplicate, (2112260-18)**								
	DMSeO	0.015		0.016	µg/L			3%	25
	MeSe(IV)	ND		ND	µg/L			N/C	25
	MeSe(VI)	ND		ND	µg/L			N/C	25
	Se(IV)	0.519		0.511	µg/L			1%	25
	Se(VI)	91.30		91.56	µg/L			0.3%	25
	SeCN	ND		ND	µg/L			N/C	25
	SeMet	ND		ND	µg/L			N/C	25
	SeSO3	ND		ND	µg/L			N/C	25
	Unk Se Sp	ND		ND	µg/L			N/C	25
B213526-MS1	**Matrix Spike, (2112260-18)**								
	Se(IV)	0.519	4.900	5.448	µg/L	101%	75-125		
	Se(VI)	91.30	5.100	97.11	µg/L	NR	75-125		
	SeCN	ND	1.962	1.897	µg/L	97%	75-125		
	SeMet	ND	1.977	1.920	µg/L	97%	75-125		
B213526-MSD1	**Matrix Spike Duplicate, (2112260-18)**								
	Se(IV)	0.519	4.900	5.411	µg/L	100%	75-125	0.7%	25
	Se(VI)	91.30	5.100	96.41	µg/L	NR	75-125	N/C	25
	SeCN	ND	1.962	1.890	µg/L	96%	75-125	0.4%	25
	SeMet	ND	1.977	1.921	µg/L	97%	75-125	0.05%	25

Accuracy & Precision Summary

Batch: B213526
Lab Matrix: Water
Method: SOP BAL-4201

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B213526-DUP2	**Duplicate, (2112275-16)**								
	DMSeO	ND		ND	µg/L			N/C	25
	MeSe(IV)	ND		ND	µg/L			N/C	25
	MeSe(VI)	ND		ND	µg/L			N/C	25
	Se(IV)	0.177		0.171	µg/L			3%	25
	Se(VI)	57.20		55.84	µg/L			2%	25
	SeCN	ND		ND	µg/L			N/C	25
	SeMet	ND		ND	µg/L			N/C	25
	SeSO3	ND		ND	µg/L			N/C	25
	Unk Se Sp	ND		ND	µg/L			N/C	25
B213526-MS2	**Matrix Spike, (2112275-16)**								
	Se(IV)	0.177	4.900	5.208	µg/L	103%	75-125		
	Se(VI)	57.20	5.100	62.97	µg/L	NR	75-125		
	SeCN	ND	1.962	1.913	µg/L	98%	75-125		
	SeMet	ND	1.977	1.881	µg/L	95%	75-125		
B213526-MSD2	**Matrix Spike Duplicate, (2112275-16)**								
	Se(IV)	0.177	4.900	5.149	µg/L	101%	75-125	1%	25
	Se(VI)	57.20	5.100	62.11	µg/L	NR	75-125	N/C	25
	SeCN	ND	1.962	1.840	µg/L	94%	75-125	4%	25
	SeMet	ND	1.977	1.851	µg/L	94%	75-125	2%	25

Accuracy & Precision Summary

Batch: B213541
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B213541-BS1	**Blank Spike, (2128021)**								
	Se		200.0	176.4	µg/L	88%	75-125		
B213541-BS2	**Blank Spike, (2128021)**								
	Se		200.0	180.1	µg/L	90%	75-125		
B213541-BS3	**Blank Spike, (2128021)**								
	Se		200.0	177.6	µg/L	89%	75-125		
B213541-SRM1	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	12.77	µg/L	89%	75-125		
B213541-SRM2	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	12.72	µg/L	89%	75-125		
B213541-SRM3	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	12.89	µg/L	90%	75-125		
B213541-DUP2	**Duplicate, (2112272-02)**								
	Se	25.18		24.35	µg/L			3%	20
B213541-MS2	**Matrix Spike, (2112272-02)**								
	Se	25.18	220.0	224.9	µg/L	91%	75-125		
B213541-MSD2	**Matrix Spike Duplicate, (2112272-02)**								
	Se	25.18	220.0	227.7	µg/L	92%	75-125	1%	20
B213541-DUP3	**Duplicate, (2112273-02)**								
	Se	0.799		0.894	µg/L			11%	20
B213541-MS3	**Matrix Spike, (2112273-02)**								
	Se	0.799	220.0	196.8	µg/L	89%	75-125		

Accuracy & Precision Summary

Batch: B213541
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B213541-MSD3	**Matrix Spike Duplicate, (2112273-02)**								
	Se	0.799	220.0	195.0	µg/L	88%	75-125	0.9%	20
B213541-DUP4	**Duplicate, (2112275-05)**								
	Se	87.36		81.38	µg/L			7%	20
B213541-MS4	**Matrix Spike, (2112275-05)**								
	Se	87.36	220.0	282.3	µg/L	89%	75-125		
B213541-MSD4	**Matrix Spike Duplicate, (2112275-05)**								
	Se	87.36	220.0	285.9	µg/L	90%	75-125	1%	20
B213541-DUP5	**Duplicate, (2112275-17)**								
	Se	56.01		51.81	µg/L			8%	20
B213541-MS5	**Matrix Spike, (2112275-17)**								
	Se	56.01	220.0	243.7	µg/L	85%	75-125		
B213541-MSD5	**Matrix Spike Duplicate, (2112275-17)**								
	Se	56.01	220.0	245.2	µg/L	86%	75-125	0.6%	20

Accuracy & Precision Summary

Batch: B220020
Lab Matrix: Water
Method: EPA 1638 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits		RPD & Limits	
B220020-BS1	**Blank Spike, (2128021)**								
	Se		200.0	166.7	µg/L	83%	75-125		
B220020-BS2	**Blank Spike, (2128021)**								
	Se		200.0	172.1	µg/L	86%	75-125		
B220020-BS3	**Blank Spike, (2128021)**								
	Se		200.0	168.8	µg/L	84%	75-125		
B220020-SRM1	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	11.59	µg/L	81%	75-125		
B220020-SRM2	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	12.58	µg/L	88%	75-125		
B220020-SRM3	**Reference Material (2145003, TMDA 51.5 Reference Standard - Bottle 2 - SRM)**								
	Se		14.30	11.51	µg/L	80%	75-125		
B220020-DUP1	**Duplicate, (2112251-10)**								
	Se	675.8		682.7	µg/L			1%	20
B220020-MS1	**Matrix Spike, (2112251-10)**								
	Se	675.8	220.0	842.4	µg/L	76%	75-125		
B220020-DUP2	**Duplicate, (2201001-11)**								
	Se	5.686		5.572	µg/L			2%	20
B220020-MS2	**Matrix Spike, (2201001-11)**								
	Se	5.686	220.0	190.6	µg/L	84%	75-125		
B220020-MSD2	**Matrix Spike Duplicate, (2201001-11)**								
	Se	5.686	220.0	172.1	µg/L	76%	75-125	10%	20

Method Blanks & Reporting Limits

Batch: B213526
Matrix: Water
Method: SOP BAL-4201
Analyte: DMSeO

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(IV)

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Analyte: MeSe(VI)

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: Se(IV)

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Analyte: Se(VI)

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: SeCN

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.010 **MRL:** 0.010

Analyte: SeMet

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.005 **MRL:** 0.005

Method Blanks & Reporting Limits

Analyte: SeSO3

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.011 **MRL:** 0.011

Analyte: Unk Se Sp

Sample	Result	Units
B213526-BLK1	0.00	µg/L
B213526-BLK2	0.00	µg/L
B213526-BLK3	0.00	µg/L
B213526-BLK4	0.00	µg/L

Average: 0.000 **MDL:** 0.002
Limit: 0.015 **MRL:** 0.015

Method Blanks & Reporting Limits

Batch: B213541
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B213541-BLK1	0.159	µg/L
B213541-BLK2	0.139	µg/L
B213541-BLK3	0.129	µg/L
B213541-BLK4	0.140	µg/L
Average:	0.142	
Limit:	0.480	

MDL: 0.150
MRL: 0.480

Method Blanks & Reporting Limits

Batch: B220020
Matrix: Water
Method: EPA 1638 Mod
Analyte: Se

Sample	Result	Units
B220020-BLK1	-0.010	µg/L
B220020-BLK2	-0.034	µg/L
B220020-BLK3	-0.022	µg/L
B220020-BLK4	-0.047	µg/L

Average: -0.028
Limit: 0.480

MDL: 0.150
MRL: 0.480

Sample Containers

Lab ID: 2112275-01
Sample: RG_UFR1_WS_LAEMP_FRO_2021-12-NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/16/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-02
Sample: RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/16/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-03
Sample: RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/16/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-04
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-05
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-06
Sample: RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-07
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-08
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-09
Sample: RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-10
Sample: RG_FODHE_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-11
Sample: RG_FODHE_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-12
Sample: RG_FODHE_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-13
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-14
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-15
Sample: RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-16
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-17
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-18
Sample: RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-19
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-20
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-21
Sample: RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-22
Sample: RG_MP1_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-23
Sample: RG_MP1_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-24
Sample: RG_MP1_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-25
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-26
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-27
Sample: RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/15/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-28
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-29
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-30
Sample: RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-31
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-32
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-33
Sample: RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-34
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-35
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-36
Sample: RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-37
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-38
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-39
Sample: RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/09/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-40
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-41
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-42
Sample: RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-43
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-44
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-45
Sample: RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-46
Sample: RG_FODPO_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-47
Sample: RG_FODPO_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-48
Sample: RG_FODPO_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/14/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-49
Sample: RG_FO22_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Sample Containers

Lab ID: 2112275-50
Sample: RG_FO22_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-51
Sample: RG_FO22_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-52
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-12_NP
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Cent Tube 15mL Se-Sp	15 mL	na	none	na	na	Cooler #3 - 2112275
B	XTRA_VOL	15 mL	na	none	na	na	Cooler #3 - 2112275
C	XTRA_VOL	60 mL	na	none	na	na	Cooler #3 - 2112275

Lab ID: 2112275-53
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Lab ID: 2112275-54
Sample: RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL
Report Matrix: WS
Sample Type: Sample + Sum
Collected: 12/13/2021
Received: 12/23/2021

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided - TM	60 mL	na	10% HNO3 (BAL)	2142027	<2	Cooler #3 - 2112275

Shipping Containers

Cooler #3 - 2112275

Received: December 23, 2021 7:13
Tracking No: PAPS#RWHV85287 via Courier
Coolant Type: Ice
Temperature: 1.1 °C

Description: Styrofoam Cooler
Damaged in transit? No
Returned to client? No
Comments: IR# 31

Custody seals present? No
Custody seals intact? No
COC present? Yes

Confidential

Teck

COC ID:	September FRO LAEMP	TURNAROUND TIME:	Regular

PROJECT/CLIENT INFO

Facility Name / Job#	REP
Project Manager	Mike Pope
Email	mike.pope@teck.com
Address	421 Pine Avenue
City	Sparwood
Province	BC
Postal Code	V0B 2G0
Country	Canada
Phone Number	250-910-8755

LABORATORY

Lab Name	Brooks Applied Labs
Lab Contact	Ben Wozniak
Email	ben@brooksapplied.com
Address	18804 North Creek Parkway
City	Bothell
Province	WA
Postal Code	98011
Country	USA
Phone Number	206-632-6206

OTHER INFO

Report Format / Distribution		Excel	PDF	EDD
Email 1:	mike.pope@teck.com	X	X	X
Email 2:	teckcoal@equisonline.com			X
Email 3:	jessica.ritz@teck.com	X	X	X
Email 4:	philip.low@teck.ca	X	X	X
Email 5:	lbowron@minnow.ca	X	X	X
Email 6:	pschnurr@minnow.ca	X	X	X
Email 7:	eric.gietz@teck.ca	X	X	X
PO number	VPO00748540			

SAMPLE DETAILS / **ANALYSIS REQUESTED** (Filtered - F: Field, L: Lab, FL: Field & Lab, N: None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Total Selenium	Dissolved Selenium (F)	Selenium Speciation (F)
RG_UFR1_WS_LAEMP_FRO_2021-12-NP	RG_UFR1	WS	No	12/16/2021	10:30	G	1			1
RG_UFR1_WS_LAEMP_FRO_2021-12-NP_NAL	RG_UFR1	WS	No	12/16/2021	10:30	G	2	1	1	
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP	RG_FRSCH2	WS	No	12/14/2021	9:30	G	1			1
RG_FRSCH2_WS_LAEMP_FRO_2021-12_NP_NAL	RG_FRSCH2	WS	No	12/14/2021	9:30	G	2	1	1	
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NP	RG_FRGHSC	WS	No	12/13/2021	13:00	G	1			1
RG_FRGHSC_WS_LAEMP_FRO_2021-12_NAL	RG_FRGHSC	WS	No	12/13/2021	13:00	G	2	1	1	
RG_FODHE_WS_LAEMP_FRO_2021-12_NP	RG_FODHE	WS	No	12/15/2021	10:00	G	1			1
RG_FODHE_WS_LAEMP_FRO_2021-12_NAL	RG_FODHE	WS	No	12/15/2021	10:00	G	2	1	1	
RG_FOUCL_WS_LAEMP_FRO_2021-12_NP	RG_FOUCL	WS	No	12/15/2021	11:40	G	1			1
RG_FOUCL_WS_LAEMP_FRO_2021-12_NAL	RG_FOUCL	WS	No	12/15/2021	11:40	G	2	1	1	
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NP	RG_FOUNGD	WS	No	12/15/2021	10:30	G	1			1
RG_FOUNGD_WS_LAEMP_FRO_2021-12_NAL	RG_FOUNGD	WS	No	12/15/2021	10:30	G	2	1	1	
RG_FODNGD_WS_LAEMP_FRO_2021-12_NP	RG_FODNGD	WS	No	12/15/2021	13:30	G	1			1
RG_FODNGD_WS_LAEMP_FRO_2021-12_NAL	RG_FODNGD	WS	No	12/15/2021	13:30	G	2	1	1	
RG_MP1_WS_LAEMP_FRO_2021-12_NP	RG_MP1	WS	No	12/15/2021	13:20	G	1			1
RG_MP1_WS_LAEMP_FRO_2021-12_NAL	RG_MP1	WS	No	12/15/2021	13:20	G	2	1	1	
RG_FOUSH_WS_LAEMP_FRO_2021-12_NP	RG_FOUSH	WS	No	12/15/2021	14:30	G	1			1
RG_FOUSH_WS_LAEMP_FRO_2021-12_NAL	RG_FOUSH	WS	No	12/15/2021	14:30	G	2	1	1	
RG_FOUKI_WS_LAEMP_FRO_2021-12_NP	RG_FOUKI	WS	No	12/14/2021	14:00	G	1			1
RG_FOUKI_WS_LAEMP_FRO_2021-12_NAL	RG_FOUKI	WS	No	12/14/2021	14:00	G	2	1	1	
RG_FOBKS_WS_LAEMP_FRO_2021-12_NP	RG_FOBKS	WS	No	12/14/2021	14:00	G	1			1
RG_FOBKS_WS_LAEMP_FRO_2021-12_NAL	RG_FOBKS	WS	No	12/14/2021	14:00	G	2	1	1	

RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NP	RG_SCOUTDS	WS	No	12/9/2021	9:45	G	1			1								
RG_SCOUTDS_WS_LAEMP_FRO_2021-12_NAL	RG_SCOUTDS	WS	No	12/9/2021	9:45	G	2	1	1									
RG_FOBSC_WS_LAEMP_FRO_2021-12_NP	RG_FOBSC	WS	No	12/9/2021	12:00	G	1			1								
RG_FOBSC_WS_LAEMP_FRO_2021-12_NAL	RG_FOBSC	WS	No	12/9/2021	12:00	G	2	1	1									
RG_FOBCP_WS_LAEMP_FRO_2021-12_NP	RG_FOBCP	WS	No	12/14/2021	11:00	G	1			1								
RG_FOBCP_WS_LAEMP_FRO_2021-12_NAL	RG_FOBCP	WS	No	12/14/2021	11:00	G	2	1	1									
RG_FRUPO_WS_LAEMP_FRO_2021-12_NP	RG_FRUPO	WS	No	12/13/2021	9:30	G	1			1								
RG_FRUPO_WS_LAEMP_FRO_2021-12_NAL	RG_FRUPO	WS	No	12/13/2021	9:30	G	2	1	1									
RG_FODPO_WS_LAEMP_FRO_2021-12_NP	RG_FODPO	WS	No	12/14/2021	9:45	G	1			1								
RG_FODPO_WS_LAEMP_FRO_2021-12_NAL	RG_FODPO	WS	No	12/14/2021	9:45	G	2	1	1									
RG_FO22_WS_LAEMP_FRO_2021-12_NP	RG_FO22	WS	No	12/13/2021	12:10	G	1			1								
RG_FO22_WS_LAEMP_FRO_2021-12_NAL	RG_FO22	WS	No	12/13/2021	12:10	G	2	1	1									
RG_FOUEW_WS_LAEMP_FRO_2021-12_NP	RG_FOUEW	WS	No	12/13/2021	14:30	G	1			1								
RG_FOUEW_WS_LAEMP_FRO_2021-12_NAL	RG_FOUEW	WS	No	12/13/2021	14:30	G	2	1	1									

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Total and dissolved selenium samples have NOT been preserved. Dissolved selenium have been filtered. Speciation samples have been filtered and frozen.	Peter Schnurr/Minnow		ASG/BAL	12/23/21 7:13

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	Peter Schnurr	Mobile #	647-967-9403
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time	December 16, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 85287

Sparwood, BC
Terrace, BC
Red Deer, AB

Vancouver, BC
Calgary, AB
Montreal, QC

Prince George, BC
Edmonton, AB
Spokane, WA

Elkford, BC
Ft. McMurray, AB
Shelby, MT

Tumbler Ridge, BC
Hinton, AB
Gillette, WY

INVOICE TO	DATE Dec 22 21
BILL OF LADING #	PURCHASE ORDER NUMBER
SHIPPER (FROM)	CONSIGNEE (TO)
STREET	STREET
CITY/PROVINCE / POSTAL CODE	CITY/PROVINCE / POSTAL CODE
SPECIAL INSTRUCTIONS	

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
3		62 LBS
	PAPS# RWHV85287	

FREIGHT CHARGES
SHIPPER TO CHECK
☐PREPAID ☐COLLECT
If not indicated, shipping will automatically move collect.

FEE
WAITING
XPU
CHARGES
FSC
US
SUB TOTAL
GST
TOTAL $
IF AT OWNER'S RISK, WRITE ORO HERE

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $

DRIVER'S SIGNATURE - PICK UP BY	PICK UP TIME	DRIVER'S SIGNATURE - DELIVERY BY	FINISH TIME
		[signature]	0713

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice, therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, on the case of failure to make delivery within nine (9) months from the date of shipment. (b)The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consigned at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT	CONSIGNEE PRINT	DATE
SHIPPER SIGN	CONSIGNEE SIGN	TIME
		NUMBER OF PIECES RECEIVED 3

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper GST #864540398RT0001

AMIGOS PRINTING

ce ASG 12/23/21

Cooler ID: Cooler #3 COC (Y/N) Temperature: ~~2.1~~ 1.1°C IR: 31

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	EV		RG		GH			
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:		Comp plastic	40 mL	Comp HDPE plastic		40mL		

Opened By: ASG Date: 12/23/21

2112275

04

Effective 7/29/20

STRAIGHT BILL OF LADING
NOT NEGOTIABLE

RW HOT SHOT SERVICE INC.
250-425-7447
24 Hour Hot Shot Service

No. 85287

Sparwood, BC / Terrace, BC / Red Deer, AB
Vancouver, BC / Calgary, AB / Montreal, QC
Prince George, BC / Edmonton, AB / Spokane, WA
Elkford, BC / Ft. McMurray, AB / Shelby, MT
Tumbler Ridge, BC / Hinton, AB / Gillette, WY

INVOICE TO	DATE
BILL OF LADING #	PURCHASE ORDER NUMBER
SHIPPER (FROM)	CONSIGNEE (TO)
STREET	STREET
CITY/PROVINCE / POSTAL CODE	CITY/PROVINCE / POSTAL CODE

SPECIAL INSTRUCTIONS

PACKAGES	DESCRIPTION OF ARTICLES AND SPECIAL MARKS	WEIGHT (Subject to Correction)
3		62 LBS
	PAPS# RWHV85287	

FREIGHT CHARGES
SHIPPER TO CHECK
☐PREPAID ☐COLLECT
If not indicated, shipping will automatically move collect.

FEE —
WAITING
XPU
CHARGES
FSC
US —
SUB TOTAL
GST — —
TOTAL $
IF AT OWNER'S RISK, WRITE ORD HERE

UNIT #

DECLARED VALUATION: Maximum liability of carrier is $2.00 per lb. ($4.41 per kilogram) unless declared valuation states otherwise. $ —

DRIVER'S SIGNATURE - PICK UP BY	PICK UP TIME	DRIVER'S SIGNATURE - DELIVERY BY	FINISH TIME
		[signature]	0712

NOTICE OF CLAIM: (a) No carrier is liable for loss, damage or delay of any goods under the Bill of Lading unless notice therefor setting out particulars of the origin, destination and date of shipment of the goods and the estimated amount claimed in respect of such loss, damage or delay is given in writing to the originating carrier or the delivering carrier within sixty (60) days after the delivery of the goods, or in the case of failure to make delivery within nine (9) months from the date of shipment. (b) The final statement of the claim must be filed within nine (9) months from the date of shipment together with a copy of the paid freight bill. RECEIVED at the point of origin on the date specified from the consignor mentioned herein, the property herein described, in apparent good order, except as noted (contents and condition of contents of package unknown) marked, consigned and destined as indicated below, which the carrier agrees to carry and to deliver to the consignee at the said destination, subject to the rates and classification in effect on the date of shipment. It is mutually agreed, as to each carrier of all or any of the goods over all or any portion of the route to destination, and as to each party of any time interested in all or any of the goods, that every service to be performed hereunder shall be subject to all the conditions standard Bill of Lading, in power at the date of issuing, which are hereto agreed by the consignor and accepted for himself and his assigns. Printed or written, including conditions set aside by the standard Bill of Lading, in power at the date of issuing, which are hereby agreed by the consignor and accepted for himself and his assigns. The Contract for the carriage of the goods listed in the Bill of Lading is governed by regulation in force in the jurisdiction at the time and place of shipment and is subject to the conditions set out in such conditions.

SHIPPER PRINT	CONSIGNEE PRINT	DATE
SHIPPER SIGN	CONSIGNEE SIGN	TIME
		NUMBER OF PIECES RECEIVED 3

WHITE: Office YELLOW: Carrier PINK: Consignee GOLDENROAD: Shipper GST #864540398RT0001

AMIGOS PRINTING

Cooler ID: Cooler #1 COC (Y/N) Temperature: 1.0 IR: 30

Coolant Type: Ice Blue Ice Ambient

Notes:

Sampling Locations:	WL		RG		MIN					
Sample Types:	T/D	SP	T/D	SP	T/D	SP	T/D	SP	T/D	SP
Container Types:	40mL Glass	125mL Plastic		125mL Glass		125mL Glass				

Opened By: [signature] Date: 12/23/21

COPY

Effective 7/29/20 Revision 004

Methods and QC Report 2021

Project ID: FROLAEMP (21-11)

Client: Minnow Environmental

Prepared by:

Cordillera Consulting Inc.
Summerland, BC

Unit 1, 13216 Henry Ave B1202
Summerland, BC, V0H 1Z0
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Table of Contents

Sample Reception 3

Sample Sorting 4

Sorting Quality Control - Sorting Efficiency 6

Sorting Quality Control - Sub-Sampling QC 8

Taxonomic Effort 10

Taxonomists 10

Taxonomic QC 11

Error Summary 12

Error Rationale 12

References 18

Taxonomic Keys 18

Sample Reception

On June 24, 2021, Cordillera Consulting received 57 benthic samples from Minnow Environmental. When samples arrived to Cordillera Consulting, exterior packaging was initially inspected for damage or wet spots that would have indicated damage to the interior containers.

Samples were logged into a proprietary software database (INSTAR1) where the clients assigned sample name was recorded along with a Cordillera Consulting (CC) number for cross-reference. Each sample was checked to ensure that all sites and replicates recorded on field sheets or packing lists were delivered intact and with adequate preservative. Any missing, mislabelled or extra samples were reported to the client immediately to confirm the total numbers and correct names on the sample jars. The client representative was notified of the arrival of the shipment and provided a sample inventory once intake was completed.
See table below for sample inventory:

Table 1: Summary of sample information including Cordillera Consulting (CC) number

Sample	CC#	Date	Size	# of Jars
RG_HENUP_BIC-01_2021-06-16	CC220082	6/16/2021	400µM	1
RG_HENUP_BIC-02_2021-06-16	CC220083	6/16/2021	400µM	1
RG_HENUP_BIC-03_2021-06-16	CC220084	6/16/2021	400µM	3
RG_FODHE_BIC-01_2021-06-14	CC220085	6/14/2021	400µM	1
RG_FODHE_BIC-02_2021-06-14	CC220086	6/14/2021	400µM	2
RG_FODHE_BIC-03_2021-06-14	CC220087	6/14/2021	400µM	1
RG_MP1_BIC-01_2021-06-14	CC220088	6/14/2021	400µM	1
RG_MP1_BIC-02_2021-06-14	CC220089	6/14/2021	400µM	1
RG_MP1_BIC-03_2021-06-14	CC220090	6/14/2021	400µM	1
RG_FOUCL_BIC-01_2021-06-14	CC220091	6/14/2021	400µM	1
RG_FOUCL_BIC-02_2021-06-14	CC220092	6/14/2021	400µM	1
RG_FOUCL_BIC-03_2021-06-14	CC220093	6/14/2021	400µM	2
RG_FOUNGD_BIC-01_2021-06-15	CC220094	6/15/2021	400µM	1
RG_FOUNGD_BIC-02_2021-06-15	CC220095	6/15/2021	400µM	2
RG_FOUNGD_BIC-03_2021-06-15	CC220096	6/15/2021	400µM	1
RG_FODNGD_BIC-01_2021-06-15	CC220097	6/15/2021	400µM	2
RG_FODNGD_BIC-02_2021-06-15	CC220098	6/15/2021	400µM	2
RG_FODNGD_BIC-03_2021-06-15	CC220099	6/15/2021	400µM	2
RG_FOBKS_BIC-01_2021-06-16	CC220100	6/16/2021	400µM	1
RG_FOBKS_BIC-02_2021-06-16	CC220101	6/16/2021	400µM	2
RG_FOBKS_BIC-03_2021-06-16	CC220102	6/16/2021	400µM	1
RG_SCOUTDS_BIC-01_2021-06-16	CC220103	6/16/2021	400µM	2
RG_SCOUTDS_BIC-02_2021-06-16	CC220104	6/16/2021	400µM	1
RG_SCOUTDS_BIC-03_2021-06-16	CC220105	6/16/2021	400µM	2
RG_FOUKI_BIC-01_2021-06-17	CC220106	6/17/2021	400µM	1
RG_FOUKI_BIC-02_2021-06-17	CC220107	6/17/2021	400µM	1
RG_FOUKI_BIC-03_2021-06-17	CC220108	6/17/2021	400µM	1

RG_FOBCP_BIC-01_2021-06-17	CC220109	6/17/2021	400µM	1
RG_FOBCP_BIC-02_2021-06-17	CC220110	6/17/2021	400µM	2
RG_FOBCP_BIC-03_2021-06-17	CC220111	6/17/2021	400µM	2
RG_FO26_BIC-01_2021-06-14	CC220112	6/14/2021	400µM	1
RG_FO26_BIC-02_2021-06-14	CC220113	6/14/2021	400µM	2
RG_FO26_BIC-03_2021-06-14	CC220114	6/14/2021	400µM	2
RG_UFR1_BIC-01_2021-06-15	CC220115	6/15/2021	400µM	2
RG_UFR1_BIC-02_2021-06-15	CC220116	6/15/2021	400µM	2
RG_UFR1_BIC-03_2021-06-15	CC220117	6/15/2021	400µM	2
RG_FOBSC_BIC-01_2021-06-17	CC220118	6/17/2021	400µM	1
RG_FOBSC_BIC-02_2021-06-17	CC220119	6/17/2021	400µM	1
RG_FOBSC_BIC-03_2021-06-17	CC220120	6/17/2021	400µM	1
RG_FRCP1SW_BIC-01_2021-06-17	CC220121	6/17/2021	400µM	1
RG_FRCP1SW_BIC-02_2021-06-17	CC220122	6/17/2021	400µM	2
RG_FRCP1SW_BIC-03_2021-06-17	CC220123	6/17/2021	400µM	1
RG_FODPO_BIC-01_2021-06-17	CC220124	6/17/2021	400µM	3
RG_FODPO_BIC-02_2021-06-17	CC220125	6/17/2021	400µM	2
RG_FODPO_BIC-03_2021-06-17	CC220126	6/17/2021	400µM	1
RG_FRUPO_BIC-01_2021-06-18	CC220127	6/18/2021	400µM	1
RG_FRUPO_BIC-02_2021-06-18	CC220128	6/18/2021	400µM	2
RG_FRUPO_BIC-03_2021-06-18	CC220129	6/18/2021	400µM	2
RG_FOUEW_BIC-01_2021-06-18	CC220130	6/18/2021	400µM	1
RG_FOUEW_BIC-02_2021-06-18	CC220131	6/18/2021	400µM	2
RG_FOUEW_BIC-03_2021-06-18	CC220132	6/18/2021	400µM	2
RG_FO22_BIC-01_2021-06-18	CC220133	6/18/2021	400µM	2
RG_FO22_BIC-02_2021-06-18	CC220134	6/18/2021	400µM	2
RG_FO22_BIC-03_2021-06-18	CC220135	6/18/2021	400µM	1
RG_FOUSH_BIC-1_2021-06-16	CC220136	6/16/2021	400µM	1
RG_FOUSH_BIC-2_2021-06-16	CC220137	6/16/2021	400µM	1
RG_FOUSH_BIC-3_2021-06-16	CC220138	6/16/2021	400µM	1

Sample Sorting

- Using a gridded Petri dish, fine forceps and a low power stereo-microscope (Olympus, Nikon, Leica) the sorting technicians removed the invertebrates and sorted them into family/orders.
- The sorting technician kept a running tally of total numbers excluding organisms from Porifera, Nemata, Platyhelminthes, Ostracoda, Copepoda, Cladocera and terrestrial drop-ins such as aphids. These organisms were marked for their presence (given a value of 1) only and left in the sample. They were not included towards the 300-organism subsample count.
- Where specimens are broken or damaged, only heads were counted.
- Subsampling was conducted with the use of a Marchant Box.
- When using the Marchant box, cells were extracted at the same time in the order indicated by a random number table. If the 300th organism was found part way into

sorting a cell then the balance of that cell was sorted. If the organism count had not reached 300 by the 50th cell then the entire sample was sorted.

- The total number of cells sorted and the number of organisms removed were recorded manually on a bench sheet and then recorded into INSTAR1
- Organisms were stored in vials containing 80% ethanol and an interior label indicating the site names, date of sampling, site code numbers and portion subsampled. This information was also recorded on the laboratory bench sheet and on INSTAR1.
- The sorted portion of the debris was preserved and labeled separately from the unsorted portion and was tested for sorting efficiency (Sorting Quality Control – Sorting Efficiency). The unsorted portion was also labeled and preserved in separate jars.

Percent sub-sampled and total countable invertebrates pulled from the samples were summarized in the table below.

Table 2: Percent sub-sample and invertebrate count for each sample

Sample	**Date**	**CC#**	**400 micron fraction**	
			% Sampled	**# Invertebrates**
RG_HENUP_BIC-01_2021-06-16	16-Jun-21	CC220082	5%	313
RG_HENUP_BIC-02_2021-06-16	16-Jun-21	CC220083	9%	335
RG_HENUP_BIC-03_2021-06-16	16-Jun-21	CC220084	20%	346
RG_FODHE_BIC-01_2021-06-14	14-Jun-21	CC220085	5%	441
RG_FODHE_BIC-02_2021-06-14	14-Jun-21	CC220086	9%	337
RG_FODHE_BIC-03_2021-06-14	14-Jun-21	CC220087	5%	408
RG_MP1_BIC-01_2021-06-14	14-Jun-21	CC220088	9%	320
RG_MP1_BIC-02_2021-06-14	14-Jun-21	CC220089	6%	352
RG_MP1_BIC-03_2021-06-14	14-Jun-21	CC220090	5%	315
RG_FOUCL_BIC-01_2021-06-14	14-Jun-21	CC220091	8%	313
RG_FOUCL_BIC-02_2021-06-14	14-Jun-21	CC220092	5%	392
RG_FOUCL_BIC-03_2021-06-14	14-Jun-21	CC220093	7%	347
RG_FOUNGD_BIC-01_2021-06-15	15-Jun-21	CC220094	36%	425
RG_FOUNGD_BIC-02_2021-06-15	15-Jun-21	CC220095	17%	311
RG_FOUNGD_BIC-03_2021-06-15	15-Jun-21	CC220096	5%	404
RG_FODNGD_BIC-01_2021-06-15	15-Jun-21	CC220097	13%	430
RG_FODNGD_BIC-02_2021-06-15	15-Jun-21	CC220098	50%	428
RG_FODNGD_BIC-03_2021-06-15	15-Jun-21	CC220099	20%	307
RG_FOBKS_BIC-01_2021-06-16	16-Jun-21	CC220100	50%	345
RG_FOBKS_BIC-02_2021-06-16	16-Jun-21	CC220101	20%	364
RG_FOBKS_BIC-03_2021-06-16	16-Jun-21	CC220102	16%	336
RG_SCOUTDS_BIC-01_2021-06-16	16-Jun-21	CC220103	5%	392
RG_SCOUTDS_BIC-02_2021-06-16	16-Jun-21	CC220104	90%	321
RG_SCOUTDS_BIC-03_2021-06-16	16-Jun-21	CC220105	9%	349

RG_FOUKI_BIC-01_2021-06-17	17-Jun-21	CC220106	6%	353
RG_FOUKI_BIC-02_2021-06-17	17-Jun-21	CC220107	10%	321
RG_FOUKI_BIC-03_2021-06-17	17-Jun-21	CC220108	5%	552
RG_FOBCP_BIC-01_2021-06-17	17-Jun-21	CC220109	9%	343
RG_FOBCP_BIC-02_2021-06-17	17-Jun-21	CC220110	5%	343
RG_FOBCP_BIC-03_2021-06-17	17-Jun-21	CC220111	8%	343
RG_FO26_BIC-01_2021-06-14	14-Jun-21	CC220112	5%	501
RG_FO26_BIC-02_2021-06-14	14-Jun-21	CC220113	5%	336
RG_FO26_BIC-03_2021-06-14	14-Jun-21	CC220114	5%	324
RG_UFR1_BIC-01_2021-06-15	15-Jun-21	CC220115	5%	452
RG_UFR1_BIC-02_2021-06-15	15-Jun-21	CC220116	5%	331
RG_UFR1_BIC-03_2021-06-15	15-Jun-21	CC220117	5%	701
RG_FOBSC_BIC-01_2021-06-17	17-Jun-21	CC220118	20%	437
RG_FOBSC_BIC-02_2021-06-17	17-Jun-21	CC220119	9%	315
RG_FOBSC_BIC-03_2021-06-17	17-Jun-21	CC220120	7%	326
RG_FRCP1SW_BIC-01_2021-06-17	17-Jun-21	CC220121	27%	354
RG_FRCP1SW_BIC-02_2021-06-17	17-Jun-21	CC220122	40%	359
RG_FRCP1SW_BIC-03_2021-06-17	17-Jun-21	CC220123	8%	371
RG_FODPO_BIC-01_2021-06-17	17-Jun-21	CC220124	5%	406
RG_FODPO_BIC-02_2021-06-17	17-Jun-21	CC220125	7%	335
RG_FODPO_BIC-03_2021-06-17	17-Jun-21	CC220126	20%	479
RG_FRUPO_BIC-01_2021-06-18	18-Jun-21	CC220127	25%	330
RG_FRUPO_BIC-02_2021-06-18	18-Jun-21	CC220128	5%	339
RG_FRUPO_BIC-03_2021-06-18	18-Jun-21	CC220129	13%	348
RG_FOUEW_BIC-01_2021-06-18	18-Jun-21	CC220130	5%	468
RG_FOUEW_BIC-02_2021-06-18	18-Jun-21	CC220131	7%	336
RG_FOUEW_BIC-03_2021-06-18	18-Jun-21	CC220132	5%	361
RG_FO22_BIC-01_2021-06-18	18-Jun-21	CC220133	12%	344
RG_FO22_BIC-02_2021-06-18	18-Jun-21	CC220134	100%	425
RG_FO22_BIC-03_2021-06-18	18-Jun-21	CC220135	9%	349
RG_FOUSH_BIC-1_2021-06-16	16-Jun-21	CC220136	5%	466
RG_FOUSH_BIC-2_2021-06-16	16-Jun-21	CC220137	5%	387
RG_FOUSH_BIC-3_2021-06-16	16-Jun-21	CC220138	5%	349

Sorting Quality Control - Sorting Efficiency

As a part of Cordillera's laboratory policy, all projects undergo sorting efficiency checks.

- As sorting progresses, 10% of samples were randomly chosen by senior members of the sorting team for resorting.
- All sorters working on a project had at least 1 sample resorted by another sorter.
- An efficiency of 90 % was expected (95% for CABIN samples).
- If 90/95% efficiency was not met, samples from that sorter were resorted.
- To calculated sorting efficiency the following formula was used:

$$\frac{\#OrganismsMissed}{TotalOrganismsFound} * 100 = \%OM$$

Table 3 Summary of sorting efficiency

			Total from Sample	Percent Efficiency
Site - QC, Sample - QC 1, CC# - CC220082, Percent sampled = 5%, Sieve size = 400				
Plecoptera		1		
	Total:	**1**	**313**	**100%**
Site - QC, Sample - QC 2, CC# - CC220089, Percent sampled = 6%, Sieve size = 400				
Chironomidae		1		
Plecoptera		2		
	Total:	**3**	**352**	**99%**
Site - QC, Sample - QC 3, CC# - CC220091, Percent sampled = 8%, Sieve size = 400				
No Invertebrates Found		0		
	Total:	**0**	**313**	**100%**
Site - QC, Sample - QC 4, CC# - CC220104, Percent sampled = 6%, Sieve size = 400				
Chironomidae		1		
	Total:	**1**	**321**	**100%**
Site - QC, Sample - QC 5, CC# - CC220116, Percent sampled = 5%, Sieve size = 400				
No Invertebrates Found		0		
	Total:	**0**	**331**	**100%**

Site - QC, Sample - QC 6, CC# - CC220133, Percent sampled = 12%, Sieve size = 400				
Trichoptera		1		
Bivalvia		1		
	Total:	**2**	**344**	**99%**

Sorting Quality Control - Sub-Sampling QC

Certain Provincial and Mining projects require additional sorting checks in the form of sub-sampling QC, (Environmental Effects Monitoring (EEM) protocol). This ensured that any fraction of the total sample that was examined was actually an accurate representation of the number of total organisms. Organisms from the additional sub-samples were not identified; rather total organism count only was compared.

Sub-Sampling efficiency was measured on 10% of the number of sub-sampled samples in the project. Ex. In a project where 50 of 100 total samples were processed through subsampling using a Marchant box, then 10% of 50; or 5 samples were used for sub sampling efficiency.

Sub-Sampling efficiency was performed by fractioning the entire sample into sub-sample percentages. On each sub-sampled portion, a total organism count was recorded and compared to the rest of the sub-samples. In order to pass, all fractions were required to be within 20% of total organism count.

Example: If 300 organisms are found in 10% of the sample, the sorter will continue to sample in 10% fractions until the entire sample is separated. They will then count the total number of organisms in each of the 10 fractions of 10% and compare the organism count.

When divergence is >20% the sorting manager examines for the source of the problem and takes steps to correct it. With the Marchant box, the problem typically rested with how the box is flipped back to the upright position. For this reason, subsampling was performed by experienced employees only. Another common source of error would be the type of debris in the sample. Samples with algae or heavy with periphyton have a higher incident of failure due to clumping than clear samples.

Table 4 Summary of Sub Sample efficiency

Station ID		Organisms in Subsample																				Sorter		Total	Precision		Accuracy	
CC#	Sample Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	By	Time		Percent Range		Min	Max
220082	RG_HENUP_ BIC-01	314	308	337	353	335	290	323	316	319	321	318	324	328	311	325	335	295	308	319	320	CM	570	6399	0.00	17.85	0.02	10.33
220126	RG_FODPO_ BIC-03	469	478	529	473	486																JH	245	2435	0.85	11.34	0.21	8.62
220127	RG_FRUPO_ BIC-01	322	289	291	296																	JH	105	1198	0.69	10.25	1.17	7.51
220113	RG_FO26_ BIC-02	348	313	369	334	316	317	328	355	314	336	337	323	356	347	303	313	341	348	297	335	AR	535	6630	0.00	19.51	0.75	11.31
220084	RG_HENUP_ BIC-03	349	315	324	311	324																AR	85	1623	0.00	10.89	0.18	7.52
220118	RG_FOBSC_ BIC-01	438	396	413	395	394																JH	140	2036	0.25	10.05	1.42	7.56

Taxonomic Effort

The next procedure was the identification to genus-species level where possible of all the organisms in the sample.

- Identifications were made at the genus/species level for all insect organisms found including Chironomidae (Based on CABIN protocol).
- Non-insect organisms (except those not included in CABIN count) were identified to genus/species where possible and to a minimum of family level with intact and mature specimens.
- The Standard Taxonomic Effort lists compiled by the CABIN manual[1], SAFIT[2] , and PNAMP[3] were used as a guide line for what level of identification to achieve where the condition and maturity of the organism enabled.
- Organisms from the same families/order were kept in separate vials with 80% ethanol and an interior label of printed laser paper.
- Chironomidae was identified to genus/species level where possible and was aided by slide mounts. CMC-10 was used to clear and mount the slide.
- Oligochaetes was identified to family/genus level with the aid of slide mounts. CMC-10 was used to clear and mount the slide.
- Other Annelida (leeches, polychaetes) were identified to the family/genus/species level with undamaged, mature specimens.
- Mollusca was identified to family and genus/species where possible
- Decapoda, Amphipoda and Isopoda were identified at family/genus/species level where possible.
- Bryozoans and Nemata remained at the phylum level
- Hydrachnidae and Cnidaria were identified at the family/genus level where possible.
- When requested, reference collections were made containing at least one individual from each taxa listed. Organisms represented will have been identified to the lowest practical level.
- Reference collection specimens were stored in 55 mm glass vials with screw-cap lids with polyseal inserts (museum quality). They were labeled with taxa name, site code, date identified and taxonomist name. The same information was applied to labels on the slide mounts.

Taxonomists

The taxonomists for this project were certified by the Society of Freshwater Science (SFS) Taxonomic Certification Program at level 2 which is the required certification for CABIN projects:

Scott Finlayson: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae (East/West); Group 4 Oligochaeta

Adam Bliss: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae
Rita Avery: Group 1 General Arthropods (East/West); Group 2 EPT (East/West)

Taxonomic QC

Taxonomic QC was performed in house by someone other than the original taxonomist.

- Quality control protocol involved complete, blind re-identification and re-enumeration of at least 10% of samples by a second SFS-certified taxonomist.
- Samples for taxonomic quality control were randomly selected and quality control procedures were conducted as the project progresses through the laboratories.

- The second (QC) taxonomist will calculate and record four types of errors:
    1. Misidentification error
    2. Enumeration error
    3. Questionable taxonomic resolution error
    4. Insufficient taxonomic resolution error

The QC coordinator then calculates the following estimates of taxonomic precision.

1. The percent total identification error rate is calculated as:

$$\frac{Sum\ of\ incorrect\ identifications}{total\ organisms\ counted\ in\ audit} * (100)$$

The average total identification error rate of audited samples did not exceed 5%. All samples that exceed a 5% error rate were re-evaluated to determine whether repeated errors or patterns in error contributed.

2. The percent difference in enumeration (PDE) to quantify the consistency of specimen counts.

$$PDE = \frac{|n_1 - n_2|}{n_1 + n_2} x100$$

3. The percent taxonomic disagreement (PTD) to quantify the shared precision between two sets of identifications.

$$PTD = \left(1 - \left[\frac{a}{N}\right]\right) x100$$

4. Bray Curtis dissimilarity Index to quantify the differences in identifications.

$$BC_{ij} = 1 - \frac{2C_{ij}}{S_j + S_i}$$

Error Summary

All samples report errors within the acceptable limits for CABIN Laboratory methods (less than 5% error).

Table 5 Summary of taxonomic error following QC

Site	Taxa Identified	% Error	PDE	PTD	Bray - Curtis Dissimilarity index
Site - 2021, Sample - RG_HENUP_BIC-01_2021-06-16, CC# - CC220082, Percent sampled = 5%, Sieve size = 400	313	0.00	0	0.63897764	0.00638978
Site - 2021, Sample - RG_FODHE_BIC-02_2021-06-14, CC# - CC220086, Percent sampled = 9%, Sieve size = 400	335	0.00	0.29761905	1.18694362	0.00892857
Site - 2021, Sample - RG_FODNGD_BIC-02_2021-06-15, CC# - CC220098, Percent sampled = 50%, Sieve size = 400	427	0.00	0.11695906	0.70093458	0.00584795
Site - 2021, Sample - RG_FOBKS_BIC-03_2021-06-16, CC# - CC220102, Percent sampled = 16%, Sieve size = 400	331	0.00	0.74962519	1.78571429	0.01049475
Site - 2021, Sample - RG_FOBCP_BIC-03_2021-06-17, CC# - CC220111, Percent sampled = 8%, Sieve size = 400	340	0.00	0.43923865	1.16618076	0.00732064

There will always be disagreements between taxonomists regarding the degree of taxonomic resolution in immature specimens and when laboratories make use of different keys for certain groups (Mollusks is an especially disputed group). It is always possible that some taxa found by the original taxonomist were overlooked in QC.

All of the Taxonomic QC samples that were observed passed testing according to the CABIN misidentification protocols. See the tables below for results from taxonomic QC audit.

Error Rationale

Site - 2021, Sample - RG_HENUP_BIC-01_2021-06-16, CC# - CC220082, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Baetidae	1	1						

Baetis	89	88	No			X		
Baetis bicaudatus	39	40	No			X		
Chloroperlidae	3	3						
Cinygmula	16	16						
Drunella	3	3						
Drunella doddsii	2	2						
Empididae	1	1						
Epeorus	1	1						
Heptageniidae	68	68						
Megarcys	3	3						
Oreogeton	1	1						
Orthocladius complex	3	3						
Parametriocnemus	1	1						
Parapsyche	1	1						
Parapsyche elsis	2	2						
Perlodidae	16	16						
Rhyacophila	1	1						
Rhyacophila alberta group	2	2						
Rhyacophila brunnea/vemna group	1	1						
Suwallia	1	1						
Tanytarsini	1	1						
Tipulidae	1	1						
Tvetenia	5	5						
Zapada	40	41	No			X		
Zapada columbiana	7	6	No			X		
Zapada oregonensis group	4	4						
Total:	**313**	**313**						
					0	**4**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_FODHE_BIC-02_2021-06-14, CC# - CC220086, Percent sampled = 9%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**
Ameletus	2	2						
Baetis	25	25						

Baetis bicaudatus	35	34	No			X		
Baetis rhodani group	1	2	No			X		
Chironomidae	1	1						
Chloroperlidae	1	1						
Cinygmula	26	26						
Corynoneura	3	3						
Diamesa	10	10						
Dicranota	1	1						
Drunella	17	17						
Drunella doddsii	1	1						
Epeorus	2	2						
Heptageniidae	79	79						
Hydrobaenus	1	1						
Micropsectra	7	7						
Oligophlebodes	4	4						
Orthocladius complex	7	7						
Parametriocnemus	57	55	No			X		
Pericoma/Telmatoscopus	3	3						
Perlodidae	11	11						
Prostoia	2	2						
Rheocricotopus	8	8						
Rhyacophila	3	3						
Rhyacophila alberta group	7	7						
Rhyacophila angelita group	5	5						
Skwala	1	1						
Sperchon	2	2						
Tvetenia	3	3						
Zapada	4	5	No			X		
Zapada columbiana	8	7	No			X		
Total:	**337**	**335**						
					0	**5**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_FODNGD_BIC-02_2021-06-15, CC# - CC220098, Percent sampled = 50%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**

Baetis	26	26						
Baetis bicaudatus	85	84	No			X		
Baetis rhodani group	3	4	No			X		
Chironomidae	1	1						
Chloroperlidae	11	11						
Cinygmula	24	24						
Corynoneura	1	1						
Dicranota	8	8						
Drunella	4	4						
Drunella doddsii	4	4						
Drunella grandis group	8	8						
Epeorus	8	8						
Ephemerellidae	2	2						
Heptageniidae	122	123	No			X		
Lebertia	2	1	No			X		
Oligophlebodes	1	1						
Orthocladius complex	2	2						
Pacifastacus	1	1						
Pagastia	1	1						
Pericoma/Telmatoscopus	3	3						
Perlodidae	34	34						
Plumiperla	5	5						
Rheocricotopus	2	2						
Rhyacophila	10	10						
Rhyacophila alberta group	5	5						
Rhyacophila angelita group	14	14						
Rhyacophila brunnea/vemna group	8	8						
Rhyacophila hyalinata group	2	2						
Rhyacophila narvae	2	2						
Simuliidae	2	2						
Simulium	12	11	No			X		
Suwallia	5	5						
Sweltsa	4	4						
Tvetenia	1	1						
Zapada columbiana	4	4						
Zapada oregonensis group	1	1						
Total:	**428**	**427**						
					0	5	0	

% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_FOBKS_BIC-03_2021-06-16, CC# - CC220102, Percent sampled = 16%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Ameletus	1	1						
Baetis	4	4						
Baetis bicaudatus	9	9						
Baetis rhodani group	2	2						
Chironomidae	1	1						
Cinygmula	14	14						
Clinocera	1	1						
Diamesa	4	4						
Dicranota	1	1						
Drunella doddsii	2	2						
Drunella grandis group	3	3						
Epeorus	101	102	No			X		
Ephemerellidae	1	1						
Heptageniidae	128	122	No			X		
Kogotus	1	1						
Micropsectra	1	1						
Neoplasta	1	1						
Oribatida	1	1						
Pagastia	1	1						
Parametriocnemus	7	7						
Perlodidae	5	5						
Plumiperla	3	3						
Rhyacophila	10	10						
Rhyacophila alberta group	5	5						
Rhyacophila angelita group	13	13						
Rhyacophila brunnea/vemna group	1	1						
Simulium	2	2						
Sperchon	1	1						
Staphylinidae	4	4						
Thienemannimyia group	1	1						
Tubificinae without hair chaetae	2	2						

Tvetenia	2	2						
Zapada	2	2						
Zapada oregonensis group	1	1						
Total:	**336**	**331**						
					0	**2**	**0**	
% Total Misidentification Rate	misidentifications	x100	0.00	**Pass**				
=	total number	=						
Site - 2021, Sample - RG_FOBCP_BIC-03_2021-06-17, CC# - CC220111, Percent sampled = 8%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**
Baetis	5	5						
Baetis bicaudatus	26	25	No			X		
Baetis rhodani group	4	5	No			X		
Capniidae	1	1						
Ceratopogon	1	1						
Chironomidae	4	4						
Cinygmula	4	4						
Diamesa	7	7						
Dicranota	1	1						
Drunella grandis group	3	3						
Drunella spinifera	1	1						
Empididae	1	1						
Epeorus	91	90	No			X		
Ephemerellidae	1	1						
Heptageniidae	61	60	No			X		
Lebertia	17	17						
Megarcys	1	1						
Micropsectra	1	1						
Neoplasta	1	1						
Orthocladius complex	29	29						
Pagastia	10	10						
Parametriocnemus	11	11						
Pericoma/Telmatoscopus	6	6						
Perlodidae	3	3						
Rhyacophila	11	11						
Rhyacophila alberta group	1	1						

Rhyacophila angelita group	9	9						
Rhyacophila brunnea/vemna group	6	6						
Roederiodes	2	2						
Simuliidae	1	1						
Simulium	5	5						
Sperchon	2	1	No			X		
Tubificinae without hair chaetae	12	12						
Tvetenia	1	1						
Zapada	1	1						
Zapada oregonensis group	2	2						
Total:	**343**	**340**						
					0	**5**	**0**	
% Total Misidentification Rate =	misidentifications	x100	0.00	**Pass**				
	total number	=						

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[3] Pacific Northwest Aquatic Monitoring Partnership (Accessed 2015). www.pnamp.org

Taxonomic Keys

Below is a reference list of taxonomic keys utilized by taxonomists at Cordillera Consulting. Cordillera taxonomists routinely seek out new literature to ensure the most accurate identification keys are being utilized. This is not reflective of the exhaustive list of resources that we use for identification. A more complete list of taxonomic resources can be found at Southwest Association of Freshwater Invertebrate Taxonomists. (2015).
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Project: FRO LAEMP (21-11)#1
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-01_2021-06-16	RG_HENUP_BIC-02_2021-06-16	RG_HENUP_BIC-03_2021-06-16	RG_FODHE_BIC-01_2021-06-14	RG_FODHE_BIC-02_2021-06-14	RG_FODHE_BIC-03_2021-06-14	RG_MP1_BIC-01_2021-06-14	RG_MP1_BIC-02_2021-06-14	RG_MP1_BIC-03_2021-06-14	RG_FOUCL_BIC-01_2021-06-14	RG_FOUCL_BIC-02_2021-06-14	RG_FOUCL_BIC-03_2021-06-14	RG_FOUNGD_BIC-01_2021-06-15	RG_FOUNGD_BIC-02_2021-06-15	RG_FOUNGD_BIC-03_2021-06-15	RG_FODNGD_BIC-01_2021-06-15
Sample Collection Date:	16-Jun-21	16-Jun-21	16-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
CC#:	CC220082	CC220083	CC220084	CC220085	CC220086	CC220087	CC220088	CC220089	CC220090	CC220091	CC220092	CC220093	CC220094	CC220095	CC220096	CC220097
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Sminthuridae	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	5	120	22	0	0	0	0	50	0	14	3	29	100	0
| Family: Baetidae	20	33	5	20	0	60	11	17	0	0	0	0	0	12	60	23
Baetis	1780	733	280	1100	278	2240	322	667	520	475	1880	1014	133	353	700	908
Baetis rhodani group	0	0	0	60	11	80	11	67	160	25	120	0	11	0	100	23
Baetis bicaudatus	780	511	140	1160	389	1120	378	650	660	462	560	671	28	171	560	377
| Family: Ephemerellidae	0	0	0	60	0	0	0	33	0	0	0	0	0	0	0	0
Drunella	60	11	10	560	189	520	78	117	160	125	220	157	22	35	140	31
Drunella grandis group	0	0	0	0	0	0	33	83	40	0	100	86	19	41	40	23
Drunella doddsii	40	56	10	40	11	0	56	167	180	0	20	14	11	18	60	31
Drunella spinifera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ephemerella excrucians complex	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
| Family: Heptageniidae	1360	867	765	1560	878	1860	822	1417	1600	1562	2600	1271	192	494	3780	638
Cinygmula	320	211	30	340	289	260	267	700	620	350	500	586	47	159	580	69
Epeorus	20	100	0	40	22	60	178	417	300	75	60	171	0	6	40	208
Rhithrogena	0	44	70	0	0	0	0	17	20	0	0	0	0	12	20	15
| Order: Plecoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Capniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
| Family: Chloroperlidae	60	11	25	0	11	0	167	133	100	162	200	71	28	94	460	169
Haploperla	0	0	0	0	0	0	0	0	0	0	20	29	0	6	20	0
Plumiperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Suwallia	20	56	50	0	0	0	0	0	0	112	40	0	14	0	20	0
Sweltsa	0	0	5	0	0	0	11	0	20	12	40	0	3	12	60	0
| Family: Leuctridae	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Paraleuctra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nemoura	0	0	0	0	0	0	0	0	0	0	20	43	0	0	0	0
Prostoia	0	0	0	20	22	40	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zapada	800	389	120	300	44	280	33	0	40	38	140	86	17	0	60	8
Zapada oregonensis group	80	44	30	80	0	80	0	50	20	0	0	14	8	6	0	46
Zapada cinctipes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zapada columbiana	140	100	30	180	89	100	0	33	20	38	0	43	0	0	0	15

Project: FRO LAEMP (21-11)#1
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-01_2021-06-16	RG_HENUP_BIC-02_2021-06-16	RG_HENUP_BIC-03_2021-06-16	RG_FODHE_BIC-01_2021-06-14	RG_FODHE_BIC-02_2021-06-14	RG_FODHE_BIC-03_2021-06-14	RG_MP1_BIC-01_2021-06-14	RG_MP1_BIC-02_2021-06-14	RG_MP1_BIC-03_2021-06-14	RG_FOUCL_BIC-01_2021-06-14	RG_FOUCL_BIC-02_2021-06-14	RG_FOUCL_BIC-03_2021-06-14	RG_FOUNGD_BIC-01_2021-06-15	RG_FOUNGD_BIC-02_2021-06-15	RG_FOUNGD_BIC-03_2021-06-15	RG_FODNGD_BIC-01_2021-06-15
Sample Collection Date:	16-Jun-21	16-Jun-21	16-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
CC#:	CC220082	CC220083	CC220084	CC220085	CC220086	CC220087	CC220088	CC220089	CC220090	CC220091	CC220092	CC220093	CC220094	CC220095	CC220096	CC220097
| Family: Perlidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
Hesperoperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlodidae	320	222	60	360	122	320	189	300	320	38	180	143	150	147	300	269
Isoperla	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0
Kogotus	0	0	0	0	0	0	0	17	20	38	20	0	3	6	20	8
Megarcys	60	67	0	0	0	0	22	0	60	0	20	0	0	0	60	8
Skwala	0	0	0	0	11	0	11	17	0	0	0	0	0	0	0	0
| Order: Trichoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydropsychidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctopsyche	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parapsyche	20	0	5	40	0	0	0	0	20	0	0	0	0	0	0	0
Parapsyche elsis	40	11	0	20	0	0	0	17	0	0	40	0	3	0	60	0
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chyranda centralis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	0	0	0	0	0	11	0	0	0	20	14	3	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	20	11	15	220	33	60	100	150	100	88	140	86	50	24	40	62
Rhyacophila angelita group	0	0	0	80	56	60	222	133	180	38	0	86	61	47	80	38
Rhyacophila betteni group	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila brunnea/vemna group	20	0	5	20	0	0	189	83	100	0	0	14	44	18	20	62
Rhyacophila hyalinata group	0	11	5	20	0	0	11	17	20	0	20	0	8	12	40	8
Rhyacophila vofixa group	0	0	0	20	0	20	0	0	40	0	0	14	0	24	0	8
Rhyacophila alberta group	40	22	0	80	78	0	44	83	80	25	0	0	19	0	0	23
Rhyacophila arnaudi	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila narvae	0	0	0	0	0	0	22	50	40	12	20	14	11	12	20	0
Rhyacophila verrula group	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	33	0	40	44	20	56	83	240	0	40	29	56	6	0	23
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Dytiscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stictotarsus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	0	0	0	0	0	0	0	0	40	0	0	0	3	0	0	0
Heterlimnius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0
Ceratopogon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallochohelea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
| Family: Chironomidae	0	0	0	40	11	40	0	0	20	0	240	0	3	6	20	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Chironomini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paracladopelma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Micropsectra	0	0	0	100	78	60	0	17	0	25	80	29	3	6	80	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	0	10	440	111	180	56	17	40	12	40	0	17	0	60	15
Pagastia	0	11	0	20	0	20	11	17	20	0	0	43	0	0	0	15

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-01_2021-06-16	RG_HENUP_BIC-02_2021-06-16	RG_HENUP_BIC-03_2021-06-16	RG_FODHE_BIC-01_2021-06-14	RG_FODHE_BIC-02_2021-06-14	RG_FODHE_BIC-03_2021-06-14	RG_MP1_BIC-01_2021-06-14	RG_MP1_BIC-02_2021-06-14	RG_MP1_BIC-03_2021-06-14	RG_FOUCL_BIC-01_2021-06-14	RG_FOUCL_BIC-02_2021-06-14	RG_FOUCL_BIC-03_2021-06-14	RG_FOUNGD_BIC-01_2021-06-15	RG_FOUNGD_BIC-02_2021-06-15	RG_FOUNGD_BIC-03_2021-06-15	RG_FODNGD_BIC-01_2021-06-15
Sample Collection Date:	16-Jun-21	16-Jun-21	16-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
CC#:	CC220082	CC220083	CC220084	CC220085	CC220086	CC220087	CC220088	CC220089	CC220090	CC220091	CC220092	CC220093	CC220094	CC220095	CC220096	CC220097
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corynoneura	0	0	0	0	33	0	0	0	0	0	0	0	0	0	20	0
Cricotopus (Nostococladius)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0
Hydrobaenus	0	0	0	20	11	0	0	0	0	0	0	0	0	0	0	0
Krenosmittia	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limnophyes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orthocladius complex	60	33	5	940	78	100	33	50	80	38	20	43	17	6	0	0
Paracladius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
Parametriocnemus	20	22	0	180	633	160	22	0	0	12	20	0	31	12	0	0
Rheocricotopus	0	11	5	0	89	80	0	0	0	12	20	29	0	0	100	31
Thienemanniella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	100	22	0	220	33	80	33	33	0	12	80	29	0	0	100	23
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zavrelimyia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	0	20	0	20	11	17	0	0	0	0	3	6	0	0
| Tribe: Procladiini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procladius	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
| Family: Empididae	20	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Clinocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neoplasta	0	0	0	0	0	0	33	17	40	0	0	14	6	0	0	8
Oreogeton	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Muscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limnophora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	0	0	5	20	33	60	0	0	120	12	20	0	0	6	0	0
| Family: Simuliidae	0	11	0	20	0	0	0	0	20	0	40	0	6	0	0	15
Gymnopais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prosimulium/Helodon	0	0	0	0	0	40	11	17	0	0	0	0	0	0	0	0
Simulium	0	0	0	20	0	40	11	33	40	50	100	29	69	6	40	46
| Family: Tipulidae	20	11	0	0	0	0	0	67	20	0	0	0	19	0	20	0
Antocha	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0
Dicranota	0	22	25	0	11	0	22	17	40	0	40	43	39	18	60	15
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erioptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hexatoma	0	0	0	0	0	0	11	0	60	0	40	0	3	0	60	8
Limnophila	0	11	5	0	0	0	22	0	0	0	0	0	0	0	0	0
Molophilus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Thysanoptera	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Sample:	RG_HENUP_BIC-01_2021-06-16	RG_HENUP_BIC-02_2021-06-16	RG_HENUP_BIC-03_2021-06-16	RG_FODHE_BIC-01_2021-06-14	RG_FODHE_BIC-02_2021-06-14	RG_FODHE_BIC-03_2021-06-14	RG_MP1_BIC-01_2021-06-14	RG_MP1_BIC-02_2021-06-14	RG_MP1_BIC-03_2021-06-14	RG_FOUCL_BIC-01_2021-06-14	RG_FOUCL_BIC-02_2021-06-14	RG_FOUCL_BIC-03_2021-06-14	RG_FOUNGD_BIC-01_2021-06-15	RG_FOUNGD_BIC-02_2021-06-15	RG_FOUNGD_BIC-03_2021-06-15	RG_FODNGD_BIC-01_2021-06-15
Sample Collection Date:	16-Jun-21	16-Jun-21	16-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
CC#:	CC220082	CC220083	CC220084	CC220085	CC220086	CC220087	CC220088	CC220089	CC220090	CC220091	CC220092	CC220093	CC220094	CC220095	CC220096	CC220097
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lebertia	0	0	0	120	0	80	22	33	60	0	40	29	8	0	0	8
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	11	0	40	22	20	0	17	0	12	0	0	3	0	0	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydrozetidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Decapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Astacidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacifastacus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Gastropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Basommatophora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lymnaeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fossaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0
Rhynchelmis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Tubificinae without hair cha	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	15
Totals:	**6260**	**3719**	**1730**	**8820**	**3742**	**8160**	**3553**	**5870**	**6300**	**3910**	**7840**	**4958**	**1183**	**1834**	**8080**	**3308**

Taxa present but not included:

Terrestrials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Cecidomyiidae	0	0	0	0	0	20	0	0	0	0	0	0	0	6	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	0	0	5	20	11	20	0	0	20	12	20	14	3	6	20	8

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-01_2021-06-16	RG_HENUP_BIC-02_2021-06-16	RG_HENUP_BIC-03_2021-06-16	RG_FODHE_BIC-01_2021-06-14	RG_FODHE_BIC-02_2021-06-14	RG_FODHE_BIC-03_2021-06-14	RG_MP1_BIC-01_2021-06-14	RG_MP1_BIC-02_2021-06-14	RG_MP1_BIC-03_2021-06-14	RG_FOUCL_BIC-01_2021-06-14	RG_FOUCL_BIC-02_2021-06-14	RG_FOUCL_BIC-03_2021-06-14	RG_FOUNGD_BIC-01_2021-06-15	RG_FOUNGD_BIC-02_2021-06-15	RG_FOUNGD_BIC-03_2021-06-15	RG_FODNGD_BIC-01_2021-06-15
Sample Collection Date:	16-Jun-21	16-Jun-21	16-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21
CC#:	CC220082	CC220083	CC220084	CC220085	CC220086	CC220087	CC220088	CC220089	CC220090	CC220091	CC220092	CC220093	CC220094	CC220095	CC220096	CC220097
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	0	0	0	0	0	0	0	20	14	6	0	0	0
Phylum: Nemata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	0	0	0	0	0	0	17	0	0	0	0	3	0	20	8
Totals:	**0**	**0**	**5**	**20**	**11**	**40**	**0**	**17**	**20**	**12**	**40**	**28**	**12**	**12**	**40**	**16**

ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODNGD_BIC-02_2021-06-15	RG_FODNGD_BIC-03_2021-06-15	RG_FOBKS_BIC-01_2021-06-16	RG_FOBKS_BIC-02_2021-06-16	RG_FOBKS_BIC-03_2021-06-16	RG_SCOUTDS_BIC-01_2021-06-16	RG_SCOUTDS_BIC-02_2021-06-16	RG_SCOUTDS_BIC-03_2021-06-16	RG_FOUKI_BIC-01_2021-06-17	RG_FOUKI_BIC-02_2021-06-17	RG_FOUKI_BIC-03_2021-06-17	RG_FOBCP_BIC-01_2021-06-17	RG_FOBCP_BIC-02_2021-06-17	RG_FOBCP_BIC-03_2021-06-17	RG_FO26_BIC-01_2021-06-14	RG_FO26_BIC-02_2021-06-14
Sample Collection Date:	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	14-Jun-21	14-Jun-21
CC#:	CC220098	CC220099	CC220100	CC220101	CC220102	CC220103	CC220104	CC220105	CC220106	CC220107	CC220108	CC220109	CC220110	CC220111	CC220112	CC220113
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	0	1	0	0	10	0	0	0	0	0	0
| Family: Sminthuridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	5	0	5	6	20	2	22	83	40	0	11	0	0	0	40
| Family: Baetidae	0	5	0	5	0	0	0	11	0	50	120	0	0	0	0	400
Baetis	52	155	8	20	25	240	16	89	133	170	240	89	180	62	680	320
Baetis rhodani group	6	15	8	5	12	100	1	56	33	30	140	56	40	50	40	120
Baetis bicaudatus	170	210	10	45	56	340	14	144	317	170	340	200	320	325	320	200
| Family: Ephemerellidae	4	5	10	0	6	640	3	89	100	140	360	44	160	12	0	0
Drunella	8	0	0	0	0	0	0	0	0	0	0	0	0	0	80	60
Drunella grandis group	16	30	4	20	19	20	4	11	100	30	100	0	20	38	600	500
Drunella doddsii	8	10	4	0	12	0	1	11	17	0	20	22	0	0	80	80
Drunella spinifera	0	0	0	0	0	20	1	22	0	10	0	11	0	12	0	0
Ephemerella excrucians complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	244	370	206	470	800	2220	107	1422	2667	810	4120	1344	2200	762	1560	920
Cinygmula	48	90	24	100	88	220	36	389	267	170	340	422	200	50	200	280
Epeorus	16	60	158	730	631	1940	120	733	1017	320	1820	700	2260	1138	640	0
Rhithrogena	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
| Order: Plecoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Capniidae	0	5	0	10	0	20	0	0	0	0	20	11	0	12	0	0
| Family: Chloroperlidae	22	50	16	15	0	20	6	56	17	0	40	0	20	0	60	60
Haploperla	0	15	0	5	0	0	0	0	0	0	0	0	0	0	20	0
Plumiperla	10	30	28	15	19	0	0	22	0	0	0	0	0	0	40	20
Suwallia	10	0	4	5	0	0	0	0	0	10	0	0	0	0	40	20
Sweltsa	8	0	0	0	0	0	0	22	0	0	0	0	0	0	40	20
| Family: Leuctridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
Paraleuctra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	0	0	0	0	0	0	1	0	33	0	140	0	40	0	0	20
Nemoura	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0
Prostoia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zapada	0	10	2	0	12	180	1	0	0	0	120	11	40	12	1960	740
Zapada oregonensis group	2	5	0	0	6	20	0	0	67	60	40	11	80	25	680	520
Zapada cinctipes	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0
Zapada columbiana	8	15	0	0	0	40	0	11	0	30	100	0	20	0	700	320

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODNGD_BIC-02_2021-06-15	RG_FODNGD_BIC-03_2021-06-15	RG_FOBKS_BIC-01_2021-06-16	RG_FOBKS_BIC-02_2021-06-16	RG_FOBKS_BIC-03_2021-06-16	RG_SCOUTDS_BIC-01_2021-06-16	RG_SCOUTDS_BIC-02_2021-06-16	RG_SCOUTDS_BIC-03_2021-06-16	RG_FOUKI_BIC-01_2021-06-17	RG_FOUKI_BIC-02_2021-06-17	RG_FOUKI_BIC-03_2021-06-17	RG_FOBCP_BIC-01_2021-06-17	RG_FOBCP_BIC-02_2021-06-17	RG_FOBCP_BIC-03_2021-06-17	RG_FO26_BIC-01_2021-06-14	RG_FO26_BIC-02_2021-06-14
Sample Collection Date:	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	14-Jun-21	14-Jun-21
CC#:	CC220098	CC220099	CC220100	CC220101	CC220102	CC220103	CC220104	CC220105	CC220106	CC220107	CC220108	CC220109	CC220110	CC220111	CC220112	CC220113
| Family: Perlidae	0	0	0	0	0	0	0	0	0	20	0	11	0	0	0	0
Hesperoperla	0	0	0	0	0	20	0	0	0	0	0	22	0	0	0	0
| Family: Perlodidae	68	135	8	15	31	60	2	33	50	40	200	22	60	38	660	540
Isoperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogotus	0	0	6	15	6	20	8	22	0	30	20	11	60	0	0	20
Megarcys	0	10	0	0	0	0	0	11	17	0	20	11	0	12	180	100
Skwala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trichoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	0	0	0	0	0	40	0	11	0	0	0	0	40	0	0	0
Brachycentrus americanus	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydropsychidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctopsyche	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Parapsyche	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	60
Parapsyche elsis	0	0	0	0	0	40	0	0	0	10	80	0	0	0	60	0
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chyranda centralis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	20	25	42	95	62	200	9	111	167	70	380	144	220	138	220	100
Rhyacophila angelita group	28	30	60	85	81	60	1	122	100	70	140	44	100	112	60	120
Rhyacophila betteni group	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0
Rhyacophila brunnea/vemna group	16	40	6	0	6	80	2	22	117	100	160	44	20	75	0	0
Rhyacophila hyalinata group	4	0	0	5	0	0	0	0	17	0	20	0	20	0	120	60
Rhyacophila vofixa group	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20	20
Rhyacophila alberta group	10	25	6	25	31	100	4	67	50	30	140	44	60	12	20	40
Rhyacophila arnaudi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila narvae	4	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0
Rhyacophila verrula group	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	2	45	0	0	0	0	0	33	0	30	0	0	0	0	340	520
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Dytiscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stictotarsus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heterlimnius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Staphylinidae	0	0	0	5	25	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	1	0	0	0	40	11	0	0	0	0
Ceratopogon	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0
Mallochohelea	0	20	0	0	0	0	0	11	0	10	0	0	0	0	0	0
| Family: Chironomidae	2	0	6	10	6	20	0	0	0	20	60	100	20	50	0	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Chironomini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paracladopelma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Micropsectra	0	5	2	20	6	80	1	33	83	40	200	11	20	12	20	40
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	5	26	0	25	80	1	11	0	20	20	22	20	88	60	40
Pagastia	2	0	0	0	6	60	1	11	50	80	40	44	20	125	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODNGD_BIC-02_2021-06-15	RG_FODNGD_BIC-03_2021-06-15	RG_FOBKS_BIC-01_2021-06-16	RG_FOBKS_BIC-02_2021-06-16	RG_FOBKS_BIC-03_2021-06-16	RG_SCOUTDS_BIC-01_2021-06-16	RG_SCOUTDS_BIC-02_2021-06-16	RG_SCOUTDS_BIC-03_2021-06-16	RG_FOUKI_BIC-01_2021-06-17	RG_FOUKI_BIC-02_2021-06-17	RG_FOUKI_BIC-03_2021-06-17	RG_FOBCP_BIC-01_2021-06-17	RG_FOBCP_BIC-02_2021-06-17	RG_FOBCP_BIC-03_2021-06-17	RG_FO26_BIC-01_2021-06-14	RG_FO26_BIC-02_2021-06-14
Sample Collection Date:	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	14-Jun-21	14-Jun-21
CC#:	CC220098	CC220099	CC220100	CC220101	CC220102	CC220103	CC220104	CC220105	CC220106	CC220107	CC220108	CC220109	CC220110	CC220111	CC220112	CC220113
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corynoneura	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cricotopus (Nostococladius)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0
Hydrobaenus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Krenosmittia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limnophyes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Orthocladius complex	4	5	4	0	0	80	0	0	50	90	220	0	80	362	20	20
Paracladius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parametriocnemus	0	0	2	30	44	100	1	0	33	90	80	22	40	138	20	0
Rheocricotopus	4	5	2	10	0	60	0	22	33	20	80	0	80	0	0	0
Thienemanniella	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
Tvetenia	2	15	0	0	12	120	0	0	50	20	360	0	60	12	100	220
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zavrelimyia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	0	5	6	60	0	0	17	20	60	0	20	0	0	0
| Tribe: Procladiini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procladius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Empididae	0	0	0	0	0	0	0	11	0	10	0	0	0	12	0	0
Clinocera	0	0	6	0	6	0	1	0	0	30	0	0	0	0	0	0
Neoplasta	0	0	0	0	6	0	0	0	0	0	0	11	0	12	0	0
Oreogeton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	10	0	0	0	25	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
| Family: Muscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limnophora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	6	0	6	5	0	20	1	22	0	10	20	11	0	75	20	20
| Family: Simuliidae	4	10	0	0	0	0	0	0	0	0	0	0	0	12	0	0
Gymnopais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prosimulium/Helodon	0	0	0	0	0	0	0	0	0	10	100	0	0	0	0	0
Simulium	24	35	12	5	12	120	3	11	83	10	360	189	160	62	40	20
| Family: Tipulidae	0	5	0	5	0	20	0	0	0	10	0	0	0	0	0	0
Antocha	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dicranota	16	15	2	5	6	20	1	33	33	0	20	11	0	12	60	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Erioptera	0	0	0	0	0	0	0	22	0	10	0	22	0	0	0	0
Hexatoma	0	0	0	0	0	20	0	0	0	10	0	0	0	0	0	0
Limnophila	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molophilus	0	0	0	0	0	0	0	11	17	10	0	0	0	0	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0
| Order: Thysanoptera	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODNGD_BIC-02_2021-06-15	RG_FODNGD_BIC-03_2021-06-15	RG_FOBKS_BIC-01_2021-06-16	RG_FOBKS_BIC-02_2021-06-16	RG_FOBKS_BIC-03_2021-06-16	RG_SCOUTDS_BIC-01_2021-06-16	RG_SCOUTDS_BIC-02_2021-06-16	RG_SCOUTDS_BIC-03_2021-06-16	RG_FOUKI_BIC-01_2021-06-17	RG_FOUKI_BIC-02_2021-06-17	RG_FOUKI_BIC-03_2021-06-17	RG_FOBCP_BIC-01_2021-06-17	RG_FOBCP_BIC-02_2021-06-17	RG_FOBCP_BIC-03_2021-06-17	RG_FO26_BIC-01_2021-06-14	RG_FO26_BIC-02_2021-06-14
Sample Collection Date:	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	14-Jun-21	14-Jun-21
CC#:	CC220098	CC220099	CC220100	CC220101	CC220102	CC220103	CC220104	CC220105	CC220106	CC220107	CC220108	CC220109	CC220110	CC220111	CC220112	CC220113
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lebertia	4	0	6	15	0	60	0	44	33	180	100	22	60	212	20	0
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	0	0	0	6	0	0	0	0	10	20	0	0	25	20	40
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	5	0	0	6	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydrozetidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Decapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Astacidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacifastacus	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Gastropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Basommatophora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lymnaeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fossaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhynchelmis	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Tubificinae without hair cha	0	10	2	0	12	200	2	33	0	0	0	44	120	150	0	0
Totals:	**856**	**1535**	**690**	**1820**	**2093**	**7840**	**354**	**3872**	**5884**	**3210**	**11040**	**3805**	**6860**	**4281**	**10020**	**6720**

Taxa present but not included:

Terrestrials	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Cecidomyiidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	2	5	2	5	6	20	1	11	17	10	0	11	0	0	20	20

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODNGD_BIC-02_2021-06-15	RG_FODNGD_BIC-03_2021-06-15	RG_FOBKS_BIC-01_2021-06-16	RG_FOBKS_BIC-02_2021-06-16	RG_FOBKS_BIC-03_2021-06-16	RG_SCOUTDS_BIC-01_2021-06-16	RG_SCOUTDS_BIC-02_2021-06-16	RG_SCOUTDS_BIC-03_2021-06-16	RG_FOUKI_BIC-01_2021-06-17	RG_FOUKI_BIC-02_2021-06-17	RG_FOUKI_BIC-03_2021-06-17	RG_FOBCP_BIC-01_2021-06-17	RG_FOBCP_BIC-02_2021-06-17	RG_FOBCP_BIC-03_2021-06-17	RG_FO26_BIC-01_2021-06-14	RG_FO26_BIC-02_2021-06-14
Sample Collection Date:	15-Jun-21	15-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	14-Jun-21	14-Jun-21
CC#:	CC220098	CC220099	CC220100	CC220101	CC220102	CC220103	CC220104	CC220105	CC220106	CC220107	CC220108	CC220109	CC220110	CC220111	CC220112	CC220113
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	5	0	0	0	11	0	0	0	11	0	25	0	0
Phylum: Nemata	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	2	5	2	0	6	20	0	0	0	0	20	11	0	12	0	0
Totals:	**4**	**10**	**4**	**10**	**12**	**40**	**1**	**22**	**17**	**20**	**20**	**33**	**0**	**37**	**20**	**20**

ND designation of a taxa represents a non-

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FO26_BIC-03_2021-06-14	RG_UFR1_BIC-01_2021-06-15	RG_UFR1_BIC-02_2021-06-15	RG_UFR1_BIC-03_2021-06-15	RG_FOBSC_BIC-01_2021-06-17	RG_FOBSC_BIC-02_2021-06-17	RG_FOBSC_BIC-03_2021-06-17	RG_FRCP1SW_BIC-01_2021-06-17	RG_FRCP1SW_BIC-02_2021-06-17	RG_FRCP1SW_BIC-03_2021-06-17	RG_FODPO_BIC-01_2021-06-17	RG_FODPO_BIC-02_2021-06-17	RG_FODPO_BIC-03_2021-06-17	RG_FRUPO_BIC-01_2021-06-18	RG_FRUPO_BIC-02_2021-06-18	RG_FRUPO_BIC-03_2021-06-18
Sample Collection Date:	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21
CC#:	CC220114	CC220115	CC220116	CC220117	CC220118	CC220119	CC220120	CC220121	CC220122	CC220123	CC220124	CC220125	CC220126	CC220127	CC220128	CC220129
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Sminthuridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	100	0	0	5	11	0	4	0	0	0	0	0	0	0	0
| Family: Baetidae	240	0	0	120	5	0	43	4	0	0	0	0	0	0	0	0
Baetis	320	540	260	1200	40	167	429	11	22	25	20	14	0	12	60	8
Baetis rhodani group	40	100	220	280	35	22	43	37	8	0	0	14	10	8	0	15
Baetis bicaudatus	300	380	620	1140	190	278	571	48	22	75	0	14	10	48	60	77
| Family: Ephemerellidae	0	0	0	0	10	44	157	19	18	50	80	43	25	24	140	38
Drunella	140	20	20	20	0	0	0	0	0	0	0	0	0	0	80	15
Drunella grandis group	460	460	620	920	15	33	71	0	2	0	0	29	0	0	0	0
Drunella doddsii	40	20	40	60	15	44	0	4	0	0	40	0	5	0	0	23
Drunella spinifera	0	0	0	0	5	11	0	4	0	0	20	14	0	4	20	8
Ephemerella excrucians complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	860	1240	780	2060	715	1678	871	567	420	2012	1080	1029	665	444	1220	508
Cinygmula	500	540	380	1000	535	489	114	48	20	62	220	71	50	60	200	108
Epeorus	0	20	60	40	25	111	657	226	85	400	620	357	310	188	2480	715
Rhithrogena	20	20	0	0	0	0	0	0	0	0	0	0	0	44	0	0
| Order: Plecoptera	0	0	60	0	0	0	0	0	0	0	0	0	5	4	0	8
| Family: Capniidae	0	0	0	0	0	0	0	7	38	50	280	214	205	40	180	100
| Family: Chloroperlidae	60	20	100	20	25	56	0	19	22	12	80	14	20	16	180	100
Haploperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
Plumiperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Suwallia	0	200	40	0	0	0	0	0	0	0	0	0	0	0	20	0
Sweltsa	40	140	200	140	0	0	0	0	0	0	20	0	10	0	0	8
| Family: Leuctridae	80	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paraleuctra	0	280	40	20	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	0	0	100	0	0	0	0	11	0	0	0	14	0	0	0	0
Nemoura	0	0	20	40	0	0	0	0	5	0	0	0	0	0	0	0
Prostoia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	40	0	20	5	0	0	0	0	0	20	0	0	0	0	0
Zapada	720	440	160	620	0	0	43	0	2	75	520	143	55	4	20	0
Zapada oregonensis group	560	380	260	1160	5	22	0	0	2	0	280	243	110	8	20	8
Zapada cinctipes	0	0	0	0	0	0	0	0	0	0	20	29	5	0	20	0
Zapada columbiana	360	1340	240	480	0	0	0	0	0	12	580	414	170	0	140	15

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Sample:	RG_FO26_BIC-03_2021-06-14	RG_UFR1_BIC-01_2021-06-15	RG_UFR1_BIC-02_2021-06-15	RG_UFR1_BIC-03_2021-06-15	RG_FOBSC_BIC-01_2021-06-17	RG_FOBSC_BIC-02_2021-06-17	RG_FOBSC_BIC-03_2021-06-17	RG_FRCP1SW_BIC-01_2021-06-17	RG_FRCP1SW_BIC-02_2021-06-17	RG_FRCP1SW_BIC-03_2021-06-17	RG_FODPO_BIC-01_2021-06-17	RG_FODPO_BIC-02_2021-06-17	RG_FODPO_BIC-03_2021-06-17	RG_FRUPO_BIC-01_2021-06-18	RG_FRUPO_BIC-02_2021-06-18	RG_FRUPO_BIC-03_2021-06-18
Sample Collection Date:	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21
CC#:	CC220114	CC220115	CC220116	CC220117	CC220118	CC220119	CC220120	CC220121	CC220122	CC220123	CC220124	CC220125	CC220126	CC220127	CC220128	CC220129
| Family: Perlidae	0	0	0	0	0	0	14	0	0	12	0	0	0	0	0	0
Hesperoperla	0	0	0	0	0	0	14	7	0	0	0	0	0	0	0	0
| Family: Perlodidae	440	1080	800	1220	20	0	29	7	15	50	140	86	50	12	0	38
Isoperla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kogotus	0	0	160	60	20	11	14	15	0	12	80	86	10	12	100	0
Megarcys	100	20	140	20	0	11	0	0	0	0	0	0	0	8	0	0
Skwala	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trichoptera	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	0	0	0	0	0	0	14	11	2	0	0	0	0	0	0	0
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydropsychidae	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arctopsyche	0	0	0	0	0	0	0	0	0	0	60	0	0	0	20	0
Parapsyche	20	0	60	20	0	11	0	0	2	0	0	0	0	0	20	0
Parapsyche elsis	0	20	0	0	0	0	0	0	0	12	0	14	0	0	40	8
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chyranda centralis	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	20	0	0	0	0	0	0	0	0	0	60	14	0	4	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	160	380	300	40	70	100	71	63	50	188	220	357	50	72	360	154
Rhyacophila angelita group	100	300	220	220	75	144	43	30	15	12	0	0	10	24	60	62
Rhyacophila betteni group	0	80	0	0	10	0	0	4	0	0	0	0	0	0	0	0
Rhyacophila brunnea/vemna group	0	0	60	0	25	33	14	0	2	0	200	57	45	12	60	8
Rhyacophila hyalinata group	100	20	100	60	5	0	0	4	2	0	0	0	0	0	0	0
Rhyacophila vofixa group	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila alberta group	60	0	20	180	15	67	57	11	15	138	220	143	30	56	580	77
Rhyacophila arnaudi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila narvae	20	20	100	0	0	0	0	0	0	0	200	186	35	0	0	8
Rhyacophila verrula group	20	40	0	20	5	0	29	0	2	0	620	171	55	8	120	8
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	340	20	40	40	5	0	14	0	2	0	20	0	0	4	0	0
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Dytiscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stictotarsus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	0	0	0	0	5	0	0	0	0	0	420	114	25	4	0	8
Heterlimnius	0	0	0	0	0	0	0	0	0	0	100	114	25	0	20	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	40	0	40	0	0	0	0	12	20	0	0	8	0	115
Ceratopogon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mallochohelea	40	0	20	0	25	0	0	0	2	0	20	0	0	8	0	77
| Family: Chironomidae	0	0	0	80	20	0	171	11	10	0	60	14	5	8	0	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Chironomini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paracladopelma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Micropsectra	40	40	40	280	0	22	0	4	0	12	60	14	5	0	20	15
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diamesa	60	60	40	20	30	22	0	41	18	62	20	0	25	36	100	92
Pagastia	0	20	40	20	0	0	86	7	0	0	200	57	60	8	60	15

Project: FRO LAEMP (21-11)#1
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FO26_BIC-03_2021-06-14	RG_UFR1_BIC-01_2021-06-15	RG_UFR1_BIC-02_2021-06-15	RG_UFR1_BIC-03_2021-06-15	RG_FOBSC_BIC-01_2021-06-17	RG_FOBSC_BIC-02_2021-06-17	RG_FOBSC_BIC-03_2021-06-17	RG_FRCP1SW_BIC-01_2021-06-17	RG_FRCP1SW_BIC-02_2021-06-17	RG_FRCP1SW_BIC-03_2021-06-17	RG_FODPO_BIC-01_2021-06-17	RG_FODPO_BIC-02_2021-06-17	RG_FODPO_BIC-03_2021-06-17	RG_FRUPO_BIC-01_2021-06-18	RG_FRUPO_BIC-02_2021-06-18	RG_FRUPO_BIC-03_2021-06-18
Sample Collection Date:	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21
CC#:	CC220114	CC220115	CC220116	CC220117	CC220118	CC220119	CC220120	CC220121	CC220122	CC220123	CC220124	CC220125	CC220126	CC220127	CC220128	CC220129
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corynoneura	0	0	0	20	0	0	0	4	0	0	0	0	0	0	20	0
Cricotopus (Nostococladius)	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Eukiefferiella	0	40	0	0	0	0	14	0	0	0	0	0	0	0	20	0
Hydrobaenus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Krenosmittia	0	20	0	0	0	0	0	0	0	0	0	29	5	0	0	0
Limnophyes	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Orthocladius complex	0	140	60	460	55	33	843	0	2	38	480	186	110	16	0	31
Paracladius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Parametriocnemus	20	80	20	740	5	0	0	7	0	25	100	29	0	4	0	0
Rheocricotopus	40	0	40	500	0	0	0	4	0	50	60	0	10	0	20	8
Thienemanniella	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0
Tvetenia	60	200	20	520	5	0	0	0	8	12	40	0	5	0	0	0
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Zavrelimyia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	0	20	0	0	0	0	2	12	20	0	0	0	0	0
| Tribe: Procladiini	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procladius	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Empididae	0	0	0	0	0	0	0	0	0	25	100	0	0	0	20	0
Clinocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neoplasta	20	20	40	0	0	0	14	4	2	0	100	114	10	28	60	0
Oreogeton	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Muscidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Limnophora	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	20	0	0	0	0	11	71	0	12	62	0	0	5	8	20	15
| Family: Simuliidae	0	0	0	0	0	0	14	11	8	75	0	14	0	0	0	0
Gymnopais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
Prosimulium/Helodon	0	0	0	60	0	0	0	0	0	50	40	0	0	0	40	0
Simulium	0	0	0	20	5	11	14	30	28	512	0	29	0	0	40	8
| Family: Tipulidae	0	0	0	0	0	0	0	0	0	0	40	0	0	16	0	38
Antocha	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dicranota	0	0	0	0	10	11	14	11	12	0	0	14	5	4	0	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0
Erioptera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hexatoma	0	0	0	0	0	11	14	0	0	0	20	0	0	0	0	0
Limnophila	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molophilus	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	54
Tipula	0	0	0	0	15	0	0	0	0	0	100	0	0	0	0	0
| Order: Thysanoptera	0	0	0	0	0	0	0	0	0	12	0	0	5	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0

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Minnow Environmental (BC)
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FO26_BIC-03_2021-06-14	RG_UFR1_BIC-01_2021-06-15	RG_UFR1_BIC-02_2021-06-15	RG_UFR1_BIC-03_2021-06-15	RG_FOBSC_BIC-01_2021-06-17	RG_FOBSC_BIC-02_2021-06-17	RG_FOBSC_BIC-03_2021-06-17	RG_FRCP1SW_BIC-01_2021-06-17
Sample Collection Date:	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
CC#:	CC220114	CC220115	CC220116	CC220117	CC220118	CC220119	CC220120	CC220121
| Family: Feltriidae	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0
Lebertia	0	0	0	20	15	11	57	7
| Family: Sperchontidae	0	0	0	0	0	0	0	0
Sperchon	60	0	20	20	0	0	0	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0
| Family: Hydrozetidae	0	0	0	0	5	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0
| Order: Decapoda	0	0	0	0	0	0	0	0
| Family: Astacidae	0	0	0	0	0	0	0	0
Pacifastacus	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	4
Phylum: Mollusca	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0
| Class: Gastropoda	0	0	0	0	0	0	0	0
| Order: Basommatophora	0	0	0	0	0	0	0	0
| Family: Lymnaeidae	0	0	0	0	0	0	0	0
Fossaria	0	0	0	0	0	0	0	4
Phylum: Annelida	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	0	0
Rhynchelmis	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0
| Subfamily: Tubificinae without hair cha	0	0	0	0	70	22	29	0
Totals:	**6480**	**9040**	**6620**	**14020**	**2185**	**3497**	**4653**	**1314**
Taxa present but not included:								
Terrestrials	0	0	0	0	0	0	0	0
Phylum: Arthropoda	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0
| Family: Cecidomyiidae	0	0	0	20	5	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	20	20	20	5	11	14	4

Site:	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FRCP1SW_BIC-02_2021-06-17	RG_FRCP1SW_BIC-03_2021-06-17	RG_FODPO_BIC-01_2021-06-17	RG_FODPO_BIC-02_2021-06-17	RG_FODPO_BIC-03_2021-06-17	RG_FRUPO_BIC-01_2021-06-18	RG_FRUPO_BIC-02_2021-06-18	RG_FRUPO_BIC-03_2021-06-18
Sample Collection Date:	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21
CC#:	CC220122	CC220123	CC220124	CC220125	CC220126	CC220127	CC220128	CC220129
| Family: Feltriidae	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0
Lebertia	12	12	260	171	115	20	60	23
| Family: Sperchontidae	0	0	0	0	0	0	0	0
Sperchon	0	0	0	0	0	4	20	8
| Family: Torrenticolidae	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0
| Family: Hydrozetidae	0	0	0	0	5	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0
| Order: Decapoda	0	0	0	0	0	0	0	0
| Family: Astacidae	0	0	0	0	0	0	0	0
Pacifastacus	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	14	0	0	0	0
Pisidium	0	0	40	0	0	0	0	0
| Class: Gastropoda	0	0	0	0	0	0	0	0
| Order: Basommatophora	0	0	0	0	0	0	0	0
| Family: Lymnaeidae	0	0	0	0	0	0	0	0
Fossaria	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	225	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	0	0
Rhynchelmis	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0
| Subfamily: Tubificinae without hair cha	0	225	80	71	15	8	40	8
Totals:	**891**	**4630**	**8120**	**4782**	**2395**	**1320**	**6780**	**2678**
Taxa present but not included:								
Terrestrials	0	0	0	0	0	4	0	0
Phylum: Arthropoda	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0
| Family: Cecidomyiidae	0	0	0	0	0	0	0	8
Subphylum: Crustacea	0	0	0	0	0	0	0	0
| Class: Ostracoda	2	12	20	14	5	4	0	8

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FO26_BIC-03_2021-06-14	RG_UFR1_BIC-01_2021-06-15	RG_UFR1_BIC-02_2021-06-15	RG_UFR1_BIC-03_2021-06-15	RG_FOBSC_BIC-01_2021-06-17	RG_FOBSC_BIC-02_2021-06-17	RG_FOBSC_BIC-03_2021-06-17	RG_FRCP1SW_BIC-01_2021-06-17
Sample Collection Date:	14-Jun-21	15-Jun-21	15-Jun-21	15-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21
CC#:	CC220114	CC220115	CC220116	CC220117	CC220118	CC220119	CC220120	CC220121
Phylum: Annelida	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	0	5	0	0	0
Phylum: Nemata	0	0	0	0	0	0	0	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	20	20	20	5	0	0	0
Totals:	**20**	**40**	**40**	**60**	**20**	**11**	**14**	**4**

Site:	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FRCP1SW_BIC-02_2021-06-17	RG_FRCP1SW_BIC-03_2021-06-17	RG_FODPO_BIC-01_2021-06-17	RG_FODPO_BIC-02_2021-06-17	RG_FODPO_BIC-03_2021-06-17	RG_FRUPO_BIC-01_2021-06-18	RG_FRUPO_BIC-02_2021-06-18	RG_FRUPO_BIC-03_2021-06-18
Sample Collection Date:	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21
CC#:	CC220122	CC220123	CC220124	CC220125	CC220126	CC220127	CC220128	CC220129
Phylum: Annelida	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0
| Family: Lumbricidae	2	0	20	29	5	0	40	0
Phylum: Nemata	0	0	20	0	0	4	0	8
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	0	20	14	5	4	20	8
Totals:	**4**	**12**	**80**	**57**	**15**	**16**	**60**	**32**

ND designation of a taxa represents a non-

Project: FRO LAEMP (21-11)#1
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-01_2021-06-18	RG_FOUEW_BIC-02_2021-06-18	RG_FOUEW_BIC-03_2021-06-18	RG_FO22_BIC-01_2021-06-18	RG_FO22_BIC-02_2021-06-18	RG_FO22_BIC-03_2021-06-18	RG_FOUSH_BIC-1_2021-06-16	RG_FOUSH_BIC-2_2021-06-16	RG_FOUSH_BIC-3_2021-06-16
Sample Collection Date:	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
CC#:	CC220130	CC220131	CC220132	CC220133	CC220134	CC220135	CC220136	CC220137	CC220138
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	0	0	0	40
| Family: Sminthuridae	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0
Ameletus	0	0	0	0	0	0	40	0	0
| Family: Baetidae	0	0	0	0	0	0	0	0	0
Baetis	920	457	1300	8	3	0	640	600	260
Baetis rhodani group	340	14	140	8	1	0	40	160	0
Baetis bicaudatus	780	386	520	0	0	0	560	240	100
| Family: Ephemerellidae	160	86	160	17	0	78	300	320	120
Drunella	140	14	100	0	0	0	160	140	40
Drunella grandis group	0	0	0	0	0	0	0	0	0
Drunella doddsii	0	29	60	0	0	0	0	40	0
Drunella spinifera	0	0	0	0	0	11	0	20	0
Ephemerella excrucians complex	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	760	686	1500	442	60	256	2860	1620	2700
Cinygmula	140	314	300	50	3	11	500	720	280
Epeorus	180	114	120	83	33	44	1600	1400	1400
Rhithrogena	0	0	0	0	0	0	0	0	0
| Order: Plecoptera	80	29	0	8	1	0	0	40	0
| Family: Capniidae	20	86	200	675	90	767	20	0	0
| Family: Chloroperlidae	20	171	120	192	63	22	40	40	80
Haploperla	0	0	0	0	0	0	0	0	0
Plumiperla	0	0	20	0	32	0	0	0	20
Suwallia	0	0	0	0	0	0	20	0	0
Sweltsa	0	100	60	0	1	22	20	20	0
| Family: Leuctridae	0	0	0	0	0	0	0	0	0
Paraleuctra	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	40	0	0	8	0	0	0	0	20
Nemoura	0	0	0	0	1	0	0	0	0
Prostoia	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	57	0	0	0	33	0	0	0
Zapada	60	57	300	92	4	56	80	0	20
Zapada oregonensis group	460	471	400	33	8	167	140	20	120
Zapada cinctipes	360	86	40	33	1	267	0	20	0
Zapada columbiana	620	414	260	75	12	178	320	320	180

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-01_2021-06-18	RG_FOUEW_BIC-02_2021-06-18	RG_FOUEW_BIC-03_2021-06-18	RG_FO22_BIC-01_2021-06-18	RG_FO22_BIC-02_2021-06-18	RG_FO22_BIC-03_2021-06-18	RG_FOUSH_BIC-1_2021-06-16	RG_FOUSH_BIC-2_2021-06-16	RG_FOUSH_BIC-3_2021-06-16
Sample Collection Date:	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
CC#:	CC220130	CC220131	CC220132	CC220133	CC220134	CC220135	CC220136	CC220137	CC220138
| Family: Perlidae	0	0	0	0	0	0	0	40	0
Hesperoperla	0	14	20	0	0	0	20	20	0
| Family: Perlodidae	20	100	140	25	10	44	180	180	200
Isoperla	40	29	20	117	4	178	0	0	0
Kogotus	40	14	100	117	2	22	80	60	0
Megarcys	0	0	0	8	0	0	20	80	20
Skwala	0	0	0	0	0	0	0	0	0
| Order: Trichoptera	0	0	0	0	0	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	14	20	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0
Brachycentrus	0	0	0	0	1	0	40	0	20
Brachycentrus americanus	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	0	0	0	0
Glossosoma	0	0	20	0	0	11	0	0	0
| Family: Hydropsychidae	0	0	0	0	0	0	0	0	0
Arctopsyche	0	0	0	0	0	0	0	0	0
Parapsyche	0	0	0	0	0	0	0	20	20
Parapsyche elsis	0	0	0	0	0	0	20	20	0
| Family: Limnephilidae	20	0	0	0	1	0	0	0	0
Chyranda centralis	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	14	0	8	1	144	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0
Rhyacophila	20	100	160	58	10	11	60	160	160
Rhyacophila angelita group	0	71	60	17	5	22	120	100	60
Rhyacophila betteni group	0	0	0	0	0	0	20	0	80
Rhyacophila brunnea/vemna group	200	29	140	25	5	56	80	40	0
Rhyacophila hyalinata group	0	0	0	0	0	0	60	20	40
Rhyacophila vofixa group	0	0	0	0	0	0	0	0	0
Rhyacophila alberta group	80	57	80	33	8	0	160	100	80
Rhyacophila arnaudi	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	0	0	0	0	0	0	0	0	0
Rhyacophila narvae	0	0	0	0	0	0	0	0	0
Rhyacophila verrula group	80	0	0	17	2	11	0	0	0
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	20	8	0	0	40	0	0
| Family: Uenoidae	0	0	0	0	0	0	0	0	0
Neothremma	20	0	0	0	0	0	0	0	0
| Order: Coleoptera	0	0	0	0	0	0	0	0	0
| Family: Dytiscidae	0	0	0	0	0	0	0	0	0
Stictotarsus	0	0	0	0	0	11	0	0	0
| Family: Elmidae	40	171	220	250	12	211	0	20	0
Heterlimnius	40	71	120	58	8	55	0	0	0
| Family: Staphylinidae	0	0	0	8	1	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	20	0	40	0	0	22	20	0	0
Ceratopogon	0	0	0	0	0	0	0	0	0
Mallochohelea	40	71	20	0	0	0	0	20	20
| Family: Chironomidae	100	29	20	0	0	11	40	80	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0
| Tribe: Chironomini	0	0	0	0	0	0	0	0	0
Paracladopelma	0	14	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0
Micropsectra	360	43	120	8	0	122	80	260	40
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0
Diamesa	0	14	0	0	0	0	20	80	20
Pagastia	520	43	0	42	0	78	80	80	40

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-01_2021-06-18	RG_FOUEW_BIC-02_2021-06-18	RG_FOUEW_BIC-03_2021-06-18	RG_FO22_BIC-01_2021-06-18	RG_FO22_BIC-02_2021-06-18	RG_FO22_BIC-03_2021-06-18	RG_FOUSH_BIC-1_2021-06-16	RG_FOUSH_BIC-2_2021-06-16	RG_FOUSH_BIC-3_2021-06-16
Sample Collection Date:	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
CC#:	CC220130	CC220131	CC220132	CC220133	CC220134	CC220135	CC220136	CC220137	CC220138
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0
Brillia	0	14	0	0	0	0	0	0	0
Corynoneura	0	0	0	0	0	0	0	0	0
Cricotopus (Nostococladius)	0	0	0	0	0	0	0	0	0
Eukiefferiella	20	0	0	0	0	0	0	0	0
Hydrobaenus	0	0	0	0	0	0	0	0	0
Krenosmittia	20	0	0	0	0	0	20	0	0
Limnophyes	0	0	0	0	0	0	0	0	0
Orthocladius complex	960	43	60	58	1	278	120	160	160
Paracladius	0	0	0	0	0	0	0	0	0
Parametriocnemus	100	0	20	25	3	44	100	20	100
Rheocricotopus	40	29	0	0	0	11	100	100	100
Thienemanniella	0	0	0	0	0	0	0	0	0
Tvetenia	0	0	0	8	0	0	80	60	40
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0
Zavrelimyia	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	0	0	1	0	0	20	0
| Tribe: Procladiini	0	0	0	0	0	0	0	0	0
Procladius	0	0	0	0	0	0	0	0	0
| Family: Empididae	0	0	0	0	0	0	0	0	0
Clinocera	0	0	0	8	2	0	0	0	0
Neoplasta	0	29	0	0	0	0	20	0	0
Oreogeton	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0
| Family: Muscidae	0	0	0	0	0	0	0	0	0
Limnophora	0	0	0	0	0	11	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0
Glutops	0	14	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	20	0	0	0	0	0	0	0	60
| Family: Simuliidae	0	0	0	0	0	0	0	60	0
Gymnopais	0	0	0	0	0	0	0	0	0
Prosimulium/Helodon	0	0	0	0	0	0	0	0	0
Simulium	60	0	40	0	5	0	160	40	140
| Family: Tipulidae	20	43	20	33	3	33	0	0	0
Antocha	20	14	0	0	0	0	0	0	0
Dicranota	40	14	0	25	7	11	40	0	20
| Family: Limoniidae	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0
Erioptera	0	0	0	0	0	0	0	0	0
Hexatoma	0	0	0	0	0	0	0	20	0
Limnophila	0	0	0	0	0	0	0	0	0
Molophilus	0	0	0	0	0	0	0	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	25	1	22	0	0	0
| Order: Thysanoptera	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	0	1	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	20

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-01_2021-06-18	RG_FOUEW_BIC-02_2021-06-18	RG_FOUEW_BIC-03_2021-06-18	RG_FO22_BIC-01_2021-06-18	RG_FO22_BIC-02_2021-06-18	RG_FO22_BIC-03_2021-06-18	RG_FOUSH_BIC-1_2021-06-16	RG_FOUSH_BIC-2_2021-06-16	RG_FOUSH_BIC-3_2021-06-16
Sample Collection Date:	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
CC#:	CC220130	CC220131	CC220132	CC220133	CC220134	CC220135	CC220136	CC220137	CC220138
| Family: Feltriidae	0	0	0	0	0	0	0	0	0
Feltria	20	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0
Lebertia	300	57	140	17	1	111	200	120	120
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0
Sperchon	20	0	0	0	0	0	0	20	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	11	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	1	0	0	0	0
| Family: Hydrozetidae	0	0	0	0	0	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0
| Order: Decapoda	0	0	0	0	0	0	0	0	0
| Family: Astacidae	0	0	0	0	0	0	0	0	0
Pacifastacus	0	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	20	43	0	42	12	333	0	0	0
Pisidium	0	0	0	42	4	56	0	0	0
| Class: Gastropoda	0	0	0	0	0	0	0	0	0
| Order: Basommatophora	0	0	0	0	0	0	0	0	0
| Family: Lymnaeidae	0	0	0	0	0	0	0	0	0
Fossaria	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	0	0	0
Rhynchelmis	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0
Nais	0	14	0	0	0	0	0	0	0
| Subfamily: Tubificinae without hair cha	980	14	20	58	0	33	0	20	40
Totals:	**9360**	**4797**	**7220**	**2864**	**425**	**3875**	**9320**	**7740**	**6980**
Taxa present but not included:									
Terrestrials	0	0	0	0	0	0	0	0	0
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0
| Family: Cecidomyiidae	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	14	20	8	1	11	20	20	20

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-01_2021-06-18	RG_FOUEW_BIC-02_2021-06-18	RG_FOUEW_BIC-03_2021-06-18	RG_FO22_BIC-01_2021-06-18	RG_FO22_BIC-02_2021-06-18	RG_FO22_BIC-03_2021-06-18	RG_FOUSH_BIC-1_2021-06-16	RG_FOUSH_BIC-2_2021-06-16	RG_FOUSH_BIC-3_2021-06-16
Sample Collection Date:	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	18-Jun-21	16-Jun-21	16-Jun-21	16-Jun-21
CC#:	CC220130	CC220131	CC220132	CC220133	CC220134	CC220135	CC220136	CC220137	CC220138
Phylum: Annelida	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	14	0	8	0	11	0	0	0
Phylum: Nemata	20	0	0	0	1	0	0	0	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	14	20	8	1	11	20	20	0
Totals:	**40**	**42**	**40**	**24**	**3**	**33**	**40**	**40**	**20**

ND designation of a taxa represents a non-

Methods and QC Report 2021

Project ID: FRO LAEMP (21-11) #2

Client: Minnow Environmental

Prepared by:

Cordillera Consulting Inc.

Summerland, BC

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Table of Contents

Sample Reception 3
Sample Sorting...4
Sorting Quality Control - Sorting Efficiency 6
Sorting Quality Control - Sub-Sampling QC 8
Taxonomic Effort 10
Taxonomists 10
Taxonomic QC...11
Error Summary 12
Error Rationale 12
References..21
Taxonomic Keys 21

Sample Reception

On September 29, 2021, Cordillera Consulting received 59 benthic samples from Minnow Environmental. When samples arrived to Cordillera Consulting, exterior packaging was initially inspected for damage or wet spots that would have indicated damage to the interior containers.

Samples were logged into a proprietary software database (INSTAR1) where the clients assigned sample name was recorded along with a Cordillera Consulting (CC) number for cross-reference. Each sample was checked to ensure that all sites and replicates recorded on field sheets or packing lists were delivered intact and with adequate preservative. Any missing, mislabelled or extra samples were reported to the client immediately to confirm the total numbers and correct names on the sample jars. The client representative was notified of the arrival of the shipment and provided a sample inventory once intake was completed.
See table below for sample inventory:

Table 1: Summary of sample information including Cordillera Consulting (CC) number

Sample	CC#	Date	Size	# of Jars
RG_SCOUTDS_BIC-1_2021-09-14	CC221408	9/14/2021	400µM	1
RG_SCOUTDS_BIC-2_2021-09-14	CC221409	9/14/2021	400µM	2
RG_SCOUTDS_BIC-3_2021-09-14	CC221410	9/14/2021	400µM	1
RG_FRCP1SW_BIC-1_2021-09-15	CC221411	9/15/2021	400µM	1
RG_FRCP1SW_BIC-2_2021-09-15	CC221412	9/15/2021	400µM	1
RG_FRCP1SW_BIC-3_2021-09-15	CC221413	9/15/2021	400µM	1
RG_MP1_BIC-1_2021-09-15	CC221414	9/15/2021	400µM	1
RG_MP1_BIC-2_2021-09-15	CC221415	9/15/2021	400µM	1
RG_MP1_BIC-3_2021-09-15	CC221416	9/15/2021	400µM	1
RG_FOUCL_BIC-1_2021-09-13	CC221417	9/13/2021	400µM	1
RG_FOUCL_BIC-2_2021-09-13	CC221418	9/13/2021	400µM	1
RG_FOUCL_BIC-3_2021-09-13	CC221419	9/13/2021	400µM	1
RG_FO22_BIC-1_2021-09-12	CC221420	9/12/2021	400µM	2
RG_FO22_BIC-2_2021-09-12	CC221421	9/12/2021	400µM	1
RG_FO22_BIC-3_2021-09-12	CC221422	9/12/2021	400µM	2
RG_FO22_BIC-4_2021-09-12	CC221423	9/12/2021	400µM	2
RG_FO22_BIC-5_2021-09-12	CC221424	9/12/2021	400µM	1
RG_FOBSC_BIC-1_2021-09-13	CC221425	9/13/2021	400µM	1
RG_FOBSC_BIC-2_2021-09-13	CC221426	9/13/2021	400µM	1
RG_FOBSC_BIC-3_2021-09-13	CC221427	9/13/2021	400µM	2
RG_FOBKS_BIC-1_2021-09-10	CC221428	9/10/2021	400µM	1
RG_FOBKS_BIC-2_2021-09-10	CC221429	9/10/2021	400µM	1
RG_FOBKS_BIC-3_2021-09-10	CC221430	9/10/2021	400µM	1
RG_FODPO_BIC-1_2021-09-11	CC221431	9/11/2021	400µM	2
RG_FODPO_BIC-2_2021-09-11	CC221432	9/11/2021	400µM	2
RG_FODPO_BIC-3_2021-09-11	CC221433	9/11/2021	400µM	1

RG_FOBCP_BIC-1_2021-09-14	CC221434	9/14/2021	400µM	1
RG_FOBCP_BIC-2_2021-09-14	CC221435	9/14/2021	400µM	2
RG_FOBCP_BIC-3_2021-09-14	CC221436	9/14/2021	400µM	1
RG_FOBCP_BIC-4_2021-09-14	CC221437	9/14/2021	400µM	1
RG_FOBCP_BIC-5_2021-09-14	CC221438	9/14/2021	400µM	1
RG_FOUEW_BIC-1_2021-09-11	CC221439	9/11/2021	400µM	2
RG_FOUEW_BIC-2_2021-09-11	CC221440	9/11/2021	400µM	1
RG_FOUEW_BIC-3_2021-09-11	CC221441	9/11/2021	400µM	1
RG_FODHE_BIC-1_2021-09-13	CC221442	9/13/2021	400µM	1
RG_FODHE_BIC-2_2021-09-13	CC221443	9/13/2021	400µM	1
RG_FODHE_BIC-3_2021-09-13	CC221444	9/13/2021	400µM	1
RG_FOUSH_BIC-1_2021-09-16	CC221445	9/16/2021	400µM	1
RG_FOUSH_BIC-2_2021-09-16	CC221446	9/16/2021	400µM	1
RG_FOUSH_BIC-3_2021-09-16	CC221447	9/16/2021	400µM	1
RG_FO26_BIC-1_2021-09-16	CC221448	9/16/2021	400µM	2
RG_FO26_BIC-2_2021-09-16	CC221449	9/16/2021	400µM	1
RG_FO26_BIC-3_2021-09-16	CC221450	9/16/2021	400µM	1
RG_HENUP_BIC-1_2021-09-16	CC221452	9/16/2021	400µM	1
RG_HENUP_BIC-2_2021-09-16	CC221453	9/16/2021	400µM	1
RG_HENUP_BIC-3_2021-09-16	CC221454	9/16/2021	400µM	1
RG_FOUNGD_BIC-1_2021-09-17	CC221455	9/17/2021	400µM	1
RG_FOUNGD_BIC-2_2021-09-17	CC221456	9/17/2021	400µM	1
RG_FOUNGD_BIC-3_2021-09-17	CC221457	9/17/2021	400µM	1
RG_FODNGD_BIC-1_2021-09-17	CC221458	9/17/2021	400µM	1
RG_FODNGD_BIC-2_2021-09-17	CC221459	9/17/2021	400µM	1
RG_FODNGD_BIC-3_2021-09-17	CC221460	9/17/2021	400µM	2
RG_FRUPO_BIC-1_2021-09-19	CC221461	9/19/2021	400µM	2
RG_FRUPO_BIC-2_2021-09-19	CC221462	9/19/2021	400µM	1
RG_FRUPO_BIC-3_2021-09-19	CC221463	9/19/2021	400µM	1
RG_FOUKI_BIC-1_2021-09-20	CC221464	9/20/2021	400µM	1
RG_FOUKI_BIC-2_2021-09-20	CC221465	9/20/2021	400µM	1
RG_FOUKI_BIC-3_2021-09-20	CC221466	9/20/2021	400µM	1

Sample Sorting

- Using a gridded Petri dish, fine forceps and a low power stereo-microscope (Olympus, Nikon, Leica) the sorting technicians removed the invertebrates and sorted them into family/orders.
- The sorting technician kept a running tally of total numbers excluding organisms from Porifera, Nemata, Platyhelminthes, Ostracoda, Copepoda, Cladocera and terrestrial drop-ins such as aphids. These organisms were marked for their presence (given a value of 1) only and left in the sample. They were not included towards the 300-organism subsample count.
- Where specimens are broken or damaged, only heads were counted.
- Subsampling was conducted with the use of a Marchant Box.

- When using the Marchant box, cells were extracted at the same time in the order indicated by a random number table. If the 300th organism was found part way into sorting a cell then the balance of that cell was sorted. If the organism count had not reached 300 by the 50th cell then the entire sample was sorted.
- The total number of cells sorted and the number of organisms removed were recorded manually on a bench sheet and then recorded into INSTAR1
- Organisms were stored in vials containing 80% ethanol and an interior label indicating the site names, date of sampling, site code numbers and portion subsampled. This information was also recorded on the laboratory bench sheet and on INSTAR1.
- The sorted portion of the debris was preserved and labeled separately from the unsorted portion and was tested for sorting efficiency (Sorting Quality Control – Sorting Efficiency). The unsorted portion was also labeled and preserved in separate jars.

Percent sub-sampled and total countable invertebrates pulled from the samples were summarized in the table below.

Table 2: Percent sub-sample and invertebrate count for each sample

Sample	Date	CC#	400 micron fraction	
			% Sampled	# Invertebrates
RG_SCOUTDS_BIC-1_2021-09-14	14-Sep-21	CC221408	5%	434
RG_SCOUTDS_BIC-2_2021-09-14	14-Sep-21	CC221409	5%	672
RG_SCOUTDS_BIC-3_2021-09-14	14-Sep-21	CC221410	5%	356
RG_FRCP1SW_BIC-1_2021-09-15	15-Sep-21	CC221411	5%	502
RG_FRCP1SW_BIC-2_2021-09-15	15-Sep-21	CC221412	5%	700
RG_FRCP1SW_BIC-3_2021-09-15	15-Sep-21	CC221413	5%	513
RG_MP1_BIC-1_2021-09-15	15-Sep-21	CC221414	5%	593
RG_MP1_BIC-2_2021-09-15	15-Sep-21	CC221415	5%	909
RG_MP1_BIC-3_2021-09-15	15-Sep-21	CC221416	5%	830
RG_FOUCL_BIC-1_2021-09-13	13-Sep-21	CC221417	5%	1185
RG_FOUCL_BIC-2_2021-09-13	13-Sep-21	CC221418	5%	1099
RG_FOUCL_BIC-3_2021-09-13	13-Sep-21	CC221419	5%	1436
RG_FO22_BIC-1_2021-09-12	12-Sep-21	CC221420	5%	466
RG_FO22_BIC-2_2021-09-12	12-Sep-21	CC221421	5%	343
RG_FO22_BIC-3_2021-09-12	12-Sep-21	CC221422	5%	526
RG_FO22_BIC-4_2021-09-12	12-Sep-21	CC221423	5%	323
RG_FO22_BIC-5_2021-09-12	12-Sep-21	CC221424	7%	497
RG_FOBSC_BIC-1_2021-09-13	13-Sep-21	CC221425	5%	355
RG_FOBSC_BIC-2_2021-09-13	13-Sep-21	CC221426	6%	363
RG_FOBSC_BIC-3_2021-09-13	13-Sep-21	CC221427	5%	511
RG_FOBKS_BIC-1_2021-09-10	10-Sep-21	CC221428	5%	395
RG_FOBKS_BIC-2_2021-09-10	10-Sep-21	CC221429	6%	330
RG_FOBKS_BIC-3_2021-09-10	10-Sep-21	CC221430	10%	342

RG_FODPO_BIC-1_2021-09-11	11-Sep-21	CC221431	5%	670
RG_FODPO_BIC-2_2021-09-11	11-Sep-21	CC221432	5%	952
RG_FODPO_BIC-3_2021-09-11	11-Sep-21	CC221433	5%	1091
RG_FOBCP_BIC-1_2021-09-14	14-Sep-21	CC221434	7%	410
RG_FOBCP_BIC-2_2021-09-14	14-Sep-21	CC221435	5%	561
RG_FOBCP_BIC-3_2021-09-14	14-Sep-21	CC221436	5%	605
RG_FOBCP_BIC-4_2021-09-14	14-Sep-21	CC221437	5%	320
RG_FOBCP_BIC-5_2021-09-14	14-Sep-21	CC221438	5%	502
RG_FOUEW_BIC-1_2021-09-11	11-Sep-21	CC221439	5%	532
RG_FOUEW_BIC-2_2021-09-11	11-Sep-21	CC221440	5%	594
RG_FOUEW_BIC-3_2021-09-11	11-Sep-21	CC221441	5%	610
RG_FODHE_BIC-1_2021-09-13	13-Sep-21	CC221442	5%	1092
RG_FODHE_BIC-2_2021-09-13	13-Sep-21	CC221443	5%	504
RG_FODHE_BIC-3_2021-09-13	13-Sep-21	CC221444	5%	892
RG_FOUSH_BIC-1_2021-09-16	16-Sep-21	CC221445	5%	341
RG_FOUSH_BIC-2_2021-09-16	16-Sep-21	CC221446	6%	335
RG_FOUSH_BIC-3_2021-09-16	16-Sep-21	CC221447	6%	323
RG_FO26_BIC-1_2021-09-16	16-Sep-21	CC221448	5%	2356
RG_FO26_BIC-2_2021-09-16	16-Sep-21	CC221449	5%	959
RG_FO26_BIC-3_2021-09-16	16-Sep-21	CC221450	5%	1071
RG_HENUP_BIC-1_2021-09-16	16-Sep-21	CC221452	10%	369
RG_HENUP_BIC-2_2021-09-16	16-Sep-21	CC221453	5%	714
RG_HENUP_BIC-3_2021-09-16	16-Sep-21	CC221454	5%	492
RG_FOUNGD_BIC-1_2021-09-17	17-Sep-21	CC221455	5%	485
RG_FOUNGD_BIC-2_2021-09-17	17-Sep-21	CC221456	5%	1001
RG_FOUNGD_BIC-3_2021-09-17	17-Sep-21	CC221457	5%	1156
RG_FODNGD_BIC-1_2021-09-17	17-Sep-21	CC221458	5%	372
RG_FODNGD_BIC-2_2021-09-17	17-Sep-21	CC221459	5%	718
RG_FODNGD_BIC-3_2021-09-17	17-Sep-21	CC221460	5%	533
RG_FRUPO_BIC-1_2021-09-19	19-Sep-21	CC221461	5%	888
RG_FRUPO_BIC-2_2021-09-19	19-Sep-21	CC221462	5%	566
RG_FRUPO_BIC-3_2021-09-19	19-Sep-21	CC221463	5%	563
RG_FOUKI_BIC-1_2021-09-20	20-Sep-21	CC221464	5%	520
RG_FOUKI_BIC-2_2021-09-20	20-Sep-21	CC221465	5%	408
RG_FOUKI_BIC-3_2021-09-20	20-Sep-21	CC221466	5%	592

Sorting Quality Control - Sorting Efficiency

As a part of Cordillera's laboratory policy, all projects undergo sorting efficiency checks.

- As sorting progresses, 10% of samples were randomly chosen by senior members of the sorting team for resorting.
- All sorters working on a project had at least 1 sample resorted by another sorter.
- An efficiency of 90 % was expected (95% for CABIN samples).
- If 90/95% efficiency was not met, samples from that sorter were resorted.

- To calculated sorting efficiency the following formula was used:

$$\frac{\#OrganismsMissed}{TotalOrganismsFound} * 100 = \%OM$$

Table 3 Summary of sorting efficiency

		Total from Sample	Percent Efficiency
Site - QC, Sample - QC 1, CC# - CC221412, Percent sampled = 5%, Sieve size = 400			
Diptera	10		
Chironomidae	2		
Heptageniidae	1		
Plecoptera	22		
Trombidiformes	2		
Total:	**37**	**700**	**95%**
Site - QC, Sample - QC 2, CC# - CC221418, Percent sampled = 5%, Sieve size = 400			
Trichoptera	2		
Ephemerellidae	1		
Total:	**3**	**1099**	**100%**
Site - QC, Sample - QC 3, CC# - CC221424, Percent sampled = 7%, Sieve size = 400			
Plecoptera	1		
Total:	**1**	**497**	**100%**
Site - QC, Sample - QC 4, CC# - CC221429, Percent sampled = 6%, Sieve size = 400			
No Invertebrates Found	0		
Total:	**0**	**330**	**100%**

Site - QC, Sample - QC 5, CC# - CC221441, Percent sampled = 5%, Sieve size = 400			
Plecoptera	1		
Total:	**1**	**610**	**100%**

Site - QC, Sample - QC 6, CC# - CC221449, Percent sampled = 5%, Sieve size = 400			
Diptera	1		
Trichoptera	1		
Trombidiformes	1		
Total:	**3**	**959**	**100%**

Sorting Quality Control - Sub-Sampling QC

Certain Provincial and Mining projects require additional sorting checks in the form of sub-sampling QC, (Environmental Effects Monitoring (EEM) protocol). This ensured that any fraction of the total sample that was examined was actually an accurate representation of the number of total organisms. Organisms from the additional sub-samples were not identified; rather total organism count only was compared.

Sub-Sampling efficiency was measured on 10% of the number of sub-sampled samples in the project. Ex. In a project where 50 of 100 total samples were processed through subsampling using a Marchant box, then 10% of 50; or 5 samples were used for sub sampling efficiency.

Sub-Sampling efficiency was performed by fractioning the entire sample into sub-sample percentages. On each sub-sampled portion, a total organism count was recorded and compared to the rest of the sub-samples. In order to pass, all fractions were required to be within 20% of total organism count.

Example: If 300 organisms are found in 10% of the sample, the sorter will continue to sample in 10% fractions until the entire sample is separated. They will then count the total number of organisms in each of the 10 fractions of 10% and compare the organism count.

When divergence is >20% the sorting manager examines for the source of the problem and takes steps to correct it. With the Marchant box, the problem typically rested with how the box is flipped back to the upright position. For this reason, subsampling was performed by experienced employees only. Another common source of error would be the type of debris in the sample. Samples with algae or heavy with periphyton have a higher incident of failure due to clumping than clear samples.

Table 4 Summary of Sub Sample efficiency

Station ID		Organisms in Subsample																				Sorter		Actual Total	Precision		Accuracy	
CC#	Sample Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	By	Time		Percent Range		Min	Max
221423	RG_FO22_BIC-4	319	268	275	287	275																RH	335	1424	0.00	15.99	0.77	12.01
221455	RG_FOUNGD_BIC-1	472	485	468	466	498																CM	225	2389	0.43	6.43	1.21	4.23
221438	RG_FOBCP_BIC-5	409	431	394	434	382																CM	240	2050	0.69	11.98	0.24	6.83
221425	RG_FOBSC_BIC-1	346	340	346	332	356																CM	210	1720	0.00	6.74	0.58	3.49
221408	RG_SCOUTDS_BIC-1	422	397	412	415	432																CM	240	2078	0.72	8.10	0.14	4.48

Taxonomic Effort

The next procedure was the identification to genus-species level where possible of all the organisms in the sample.

- Identifications were made at the genus/species level for all insect organisms found including Chironomidae (Based on CABIN protocol).
- Non-insect organisms (except those not included in CABIN count) were identified to genus/species where possible and to a minimum of family level with intact and mature specimens.
- The Standard Taxonomic Effort lists compiled by the CABIN manual[1], SAFIT[2] , and PNAMP[3] were used as a guide line for what level of identification to achieve where the condition and maturity of the organism enabled.
- Organisms from the same families/order were kept in separate vials with 80% ethanol and an interior label of printed laser paper.
- Chironomidae was identified to genus/species level where possible and was aided by slide mounts. CMC-10 was used to clear and mount the slide.
- Oligochaetes was identified to family/genus level with the aid of slide mounts. CMC-10 was used to clear and mount the slide.
- Other Annelida (leeches, polychaetes) were identified to the family/genus/species level with undamaged, mature specimens.
- Mollusca was identified to family and genus/species where possible
- Decapoda, Amphipoda and Isopoda were identified at family/genus/species level where possible.
- Bryozoans and Nemata remained at the phylum level
- Hydrachnidae and Cnidaria were identified at the family/genus level where possible.
- When requested, reference collections were made containing at least one individual from each taxa listed. Organisms represented will have been identified to the lowest practical level.
- Reference collection specimens were stored in 55 mm glass vials with screw-cap lids with polyseal inserts (museum quality). They were labeled with taxa name, site code, date identified and taxonomist name. The same information was applied to labels on the slide mounts.

Taxonomists

The taxonomists for this project were certified by the Society of Freshwater Science (SFS) Taxonomic Certification Program at level 2 which is the required certification for CABIN projects:
Scott Finlayson: Group 1 General Arthropods (East/West); Group 2 EPT (East/West);
Group 3 Chironomidae (East/West); Group 4 Oligochaeta

Adam Bliss: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae
Rita Avery: Group 1 General Arthropods (East/West); Group 2 EPT (East/West)

Taxonomic QC

Taxonomic QC was performed in house by someone other than the original taxonomist.

- Quality control protocol involved complete, blind re-identification and re-enumeration of at least 10% of samples by a second SFS-certified taxonomist.
- Samples for taxonomic quality control were randomly selected and quality control procedures were conducted as the project progresses through the laboratories.

- The second (QC) taxonomist will calculate and record four types of errors:
    1. Misidentification error
    2. Enumeration error
    3. Questionable taxonomic resolution error
    4. Insufficient taxonomic resolution error

The QC coordinator then calculates the following estimates of taxonomic precision.

1. The percent total identification error rate is calculated as:

$$\frac{Sum\ of\ incorrect\ identifications}{total\ organisms\ counted\ in\ audit} * (100)$$

The average total identification error rate of audited samples did not exceed 5%. All samples that exceed a 5% error rate were re-evaluated to determine whether repeated errors or patterns in error contributed.

2. The percent difference in enumeration (PDE) to quantify the consistency of specimen counts.

$$PDE = \frac{|n_1 - n_2|}{n_1 + n_2} x100$$

3. The percent taxonomic disagreement (PTD) to quantify the shared precision between two sets of identifications.

$$PTD = \left(1 - \left[\frac{a}{N}\right]\right) x100$$

4. Bray Curtis dissimilarity Index to quantify the differences in identifications.

$$BC_{ij} = 1 - \frac{2C_{ij}}{S_j + S_i}$$

Error Summary

All samples report errors within the acceptable limits for CABIN Laboratory methods (less than 5% error).

Table 5 Summary of taxonomic error following QC

Site	Taxa Identified	% Error	PDE	PTD	Bray - Curtis Dissimilarity index
Site - 2021, Sample - RG_SCOUTDS_BIC-1_2021-09-14, CC# - CC221408, Percent sampled = 5%, Sieve size = 400	435	0.00	0.1150748	0.68965517	0.00575374
Site - 2021, Sample - RG_MP1_BIC-2_2021-09-15, CC# - CC221415, Percent sampled = 5%, Sieve size = 400	909	0.00	0	1.21012101	0.01210121
Site - 2021, Sample - RG_FOBSC_BIC-1_2021-09-13, CC# - CC221425, Percent sampled = 5%, Sieve size = 400	355	0.00	0	0.56338028	0.0056338
Site - 2021, Sample - RG_FOBCP_BIC-3_2021-09-14, CC# - CC221436, Percent sampled = 5%, Sieve size = 400	604	0.00	0.08271299	0.66115702	0.00578991
Site - 2021, Sample - RG_FOUEW_BIC-3_2021-09-11, CC# - CC221441, Percent sampled = 5%, Sieve size = 400	609	0.00	0.08203445	0.49180328	0.00410172
Site - 2021, Sample - RG_FO26_BIC-1_2021-09-16, CC# - CC221448, Percent sampled = 5%, Sieve size = 400	2358	0.00	0.04242681	1.18744699	0.01145524

There will always be disagreements between taxonomists regarding the degree of taxonomic resolution in immature specimens and when laboratories make use of different keys for certain groups (Mollusks is an especially disputed group). It is always possible that some taxa found by the original taxonomist were overlooked in QC.

All of the Taxonomic QC samples that were observed passed testing according to the CABIN misidentification protocols. See the tables below for results from taxonomic QC audit.

Error Rationale

Site - 2021, Sample - RG_SCOUTDS_BIC-1_2021-09-14, CC# - CC221408, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Baetidae	1	1						

Baetis	1	2	No			X			
Baetis rhodani group	7	6	No			X			
Brachycentrus	1	1							
Capniidae	2	2							
Chironomidae	2	2							
Cinygmula	82	81	No			X			
Constempellina sp. C	1	1							
Corynoneura	1	1							
Diamesa	1	1							
Drunella doddsii	1	1							
Empididae	1	1							
Enchytraeus	9	9							
Epeorus	8	8							
Ephemerellidae	37	37							
Heptageniidae	8	9	No			X			
Hesperoperla	3	3							
Isoperla	13	13							
Kogotus	19	19							
Mallochohelea	9	9							
Megarcys	1	1							
Neoplasta	1	1							
Oligochaeta	9	9							
Orthocladius complex	1	1							
Parapsyche	1	1							
Parapsyche elsis	1	1							
Pericoma/Telmatoscopus	149	150	No			X			
Perlidae	1	1							
Perlodidae	1	1							
Rhithrogena	2	2							
Rhyacophila	8	8							
Rhyacophila atrata complex	2	2							
Rhyacophila hyalinata group	1	1							
Roederiodes	2	2							
Simuliidae	1	1							
Sweltsa	2	2							
Taeniopterygidae	16	16							
Thienemannimyia group	1	1							
Zapada	4	4							
Zapada cinctipes	19	19							
Zapada columbiana	1	1							
Zapada oregonensis group	3	3							

Total:	**434**	**435**						
					0	**5**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_MP1_BIC-2_2021-09-15, CC# - CC221415, Percent sampled = 5%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**
Baetidae	2	2						
Baetis	1	1						
Baetis rhodani group	11	11						
Bezzia/ Palpomyia	1	1						
Brachycentrus	1	1						
Chelifera/ Metachela	1	1						
Cinygmula	315	305	No			X		
Diamesa	1	1						
Dicranota	2	2						
Drunella doddsii	4	4						
Elmidae	1	1						
Epeorus	4	4						
Ephemerellidae	179	178	No			X		
Glossosoma	1	1						
Heptageniidae	67	77	No			X		
Hesperoconopa	1	1						
Heterlimnius	6	6						
Isoperla	2	2						
Kogotus	6	6						
Lebertia	5	5						
Mallochohelea	9	9						
Megarcys	2	2						
Micropsectra	1	1						
Nemouridae	1	1						
Oligophlebodes	26	26						
Orthocladius complex	5	5						
Parapsyche	1	1						
Pericoma/Telmatoscopus	200	201	No			X		
Perlodidae	2	2						
Rhithrogena	2	2						
Rhyacophila	24	24						

Rhyacophila atrata complex	6	6						
Rhyacophila betteni group	2	2						
Rhyacophila brunnea/vemna group	3	3						
Sweltsa	2	2						
Taeniopterygidae	4	4						
Zapada columbiana	1	1						
Zapada oregonensis group	7	7						
Total:	**909**	**909**						
					0	**4**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_FOBSC_BIC-1_2021-09-13, CC# - CC221425, Percent sampled = 5%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**
Apatania	1	1						
Arctopsyche	1	1						
Baetidae	2	2						
Bezzia/ Palpomyia	1	1						
Brachycentrus	1	1						
Chelifera/ Metachela	3	3						
Chloroperlidae	1	1						
Cinygmula	54	55	No			X		
Diamesa	1	1						
Enchytraeus	15	15						
Epeorus	7	7						
Ephemerellidae	19	18	No			X		
Glossosoma	2	2						
Heptageniidae	7	7						
Hesperoperla	1	1						
Hexatoma	1	1						
Isoperla	13	13						
Kogotus	6	6						
Lebertia	4	4						
Mallochohelea	11	11						
Megarcys	1	1						
Parapsyche	1	1						

Parapsyche elsis	1	1						
Pericoma/Telmatoscopus	166	166						
Perlidae	1	1						
Rhithrogena	3	3						
Rhyacophila	1	1						
Rhyacophila	5	5						
Rhyacophila atrata complex	1	1						
Rhyacophila betteni group	1	1						
Rhyacophila brunnea/vemna group	1	1						
Rhyacophila hyalinata group	4	4						
Roederiodes	1	1						
Skwala	1	1						
Taeniopterygidae	3	3						
Zapada	4	5	No			X		
Zapada cinctipes	7	6	No			X		
Zapada oregonensis group	2	2						
Total:	**355**	**355**						
					0	**4**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				

Site - 2021, Sample - RG_FOBCP_BIC-3_2021-09-14, CC# - CC221436, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Apatania	2	2						
Arctopsyche	3	3						
Baetis rhodani group	2	2						
Brachycentrus	1	1						
Capniidae	1	1						
Chelifera/ Metachela	1	1						
Chironomidae	1	1						
Chloroperlidae	1	1						
Cinygmula	96	99	No			X		
Dicranota	1	1						
Drunella doddsii	1	1						
Ecclisomyia	1	1						
Enchytraeus	2	2						

Ephemerellidae	32	32						
Eukiefferiella	2	2						
Glossosoma	2	2						
Heptageniidae	5	2	No			X		
Hesperoperla	1	1						
Isoperla	34	34						
Kogotus	28	28						
Lebertia	16	16						
Leuctridae	1	1						
Mallochohelea	7	7						
Megarcys	1	1						
Nemouridae	2	2						
Orthocladius complex	17	17						
Pagastia	1	1						
Parapsyche	1	1						
Pericoma/Telmatoscopus	191	190	No			X		
Perlidae	3	3						
Perlodidae	4	4						
Rhithrogena	7	7						
Rhyacophila	1	1						
Rhyacophila	15	15						
Rhyacophila brunnea/vemna group	1	1						
Roederiodes	1	1						
Simuliidae	3	3						
Simulium	4	4						
Sperchon	1	1						
Sweltsa	1	1						
Taeniopterygidae	36	36						
Thienemannimyia group	2	2						
Zapada	13	13						
Zapada cinctipes	48	48						
Zapada columbiana	1	1						
Zapada oregonensis group	10	10						
Total:	**605**	**604**						
					0	**3**	**0**	
% Total Misidentification Rate =	misidentifications	x100 =	0.00	**Pass**				
	total number							

Site - 2021, Sample - RG_FOUEW_BIC-3_2021-09-11, CC# - CC221441, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Ameletus	1	1						
Apatania	3	3						
Baetidae	1	1						
Baetis	3	3						
Baetis rhodani group	16	16						
Brachycentrus	1	1						
Brillia	1	1						
Capniidae	3	3						
Chelifera/ Metachela	4	4						
Chironomidae	5	5						
Chloroperlidae	4	4						
Cinygmula	69	70	No			X		
Coleoptera	32	32						
Dicranota	1	1						
Drunella grandis group	1	1						
Ecclisomyia	1	1						
Elmidae	2	2						
Empididae	1	1						
Ephemerellidae	23	23						
Eukiefferiella	4	4						
Glossosoma	18	18						
Glossosomatidae	2	2						
Heptageniidae	2	2						
Heterlimnius	7	7						
Heterlimnius	23	23						
Hydropsychidae	3	3						
Isoperla	30	30						
Kogotus	31	31						
Lebertia	17	17						
Leuctridae	1	1						
Limnophyes	1	1						
Megarcys	5	5						
Nais	2	2						
Nemouridae	2	2						
Neoplasta	3	3						
Oligophlebodes	1	1						

Orthocladius complex	24	24						
Pagastia	1	1						
Parapsyche	2	2						
Parapsyche elsis	3	3						
Pericoma/Telmatoscopus	21	21						
Perlidae	1	1						
Perlodidae	11	11						
Pisidiidae	2	2						
Pisidium	1	1						
Rhithrogena	1	1						
Rhyacophila	23	23						
Rhyacophila atrata complex	9	9						
Rhyacophila betteni group	4	4						
Rhyacophila brunnea/vemna group	4	4						
Rhyacophila hyalinata group	1	1						
Sperchon	2	2						
Sweltsa	6	6						
Taeniopterygidae	27	26	No			X		
Trichoptera	1	1						
Trichoptera	3	3						
Tvetenia	1	1						
Zapada	44	42	No			X		
Zapada cinctipes	47	47						
Zapada oregonensis group	47	48	No			X		
Total:	**610**	**609**						
					0	4	0	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				
Site - 2021, Sample - RG_FO26_BIC-1_2021-09-16, CC# - CC221448, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Ameletus	4	4						
Baetidae	322	318	No			X		
Baetis rhodani group	3	7	No			X		
Bezzia/ Palpomyia	1	1						
Chelifera/ Metachela	1	1						

Chironomidae	3	3						
Chloroperlidae	14	14						
Cinygmula	799	784	No			X		
Diamesa	10	10						
Dicranota	13	13						
Drunella doddsii	49	49						
Enchytraeus	1	1						
Epeorus	6	6						
Ephemerellidae	152	150	No			X		
Eukiefferiella	1	1						
Feltria	2	2						
Heptageniidae	27	42	No			X		
Hydropsychidae	13	13						
Kogotus	38	38						
Lebertia	6	6						
Leuctridae	5	5						
Limnephilidae	1	1						
Mallochohelea	4	4						
Megarcys	17	17						
Micropsectra	2	2						
Nemouridae	14	14						
Neothremma	1	1						
Oligophlebodes	49	49						
Orthocladius complex	35	35						
Pagastia	14	14						
Paraleuctra	1	1						
Parapsyche	25	25						
Parapsyche elsis	13	13						
Pericoma/Telmatoscopus	81	80	No			X		
Perlodidae	4	4						
Plecoptera	8	8						
Rheocricotopus	1	1						
Rhithrogena	13	13						
Rhyacophila	23	23						
Rhyacophila atrata complex	1	1						
Rhyacophila betteni group	4	4						
Rhyacophila hyalinata group	5	5						
Rhyacophila vofixa group	26	26						
Simulium	1	1						
Sperchon	13	11	No			X		
Sweltsa	40	40						
Taeniopterygidae	252	253	No			X		

Trichoptera	1	1						
Tvetenia	1	1						
Visoka cataractae	1	1						
Zapada	93	99	No			X		
Zapada columbiana	49	47	No			X		
Zapada oregonensis group	93	95	No			X		
Total:	**2356**	**2358**						
					0	**11**	**0**	
% Total Misidentification Rate =	misidentifications	x100 =	0.00	**Pass**				
	total number							

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[2] Southwest Association of Freshwater Invertebrate Taxonomists. (2015). www.safit.org

[3] Pacific Northwest Aquatic Monitoring Partnership (Accessed 2015). www.pnamp.org

Taxonomic Keys

Below is a reference list of taxonomic keys utilized by taxonomists at Cordillera Consulting. Cordillera taxonomists routinely seek out new literature to ensure the most accurate identification keys are being utilized. This is not reflective of the exhaustive list of resources that we use for identification. A more complete list of taxonomic resources can be found at Southwest Association of Freshwater Invertebrate Taxonomists. (2015).
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Project: FRO LAEMP (21-11)#2
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	0	0	0	0	0	0	40	120	360
| Family: Baetidae	20	40	20	40	20	0	180	40	20	260	420
Acentrella	0	0	0	0	40	0	0	0	0	0	0
Baetis	20	20	0	0	0	0	0	20	0	80	60
Baetis fuscatus gr.	0	0	0	0	0	0	0	0	0	0	0
Baetis rhodani group	140	60	20	100	0	0	300	220	140	460	740
Baetis bicaudatus	0	0	0	0	20	0	40	0	20	60	100
Diphetor hageni	0	0	0	0	20	0	0	0	0	0	0
| Family: Ephemerellidae	740	440	860	160	80	120	2220	3580	2140	4580	4940
Caudatella	0	0	0	0	0	0	0	0	0	0	0
Drunella	0	0	0	0	0	0	0	0	0	0	0
Drunella grandis group	0	0	0	0	0	0	20	0	0	0	0
Drunella doddsii	20	40	60	20	40	40	20	80	80	340	260
Ephemerella	0	0	0	0	0	0	0	0	20	20	0
| Family: Heptageniidae	160	120	80	220	200	0	560	1340	3220	3440	3280
Cinygmula	1640	2340	1380	1000	1180	900	3640	6300	4680	9480	7700
Epeorus	160	340	120	20	20	0	0	80	60	180	80
Rhithrogena	40	220	60	60	220	40	20	40	40	20	60
| Order: Plecoptera	0	2640	0	0	0	0	0	0	0	0	0
| Family: Capniidae	40	40	20	180	160	60	0	0	20	0	0
Mesocapnia	0	0	0	0	0	0	0	0	0	0	0
| Family: Chloroperlidae	0	20	0	20	20	0	0	0	0	0	0
Haploperla	0	20	0	0	20	20	0	0	0	0	0
Plumiperla	0	0	0	0	0	0	0	0	0	0	0
Sweltsa	40	120	20	20	20	0	40	40	20	180	220
| Family: Leuctridae	0	0	0	0	0	0	0	0	0	20	0
Paraleuctra	0	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	0	40	0	40	80	0	60	20	0	60	60
Malenka	0	0	20	20	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0
Zapada	80	240	60	240	800	180	60	0	40	60	140
Zapada oregonensis group	60	40	120	140	440	440	200	140	60	380	260
Zapada cinctipes	380	460	100	960	2460	2140	120	0	40	180	80
Zapada columbiana	20	20	0	0	40	0	20	20	40	0	100

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0
Yoraperla	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	20	100	20	0	0	0	0	0	0	0	0
Hesperoperla	60	100	20	20	20	0	20	0	0	0	0
| Family: Perlodidae	20	100	0	80	80	80	80	40	20	80	180
Isoperla	260	400	120	800	1040	240	100	40	60	20	240
Kogotus	380	120	160	440	460	940	160	120	120	100	120
Megarcys	20	0	80	140	100	80	80	40	20	200	60
Skwala	0	0	0	0	20	0	0	0	0	0	0
| Family: Taeniopterygidae	320	760	460	1740	1720	740	180	80	20	200	120
| Order: Trichoptera	0	0	0	0	20	0	20	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	0	20	100	40	600	0	0	0	20	20
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	20	0	40	80	80	100	0	20	0	20	40
Brachycentrus americanus	0	0	0	0	100	20	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	20	0	0	0	0	0
Anagapetus	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	0	0	0	180	40	200	0	20	20	0	20
| Family: Hydropsychidae	0	0	0	0	0	0	20	0	0	0	20
Arctopsyche	0	0	20	20	80	20	0	0	0	0	0
Parapsyche	20	20	0	20	40	0	20	20	40	40	20
Parapsyche elsis	20	0	0	0	20	0	40	0	0	0	0
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	20	20
Dicosmoecus	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	0	0	0	0	0	0	0	40	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	160	360	60	80	280	20	300	480	400	340	400
Rhyacophila betteni group	0	60	60	0	60	20	0	40	0	20	20
Rhyacophila brunnea/vemna group	0	40	120	20	60	20	120	60	0	20	20
Rhyacophila hyalinata group	20	20	0	0	20	0	40	0	0	0	0
Rhyacophila vofixa group	0	0	0	0	0	0	0	0	20	20	40
Rhyacophila atrata complex	40	0	0	20	0	0	180	120	20	40	20
Rhyacophila narvae	0	0	0	0	0	0	40	0	0	260	80
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	0	0	0	40	1540	520	600	20	20
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0

Project: FRO LAEMP (21-11)#2
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scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	20
| Family: Elmidae	0	0	0	0	0	0	0	20	20	0	0
Heterlimnius	0	0	20	0	0	0	20	120	20	0	0
Narpus	0	0	0	0	0	0	0	0	0	0	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	0	0	0	20	0
Bezzia/ Palpomyia	0	0	0	0	0	0	0	20	0	0	20
Mallochohelea	180	280	120	120	500	360	60	180	200	240	240
| Family: Chironomidae	40	20	0	200	100	60	0	0	0	80	60
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0
Constempellina sp. C	20	0	0	0	0	0	0	0	0	0	0
Micropsectra	0	40	0	0	0	20	0	20	0	0	20
Rheotanytarsus	0	0	0	0	0	0	0	0	0	0	0
Stempellinella	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0
Diamesa	20	0	0	0	0	0	0	20	0	0	0
Pagastia	0	0	0	20	20	40	40	0	40	0	20
Pseudodiamesa	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	0	0	0	0	20	60
Corynoneura	20	0	0	0	0	0	0	0	0	0	0
Diplocladius cultriger	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	0	0	0	40	0	0	0	0	20	40	20
Hydrobaenus	0	0	0	0	0	0	0	0	0	0	0
Limnophyes	0	0	0	0	0	0	0	0	0	0	0
Orthocladius complex	20	100	0	1060	740	120	200	100	20	60	0
Orthocladius lignicola	0	0	0	0	0	0	0	0	0	0	0
Parorthocladius	0	0	0	0	0	0	0	0	0	20	0
Rheocricotopus	0	0	0	0	0	0	20	0	0	0	20
Thienemanniella	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	0	20	0	20	0	20	0	0	0	0	40
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	20	20	20	0	0	0	20	0	0	20	0

Project: FRO LAEMP (21-11)#2
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
| Family: Empididae	20	0	0	0	0	0	0	0	0	0	0
Chelifera/ Metachela	0	0	60	20	0	40	0	20	0	20	0
Neoplasta	20	0	60	0	0	20	0	0	0	60	0
Oreogeton	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	40	0	0	0	0	0	20	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	2980	3220	2520	1080	1960	1680	780	4000	4080	1480	880
| Family: Simuliidae	20	20	0	20	60	0	0	0	0	0	0
Simulium	0	0	20	80	40	0	0	0	0	0	0
| Family: Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0
Nemotelus	0	0	0	0	0	0	0	0	0	0	0
| Family: Tipulidae	0	20	0	0	0	0	0	0	0	0	0
Antocha	0	0	0	0	0	0	20	0	0	0	0
Dicranota	0	0	0	60	0	20	0	40	20	20	40
Hesperoconopa	0	0	0	0	0	0	0	20	0	0	0
Hexatoma	0	0	0	0	20	0	40	0	0	0	20
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	0	0	0	0	0	0	20	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	0	20
| Family: Hydryphantidae	0	0	0	0	0	0	0	0	0	0	0
Protzia	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0
Hygrobates	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0
Lebertia	0	60	40	340	380	680	160	100	120	60	80

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	0	0	0	20	60	20	0	0	20	60
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	20	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0
| Order: Isopoda	0	0	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	20	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	180	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	180	300	140	0	0	60	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	160	40
Totals:	**8680**	**13440**	**7120**	**10040**	**14000**	**10260**	**11860**	**18180**	**16600**	**23700**	**21980**

Taxa present but not included:

Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Homoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Aphididae	0	0	0	0	0	0	0	0	0	20	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	0	0	20	0	20	0	20	20	20	20	20
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	20	0	0	0	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-1_2021-09-14	RG_SCOUTDS_BIC-2_2021-09-14	RG_SCOUTDS_BIC-3_2021-09-14	RG_FRCP1SW_BIC-1_2021-09-15	RG_FRCP1SW_BIC-2_2021-09-15	RG_FRCP1SW_BIC-3_2021-09-15	RG_MP1_BIC-1_2021-09-15	RG_MP1_BIC-2_2021-09-15	RG_MP1_BIC-3_2021-09-15	RG_FOUCL_BIC-1_2021-09-13	RG_FOUCL_BIC-2_2021-09-13
Sample Collection Date:	14-Sep-21	14-Sep-21	14-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	15-Sep-21	13-Sep-21	13-Sep-21
CC#:	CC221408	CC221409	CC221410	CC221411	CC221412	CC221413	CC221414	CC221415	CC221416	CC221417	CC221418
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	20	0	0	0	0	0	0	0	0	0
Phylum: Nemata	0	0	0	20	0	20	20	0	0	20	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	20	20	0	0	0	20	20	20	20	20	20
Totals:	**20**	**40**	**40**	**20**	**20**	**40**	**60**	**40**	**40**	**80**	**40**

ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0
Ameletus	20	0	0	0	0	0	0	0	0	0	0
| Family: Baetidae	340	100	0	100	0	14	40	17	0	40	33
Acentrella	0	0	0	0	0	0	0	0	0	0	0
Baetis	20	20	60	0	40	29	0	0	0	40	33
Baetis fuscatus gr.	0	0	0	0	0	0	0	0	0	0	17
Baetis rhodani group	360	300	380	180	400	429	0	133	60	240	150
Baetis bicaudatus	60	0	0	0	0	0	0	0	0	40	17
Diphetor hageni	0	0	0	0	0	0	0	0	0	0	0
| Family: Ephemerellidae	4080	220	100	220	80	71	380	283	320	440	250
Caudatella	0	0	0	0	0	0	0	0	0	0	0
Drunella	0	0	0	0	0	14	0	0	0	0	0
Drunella grandis group	0	0	20	0	0	14	0	17	0	0	0
Drunella doddsii	260	40	0	40	20	14	0	17	60	0	17
Ephemerella	0	0	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	1960	80	40	0	0	29	140	33	60	100	17
Cinygmula	14000	80	40	280	60	86	1080	1033	1560	2300	1833
Epeorus	160	0	0	0	0	0	140	233	180	240	133
Rhithrogena	180	0	0	0	0	0	60	33	60	20	50
| Order: Plecoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Capniidae	20	180	40	80	40	100	0	17	40	0	0
Mesocapnia	0	0	0	0	0	0	0	0	0	0	0
| Family: Chloroperlidae	0	40	20	20	0	0	20	0	0	0	0
Haploperla	0	0	0	0	0	0	0	0	0	0	0
Plumiperla	0	0	0	0	0	0	0	0	0	0	0
Sweltsa	240	20	20	0	40	29	0	0	0	0	33
| Family: Leuctridae	0	0	0	0	0	0	0	0	0	0	0
Paraleuctra	40	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	140	40	20	20	20	43	0	17	0	20	0
Malenka	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0
Zapada	220	340	360	560	260	371	80	0	60	40	67
Zapada oregonensis group	460	220	200	240	80	157	40	150	220	40	50
Zapada cinctipes	280	820	660	680	200	514	140	233	640	20	0
Zapada columbiana	80	0	0	0	0	14	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0
Yoraperla	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	0	0	0	0	0	0	20	17	0	20	0
Hesperoperla	0	0	0	0	0	0	20	17	0	20	17
| Family: Perlodidae	180	800	440	560	120	486	0	0	20	60	0
Isoperla	220	1000	620	940	360	714	260	167	160	40	33
Kogotus	120	460	220	340	100	300	120	100	240	180	33
Megarcys	160	120	80	40	20	0	20	100	0	100	33
Skwala	0	0	0	0	0	0	20	0	0	0	0
| Family: Taeniopterygidae	740	460	120	360	20	29	60	133	500	200	217
| Order: Trichoptera	0	20	0	20	20	0	0	0	0	20	17
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	40	360	0	320	129	20	0	20	0	33
Pedomoecus sierra	0	20	0	0	0	14	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	40	0	20	0	0	0	20	17	160	60	83
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	60	40	60	0	0	0	0	0	0
Anagapetus	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	20	600	420	600	580	100	40	0	40	60	0
| Family: Hydropsychidae	80	0	0	20	0	0	0	17	20	20	0
Arctopsyche	0	0	0	0	0	0	20	50	40	80	17
Parapsyche	80	0	0	0	0	0	20	83	100	40	0
Parapsyche elsis	20	0	0	0	0	0	20	17	20	40	17
| Family: Limnephilidae	0	100	80	140	60	29	0	0	0	0	0
Dicosmoecus	0	0	0	0	20	0	0	0	0	0	0
Ecclisomyia	0	180	200	120	40	71	0	0	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	1180	20	100	80	20	14	120	200	160	360	133
Rhyacophila betteni group	0	0	0	0	0	0	20	0	20	40	50
Rhyacophila brunnea/vemna group	40	180	120	80	20	14	20	33	0	40	0
Rhyacophila hyalinata group	0	0	0	0	0	0	80	17	20	0	0
Rhyacophila vofixa group	20	0	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	0	0	40	20	20	0	20	0	0	40	0
Rhyacophila narvae	20	100	80	120	60	43	0	0	0	0	0
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	0	0	40	29	0	0	0	0	0
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0

Project: FRO LAEMP (21-11)#2
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
| Order: Coleoptera	0	0	0	0	0	1286	0	0	0	0	0
| Family: Elmidae	0	280	120	500	340	114	0	17	0	0	17
Heterlimnius	0	1540	1420	3140	2440	1157	0	0	20	0	17
Narpus	0	0	0	0	0	0	0	0	0	0	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	20	0	0	0	0	0	0	0	0	0	0
Bezzia/ Palpomyia	80	0	0	20	0	0	20	0	0	20	17
Mallochohelea	80	20	0	60	40	29	220	100	320	160	133
| Family: Chironomidae	40	80	0	140	20	29	0	17	0	0	17
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0
Constempellina sp. C	0	0	0	0	0	0	0	0	0	0	0
Micropsectra	40	0	0	0	0	0	0	17	0	0	0
Rheotanytarsus	0	0	0	0	0	0	0	0	0	0	17
Stempellinella	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	0	0	0	0	0	20	0	0	20	0
Pagastia	0	0	0	0	0	0	0	0	0	0	0
Pseudodiamesa	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0
Brillia	80	0	0	0	0	0	0	0	0	0	0
Corynoneura	0	0	0	0	0	0	0	0	0	0	0
Diplocladius cultriger	20	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	20	120	20	40	20	0	0	0	20	20	17
Hydrobaenus	0	0	0	40	0	0	0	0	0	0	0
Limnophyes	0	0	0	20	0	0	0	0	0	0	0
Orthocladius complex	20	80	0	80	0	14	0	17	0	40	0
Orthocladius lignicola	0	0	0	0	0	0	0	0	0	40	0
Parorthocladius	20	0	0	0	0	0	0	0	0	0	0
Rheocricotopus	0	0	0	0	0	0	0	0	0	0	0
Thienemanniella	0	0	0	0	0	0	0	0	0	20	0
Tvetenia	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	0	0	0	0	0	0	40	20	0

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
| Family: Empididae	0	0	40	20	0	14	0	0	0	0	0
Chelifera/ Metachela	0	0	0	40	0	29	60	33	20	20	17
Neoplasta	0	40	20	80	20	14	0	0	0	0	0
Oreogeton	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	20	33	20	0	17
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	20	20	14	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	2300	200	40	200	100	143	3320	2067	4740	2300	1667
| Family: Simuliidae	0	20	0	0	0	0	0	0	20	0	0
Simulium	40	0	0	20	40	0	0	17	20	0	0
| Family: Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0
Nemotelus	0	0	0	0	0	0	0	0	0	0	0
| Family: Tipulidae	0	0	20	0	0	0	0	0	0	0	0
Antocha	0	0	0	0	0	0	0	0	0	0	0
Dicranota	20	160	100	60	200	114	0	17	40	0	0
Hesperoconopa	0	0	0	0	20	0	0	0	0	0	0
Hexatoma	0	0	0	0	0	0	20	0	20	0	17
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	20	0	0	0	29	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	20	0
| Family: Hydryphantidae	0	0	0	0	0	0	0	0	0	0	0
Protzia	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0
Hygrobates	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0
Lebertia	60	120	160	60	20	129	80	150	40	120	117

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0
Sperchon	20	0	0	0	0	0	0	17	0	0	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	20	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0
| Order: Isopoda	0	0	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	20	43	0	0	0	0	0
Pisidium	0	0	0	20	20	14	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	20	20	29	300	367	120	100	50
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0
Nais	0	40	0	40	0	0	0	0	0	0	0
Totals:	**28720**	**9320**	**6860**	**10520**	**6460**	**7101**	**7100**	**6053**	**10220**	**7900**	**5503**

Taxa present but not included:

Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Homoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Aphididae	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	20	20	20	0	0	20	17	20	20	233
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUCL_BIC-3_2021-09-13	RG_FO22_BIC-1_2021-09-12	RG_FO22_BIC-2_2021-09-12	RG_FO22_BIC-3_2021-09-12	RG_FO22_BIC-4_2021-09-12	RG_FO22_BIC-5_2021-09-12	RG_FOBSC_BIC-1_2021-09-13	RG_FOBSC_BIC-2_2021-09-13	RG_FOBSC_BIC-3_2021-09-13	RG_FOBKS_BIC-1_2021-09-10	RG_FOBKS_BIC-2_2021-09-10
Sample Collection Date:	13-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	12-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	10-Sep-21	10-Sep-21
CC#:	CC221419	CC221420	CC221421	CC221422	CC221423	CC221424	CC221425	CC221426	CC221427	CC221428	CC221429
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	20	0	0	0	20	0	0	0	0
Phylum: Nemata	0	0	0	20	20	14	0	17	20	0	233
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	20	20	20	20	20	14	20	17	20	20	233
Totals:	**40**	**40**	**60**	**60**	**40**	**28**	**60**	**51**	**60**	**40**	**699**

ND designation of a taxa represents a non-

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	0	0	14	0	0	0	0	0	0
| Family: Baetidae	0	180	20	160	14	20	0	0	0	40	20
Acentrella	0	0	0	0	0	0	0	0	0	0	0
Baetis	70	20	60	20	0	0	0	0	20	20	0
Baetis fuscatus gr.	10	0	0	0	0	0	0	0	0	0	0
Baetis rhodani group	220	360	540	540	0	40	40	0	60	160	260
Baetis bicaudatus	20	0	0	0	0	0	0	0	0	0	0
Diphetor hageni	0	0	0	0	0	0	0	0	0	0	0
| Family: Ephemerellidae	30	60	300	100	257	320	640	360	360	360	520
Caudatella	0	0	0	0	0	0	0	0	0	0	0
Drunella	0	0	0	0	0	0	0	0	0	0	0
Drunella grandis group	0	20	60	20	0	20	0	40	0	20	40
Drunella doddsii	40	20	20	0	14	20	20	0	0	80	60
Ephemerella	0	0	0	0	0	0	0	20	0	0	0
| Family: Heptageniidae	70	0	40	0	43	60	100	40	80	20	80
Cinygmula	680	460	700	700	657	1660	1920	740	1040	1060	940
Epeorus	100	0	0	0	0	20	0	0	0	20	0
Rhithrogena	40	0	0	0	71	120	140	80	160	0	0
| Order: Plecoptera	0	0	40	0	0	0	0	20	1800	0	0
| Family: Capniidae	0	80	160	20	14	120	20	0	0	20	20
Mesocapnia	0	0	40	0	0	0	0	0	0	0	0
| Family: Chloroperlidae	10	20	0	20	0	60	20	0	0	0	80
Haploperla	0	0	0	0	0	0	0	0	0	0	0
Plumiperla	0	0	0	0	0	0	0	0	0	0	0
Sweltsa	0	20	40	60	14	20	20	0	20	160	20
| Family: Leuctridae	0	0	20	0	0	0	20	20	0	0	0
Paraleuctra	0	0	0	0	0	0	0	0	0	0	0
| Family: Nemouridae	0	200	220	140	0	40	40	40	40	40	0
Malenka	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0
Zapada	20	1980	2760	4280	114	1540	260	320	160	820	900
Zapada oregonensis group	30	640	1180	1540	157	300	200	60	160	760	920
Zapada cinctipes	30	2100	3340	5100	586	0	960	760	480	1920	1360
Zapada columbiana	0	0	0	0	0	0	20	0	20	20	40

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0
Yoraperla	0	20	0	0	0	0	0	0	0	0	0
| Family: Perlidae	0	20	20	120	29	20	60	40	0	20	0
Hesperoperla	0	0	20	40	0	60	20	40	0	0	40
| Family: Perlodidae	20	600	440	960	29	40	80	0	40	200	180
Isoperla	30	940	1640	2360	371	680	680	200	480	820	500
Kogotus	110	740	680	920	371	260	560	280	260	620	920
Megarcys	0	100	60	120	29	120	20	60	80	60	20
Skwala	0	0	0	0	0	0	0	0	0	0	0
| Family: Taeniopterygidae	80	900	240	160	429	640	720	240	1000	100	100
| Order: Trichoptera	0	0	60	0	0	0	0	0	40	20	20
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	60	120	0	0	0	40	0	20	0	20
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	10	20	20	20	71	80	20	20	40	60	0
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	20	0	0	0	0	0	0	0
Anagapetus	0	0	0	20	0	0	0	0	0	0	0
Glossosoma	0	360	220	80	0	20	40	20	0	40	20
| Family: Hydropsychidae	10	20	0	40	0	0	0	20	0	60	20
Arctopsyche	20	0	0	0	29	100	60	0	40	0	0
Parapsyche	20	0	0	20	14	40	20	0	20	80	20
Parapsyche elsis	10	20	0	0	14	0	0	40	0	0	20
| Family: Limnephilidae	0	60	60	0	0	0	0	0	0	0	40
Dicosmoecus	0	0	0	0	0	0	0	20	0	0	0
Ecclisomyia	0	20	20	0	0	0	20	0	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	90	260	360	620	243	460	320	260	320	400	300
Rhyacophila betteni group	0	0	0	0	0	0	0	0	0	0	20
Rhyacophila brunnea/vemna group	10	40	180	180	29	100	20	40	60	180	260
Rhyacophila hyalinata group	0	0	0	0	14	80	0	40	0	0	0
Rhyacophila vofixa group	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila atrata complex	20	40	20	0	0	40	0	0	0	40	120
Rhyacophila narvae	0	400	160	200	0	0	0	0	0	20	40
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	20	0	0	0	0	0	0	40	40
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
| Order: Coleoptera	0	0	1040	0	0	0	0	0	0	0	1060
| Family: Elmidae	0	20	80	20	0	20	0	0	0	40	100
Heterlimnius	10	540	960	620	0	0	0	20	0	640	960
Narpus	0	0	0	0	0	0	0	0	20	0	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	0	0	0	0	0
Bezzia/ Palpomyia	20	0	40	0	0	60	0	60	0	0	0
Mallochohelea	110	20	40	0	0	160	140	40	160	20	20
| Family: Chironomidae	10	220	300	240	0	40	20	60	20	220	100
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0
Constempellina sp. C	0	0	0	0	0	0	0	0	0	0	0
Micropsectra	0	20	20	0	14	40	0	0	0	0	0
Rheotanytarsus	0	0	0	0	0	0	0	0	0	0	0
Stempellinella	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	0	0	0	0	0	0	20	20	0	0
Pagastia	0	40	160	140	14	0	20	20	20	0	80
Pseudodiamesa	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	0	0	0	0	0	0
Corynoneura	0	0	0	0	0	0	0	0	0	0	0
Diplocladius cultriger	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	10	240	220	280	14	40	40	0	60	160	40
Hydrobaenus	0	0	0	0	0	0	0	0	0	0	0
Limnophyes	0	0	40	20	0	0	0	0	0	40	20
Orthocladius complex	20	520	880	520	71	360	340	20	140	520	320
Orthocladius lignicola	0	0	0	0	0	0	0	0	0	0	0
Parorthocladius	0	0	0	0	0	0	0	0	0	0	0
Rheocricotopus	0	0	0	0	0	0	0	0	0	0	0
Thienemanniella	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	0	20	20	0	0	0	0	0	0	0	0
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	20	0	0	20	0	40	40	0	20	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
| Family: Empididae	0	20	160	20	0	0	0	0	0	0	40
Chelifera/ Metachela	10	60	60	100	0	20	20	0	20	100	140
Neoplasta	10	80	180	100	0	0	0	0	0	40	100
Oreogeton	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	20	0	0	0	0	20	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	40	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	20	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	1270	440	520	680	1786	2360	3820	2040	2340	100	320
| Family: Simuliidae	0	20	20	60	14	660	60	0	100	0	0
Simulium	10	0	40	0	29	140	80	20	60	0	20
| Family: Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0
Nemotelus	10	0	0	0	0	0	0	0	0	0	0
| Family: Tipulidae	0	0	0	0	0	0	0	0	0	0	0
Antocha	0	0	20	0	0	0	0	0	0	0	0
Dicranota	10	40	80	0	0	0	20	20	60	0	0
Hesperoconopa	0	0	0	0	0	0	0	0	0	20	0
Hexatoma	0	0	0	0	0	20	0	0	0	0	0
Rhabdomastix	10	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	20	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydryphantidae	0	0	0	0	0	0	0	0	0	0	0
Protzia	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0
Hygrobates	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0
Lebertia	70	260	220	380	114	60	320	240	160	320	440

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Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	0	0	0	0	20	20	0	40	40	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	20	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0
| Order: Isopoda	0	0	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	20	0	40	0	171	80	40	20	0	60	20
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	40	140
Totals:	**3420**	**13400**	**19040**	**21820**	**5854**	**11220**	**12100**	**6400**	**10040**	**10640**	**11880**

Taxa present but not included:

Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Homoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Aphididae	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	0	0	20	0	0	0	0	0	0	0	20
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOBKS_BIC-3_2021-09-10	RG_FODPO_BIC-1_2021-09-11	RG_FODPO_BIC-2_2021-09-11	RG_FODPO_BIC-3_2021-09-11	RG_FOBCP_BIC-1_2021-09-14	RG_FOBCP_BIC-2_2021-09-14	RG_FOBCP_BIC-3_2021-09-14	RG_FOBCP_BIC-4_2021-09-14	RG_FOBCP_BIC-5_2021-09-14	RG_FOUEW_BIC-1_2021-09-11	RG_FOUEW_BIC-2_2021-09-11
Sample Collection Date:	10-Sep-21	11-Sep-21	11-Sep-21	11-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	14-Sep-21	11-Sep-21	11-Sep-21
CC#:	CC221430	CC221431	CC221432	CC221433	CC221434	CC221435	CC221436	CC221437	CC221438	CC221439	CC221440
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	20	0	0	0	0	0	0	0	0	0
Phylum: Nemata	0	0	20	20	14	20	20	0	20	20	20
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	20	20	20	14	20	20	20	0	20	20
Totals:	**0**	**40**	**60**	**40**	**28**	**40**	**40**	**20**	**20**	**40**	**60**

ND designation of a taxa represents a non-

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0
Ameletus	20	0	60	100	20	17	0	80	180	20	170
| Family: Baetidae	20	2000	340	500	60	17	100	6440	2200	2440	30
Acentrella	0	0	0	0	0	0	0	0	0	0	0
Baetis	60	0	0	0	0	0	0	0	0	0	20
Baetis fuscatus gr.	0	0	0	0	0	0	0	0	0	0	0
Baetis rhodani group	320	160	20	20	220	17	217	60	0	0	40
Baetis bicaudatus	0	20	20	20	20	0	0	0	0	0	0
Diphetor hageni	0	0	0	0	0	0	0	0	0	0	0
| Family: Ephemerellidae	460	2640	1660	2440	800	600	633	3040	3080	2060	20
Caudatella	0	20	0	0	0	0	0	0	0	0	0
Drunella	0	0	0	0	0	0	0	0	0	0	0
Drunella grandis group	20	0	0	0	0	0	0	0	0	0	0
Drunella doddsii	0	800	420	520	20	17	0	980	380	420	30
Ephemerella	0	0	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	40	340	260	440	0	117	17	540	200	60	180
Cinygmula	1380	8740	4340	8760	1740	1800	1350	15980	5860	6580	1530
Epeorus	0	1080	160	320	20	0	17	120	40	0	20
Rhithrogena	20	340	160	300	20	17	17	260	160	200	290
| Order: Plecoptera	0	0	0	20	0	0	0	160	0	0	0
| Family: Capniidae	60	0	0	0	20	17	17	0	0	0	0
Mesocapnia	0	0	0	0	0	0	0	0	0	0	0
| Family: Chloroperlidae	80	0	0	0	0	0	0	280	20	0	0
Haploperla	0	20	0	0	0	17	0	0	0	0	0
Plumiperla	0	0	0	0	0	33	0	0	0	0	0
Sweltsa	120	0	20	20	20	0	0	800	180	140	20
| Family: Leuctridae	20	0	0	0	0	0	0	100	0	0	0
Paraleuctra	0	20	0	0	0	0	17	20	0	20	0
| Family: Nemouridae	40	20	0	40	20	33	33	280	0	0	10
Malenka	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	20	0	0	0
Zapada	880	320	40	200	0	17	17	1860	440	1180	20
Zapada oregonensis group	940	540	280	240	60	33	50	1860	580	240	70
Zapada cinctipes	940	120	120	260	40	50	33	0	0	40	0
Zapada columbiana	0	240	20	40	0	33	0	980	20	100	90

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Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0
Yoraperla	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	20	0	0	0	0	17	17	0	0	0	0
Hesperoperla	0	0	0	0	0	17	0	0	0	0	0
| Family: Perlodidae	220	20	0	20	20	0	0	80	20	40	0
Isoperla	600	0	0	60	0	50	67	0	0	0	0
Kogotus	620	140	100	220	40	50	83	760	540	380	0
Megarcys	100	240	40	200	260	150	200	340	80	120	50
Skwala	0	0	0	0	0	0	0	0	0	0	0
| Family: Taeniopterygidae	540	900	300	360	220	67	150	5040	560	1260	620
| Order: Trichoptera	80	0	0	20	0	0	0	20	100	60	10
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0
Apatania	60	0	0	0	0	17	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	20	20	40	0	40	0	0	0	0	0	0
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	40	0	0	0	0	0	0	0	0	0	0
Anagapetus	0	0	0	0	0	0	0	0	0	0	0
Glossosoma	360	0	0	20	20	33	83	0	0	0	10
| Family: Hydropsychidae	60	60	20	20	0	33	17	260	0	40	90
Arctopsyche	0	0	0	0	40	0	0	0	0	0	0
Parapsyche	40	60	20	20	120	67	117	500	40	120	0
Parapsyche elsis	60	0	0	0	40	33	33	260	40	40	10
| Family: Limnephilidae	0	0	0	0	0	0	0	20	40	40	0
Dicosmoecus	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	20	0	0	20	0	0	17	0	0	80	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	460	460	60	140	220	33	50	460	40	680	20
Rhyacophila betteni group	80	0	0	0	0	0	17	80	0	0	0
Rhyacophila brunnea/vemna group	80	0	0	0	60	0	50	0	0	0	10
Rhyacophila hyalinata group	20	20	0	20	60	33	50	100	40	60	0
Rhyacophila vofixa group	0	0	20	20	0	0	0	520	20	200	0
Rhyacophila atrata complex	180	0	0	0	0	17	17	20	40	0	0
Rhyacophila narvae	0	0	0	0	0	0	0	0	20	0	0
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	20	20	20	0	60	33	250	980	1240	560	0
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	20	0	0	0

Project: FRO LAEMP (21-11)#2
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
| Order: Coleoptera	640	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	40	0	0	0	0	0	0	0	0	0	0
Heterlimnius	600	0	0	0	0	0	0	0	0	0	10
Narpus	0	0	0	0	0	0	0	0	0	0	0
| Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	0
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	0	0	0	0	0
Bezzia/ Palpomyia	0	0	0	0	0	0	0	20	0	0	0
Mallochohelea	0	200	40	60	120	133	83	80	20	0	10
| Family: Chironomidae	100	600	380	680	0	0	33	60	40	20	100
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0
Constempellina sp. C	0	0	0	0	20	17	0	0	0	0	0
Micropsectra	0	80	200	280	0	17	0	40	0	40	0
Rheotanytarsus	0	0	0	0	0	0	0	0	0	0	0
Stempellinella	0	0	0	20	0	0	0	0	0	0	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	40	0	0	0	0	0	200	0	260	10
Pagastia	20	0	0	20	20	0	17	280	160	180	0
Pseudodiamesa	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0
Brillia	20	0	0	0	0	0	0	0	0	0	0
Corynoneura	0	0	0	0	0	0	0	0	0	0	0
Diplocladius cultriger	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	80	160	20	0	0	0	0	20	0	0	20
Hydrobaenus	0	0	20	140	0	0	0	0	0	0	0
Limnophyes	20	0	0	0	0	0	0	0	0	0	0
Orthocladius complex	480	60	20	20	120	183	133	700	220	1080	60
Orthocladius lignicola	0	0	0	0	0	0	0	0	0	0	0
Parorthocladius	0	0	0	0	0	0	0	0	0	0	10
Rheocricotopus	0	160	40	80	0	0	0	20	0	20	50
Thienemanniella	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	20	0	0	40	0	0	0	20	0	0	0
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	20	0	0	40	0	17	0	0	0	0

Project: FRO LAEMP (21-11)#2
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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
| Family: Empididae	20	0	60	0	0	17	0	0	0	0	10
Chelifera/ Metachela	80	0	0	0	0	0	0	20	200	40	0
Neoplasta	60	0	0	0	0	0	0	0	80	40	0
Oreogeton	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	0	0
Wiedemannia	0	0	0	0	0	0	0	0	0	0	10
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	420	760	660	820	1980	1583	1233	1620	2040	2220	0
| Family: Simuliidae	0	200	0	0	0	17	17	0	0	0	0
Simulium	0	60	0	0	0	0	0	20	0	0	0
| Family: Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0
Nemotelus	0	0	0	0	0	0	0	0	0	0	0
| Family: Tipulidae	0	0	0	0	0	0	0	0	0	0	0
Antocha	0	0	0	0	0	0	0	0	0	0	0
Dicranota	20	20	20	60	0	0	0	260	0	0	0
Hesperoconopa	0	0	0	0	0	0	0	0	0	0	0
Hexatoma	0	0	0	40	0	33	17	0	0	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	40	0	0	0
| Family: Hydryphantidae	0	0	0	0	0	0	0	0	0	0	0
Protzia	0	0	0	0	0	0	0	0	0	20	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0
Hygrobates	0	20	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0
Lebertia	340	40	60	180	100	100	33	120	120	100	40

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0
Sperchon	40	60	20	20	20	0	17	260	140	220	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0	0	0	0
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0
| Order: Isopoda	0	0	0	0	120	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	40	0	0	0	0	0	0	0	0	0	0
Pisidium	20	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	0	0	0	0	17	20	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0
Nais	40	0	0	0	0	0	33	0	0	0	0
Totals:	**12200**	**21840**	**10080**	**17840**	**6820**	**5585**	**5386**	**47120**	**19180**	**21420**	**3690**

Taxa present but not included:

Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Homoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Aphididae	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	20	20	20	20	17	17	20	20	20	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FOUEW_BIC-3_2021-09-11	RG_FODHE_BIC-1_2021-09-13	RG_FODHE_BIC-2_2021-09-13	RG_FODHE_BIC-3_2021-09-13	RG_FOUSH_BIC-1_2021-09-16	RG_FOUSH_BIC-2_2021-09-16	RG_FOUSH_BIC-3_2021-09-16	RG_FO26_BIC-1_2021-09-16	RG_FO26_BIC-2_2021-09-16	RG_FO26_BIC-3_2021-09-16	RG_HENUP_BIC-1_2021-09-16
Sample Collection Date:	11-Sep-21	13-Sep-21	13-Sep-21	13-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21	16-Sep-21
CC#:	CC221441	CC221442	CC221443	CC221444	CC221445	CC221446	CC221447	CC221448	CC221449	CC221450	CC221452
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	0	0	0	0	0	0	0	0
Phylum: Nemata	0	0	0	20	0	17	17	0	20	0	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	20	20	20	20	20	17	17	0	20	0	10
Totals:	**40**	**40**	**40**	**60**	**40**	**51**	**51**	**20**	**60**	**20**	**10**

ND designation of a taxa represents a non·

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	60	20	0	40	0	0	0	20	0
| Family: Baetidae	100	180	420	420	280	60	100	120	100	100	120
Acentrella	0	0	0	0	0	0	0	0	0	0	0
Baetis	0	20	20	0	20	20	20	20	0	0	40
Baetis fuscatus gr.	0	0	0	0	0	0	0	0	0	0	0
Baetis rhodani group	40	220	220	320	80	140	80	200	0	60	0
Baetis bicaudatus	0	20	20	0	20	60	0	20	0	0	0
Diphetor hageni	0	0	0	0	0	0	0	0	0	0	0
| Family: Ephemerellidae	740	300	3200	7020	6580	660	3400	1080	920	140	80
Caudatella	0	0	0	0	0	0	0	0	0	0	0
Drunella	0	0	0	0	0	0	0	0	0	0	0
Drunella grandis group	0	0	0	0	0	0	0	0	60	0	0
Drunella doddsii	120	60	20	120	140	80	40	60	0	0	40
Ephemerella	0	0	20	0	0	0	0	0	0	0	0
| Family: Heptageniidae	480	1040	80	240	380	180	680	340	0	0	0
Cinygmula	5520	3660	3240	7320	9800	3380	5780	5040	40	100	80
Epeorus	60	40	20	0	0	20	40	20	0	0	0
Rhithrogena	900	460	0	20	100	0	0	100	0	0	0
| Order: Plecoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Capniidae	0	0	0	20	60	0	0	0	140	100	180
Mesocapnia	0	0	0	0	0	0	0	0	0	20	0
| Family: Chloroperlidae	220	160	0	100	100	0	0	20	0	0	40
Haploperla	0	0	0	0	0	0	0	0	20	20	0
Plumiperla	260	60	0	0	0	0	0	0	0	0	0
Sweltsa	100	40	20	160	140	20	80	240	120	80	180
| Family: Leuctridae	20	0	0	0	20	0	0	0	0	0	20
Paraleuctra	20	0	0	20	0	0	40	20	20	0	0
| Family: Nemouridae	60	40	100	160	340	80	120	20	240	120	160
Malenka	0	0	0	0	0	0	0	0	0	0	0
Visoka cataractae	0	0	0	0	0	0	0	0	0	0	0
Zapada	620	220	100	140	320	160	60	300	1220	1380	1000
Zapada oregonensis group	100	100	40	80	40	180	60	20	80	120	180
Zapada cinctipes	0	0	0	20	220	40	20	140	1040	980	560
Zapada columbiana	180	100	0	0	80	0	0	20	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0
Yoraperla	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	0	0	0	0	0	0	0	0	0	0	20
Hesperoperla	0	0	0	0	0	0	0	0	0	20	60
| Family: Perlodidae	0	0	20	40	40	0	20	20	880	360	540
Isoperla	0	0	40	120	220	80	60	80	3240	2060	2460
Kogotus	20	0	280	340	400	80	340	40	1780	940	580
Megarcys	40	120	20	60	20	40	40	60	80	140	120
Skwala	0	0	0	0	0	0	0	0	20	20	0
| Family: Taeniopterygidae	2040	1000	80	60	680	60	180	200	480	140	1300
| Order: Trichoptera	60	80	0	0	0	0	0	0	140	60	20
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	0	0	0	0	0	0	0	40	20	20
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	0	0	0	0	0	0	0
Brachycentrus	0	0	0	0	20	0	0	0	0	0	0
Brachycentrus americanus	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	20	0	0	0	0	0	0	0	40	60
Anagapetus	0	0	0	0	0	0	0	0	100	20	0
Glossosoma	0	0	0	0	0	40	40	180	340	180	360
| Family: Hydropsychidae	40	20	0	0	0	20	0	20	0	20	0
Arctopsyche	0	0	0	0	0	0	0	0	0	0	0
Parapsyche	0	0	0	0	0	0	20	40	0	20	0
Parapsyche elsis	20	20	20	20	20	0	20	0	0	0	20
| Family: Limnephilidae	0	0	0	0	0	0	0	0	40	0	0
Dicosmoecus	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	0	20	0	0	20	0	0	20	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	0	40	180	320	860	160	340	320	120	100	40
Rhyacophila betteni group	0	0	0	0	0	0	0	0	40	0	20
Rhyacophila brunnea/vemna group	0	0	40	100	200	60	160	0	20	40	60
Rhyacophila hyalinata group	20	0	20	0	0	0	0	20	0	0	0
Rhyacophila vofixa group	0	0	0	40	0	0	0	0	0	20	0
Rhyacophila atrata complex	0	0	20	100	100	0	360	40	0	0	40
Rhyacophila narvae	0	0	40	440	200	20	20	20	360	80	20
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	40	20	20	40	20	20	0	0	0
| Family: Uenoidae	0	0	0	0	0	0	0	0	0	0	0
Neothremma	0	0	0	0	0	0	0	0	0	0	0

Project: FRO LAEMP (21-11)#2
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0
Family: Elmidae	0	0	0	0	0	0	0	0	40	0	0
Heterlimnius	0	0	0	0	0	40	0	0	80	0	20
Narpus	0	0	0	0	0	0	0	0	0	0	0
Family: Staphylinidae	0	0	0	0	0	0	0	0	0	0	20
Order: Diptera	0	0	0	0	0	0	0	0	0	0	0
Family: Ceratopogonidae	20	0	0	0	0	0	0	0	0	0	0
Bezzia/ Palpomyia	0	0	40	120	80	0	0	0	0	0	0
Mallochohelea	20	0	20	300	140	80	180	100	40	20	20
Family: Chironomidae	960	360	40	20	20	20	60	0	520	220	200
Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0
Tribe: Tanytarsini	0	0	0	0	0	0	0	0	0	0	0
Constempellina sp. C	0	0	0	0	0	20	0	0	0	0	0
Micropsectra	120	460	0	0	0	0	0	0	0	20	0
Rheotanytarsus	0	0	0	0	0	0	0	0	0	0	0
Stempellinella	0	0	0	0	0	0	0	0	0	0	0
Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0
Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0
Diamesa	40	20	20	0	0	0	0	0	40	20	40
Pagastia	20	20	20	0	0	0	0	0	380	180	60
Pseudodiamesa	0	40	0	0	0	0	0	0	20	0	0
Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	20	20	0	0	0	0
Corynoneura	0	0	0	0	0	0	0	0	0	0	0
Diplocladius cultriger	0	0	0	0	0	0	0	0	0	0	0
Eukiefferiella	0	0	20	0	20	0	20	0	0	20	0
Hydrobaenus	0	0	0	0	0	0	0	0	0	0	0
Limnophyes	0	0	0	0	0	0	0	0	40	20	0
Orthocladius complex	0	20	560	120	200	40	500	80	3700	2140	1360
Orthocladius lignicola	0	0	0	0	0	0	0	0	0	0	0
Parorthocladius	0	0	0	0	0	0	0	0	0	0	0
Rheocricotopus	1120	800	0	0	0	0	0	0	0	0	0
Thienemanniella	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	40	0	0	0	20	0	0	0	20	0	0
Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0
Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	40	60	0	20	40	40	0	0	20

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
| Family: Empididae	0	0	0	0	0	0	0	0	140	100	0
Chelifera/ Metachela	20	0	20	0	0	0	20	20	20	40	20
Neoplasta	0	20	0	0	0	0	0	0	0	40	0
Oreogeton	20	20	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	0	0
Trichoclinocera	0	0	0	0	0	0	0	0	0	20	0
Wiedemannia	0	20	0	0	0	0	0	0	0	0	0
| Family: Limoniidae	0	0	0	0	0	0	0	0	0	0	0
Eloeophila	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	20	0	300	1340	1040	1380	1320	1480	160	300	300
| Family: Simuliidae	0	0	0	0	0	0	0	40	0	0	360
Simulium	0	0	0	20	0	0	0	20	0	0	40
| Family: Stratiomyidae	0	0	0	0	0	0	0	0	0	0	0
Nemotelus	0	0	0	0	0	0	0	0	0	0	0
| Family: Tipulidae	0	0	0	0	0	0	0	0	0	0	20
Antocha	0	0	0	0	0	0	0	0	0	0	0
Dicranota	0	0	0	0	40	0	20	20	80	100	100
Hesperoconopa	40	0	0	0	20	0	0	0	0	0	0
Hexatoma	0	0	20	60	20	0	20	0	20	0	0
Rhabdomastix	0	0	0	0	0	0	0	0	0	0	0
Tipula	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0
| Family: Aturidae	0	0	0	0	0	0	0	0	0	0	0
Aturus	0	0	0	0	0	0	0	0	0	0	0
| Family: Feltriidae	0	0	0	0	0	0	0	0	0	0	0
Feltria	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydryphantidae	0	0	0	0	0	0	0	0	0	0	0
Protzia	0	0	0	0	0	0	0	0	0	0	0
| Family: Hygrobatidae	0	0	0	0	0	0	0	0	0	0	0
Hygrobates	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0
Lebertia	40	20	140	120	20	80	0	20	620	460	180

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0
Sperchon	20	20	20	20	0	0	0	0	80	100	40
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0
| Order: Sarcoptiformes	0	0	0	0	0	0	0	0	0	0	0
| Order: Oribatida	0	0	0	0	0	0	0	0	0	0	40
| Class: Malacostraca	0	0	0	0	0	0	0	0	0	0	0
| Order: Isopoda	0	0	0	0	0	0	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	0	0	40	0	0	0	20	0	60	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	0	0
Totals:	**14280**	**9840**	**9700**	**20020**	**23120**	**7440**	**14360**	**10660**	**17760**	**11320**	**11260**

Taxa present but not included:

Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0
| Order: Homoptera	0	0	0	0	0	0	0	0	0	0	0
| Family: Aphididae	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	0	0	0	20	20	20	20	20	20	20	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_HENUP_BIC-2_2021-09-16	RG_HENUP_BIC-3_2021-09-16	RG_FOUNGD_BIC-1_2021-09-17	RG_FOUNGD_BIC-2_2021-09-17	RG_FOUNGD_BIC-3_2021-09-17	RG_FODNGD_BIC-1_2021-09-17	RG_FODNGD_BIC-2_2021-09-17	RG_FODNGD_BIC-3_2021-09-17	RG_FRUPO_BIC-1_2021-09-19	RG_FRUPO_BIC-2_2021-09-19	RG_FRUPO_BIC-3_2021-09-19
Sample Collection Date:	16-Sep-21	16-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	17-Sep-21	19-Sep-21	19-Sep-21	19-Sep-21
CC#:	CC221453	CC221454	CC221455	CC221456	CC221457	CC221458	CC221459	CC221460	CC221461	CC221462	CC221463
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	0	0	0	0	0	0	0	0
Phylum: Nemata	0	260	0	0	0	0	0	20	0	20	0
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	260	20	20	20	20	20	20	20	20	20
Totals:	**0**	**520**	**20**	**40**	**40**	**40**	**40**	**60**	**40**	**60**	**20**

ND designation of a taxa represents a non-

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Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
Phylum: Arthropoda	0	0	0
Subphylum: Hexapoda	0	0	0
| Class: Insecta	0	0	0
| Order: Ephemeroptera	0	0	0
| Family: Ameletidae	0	0	0
Ameletus	20	20	0
| Family: Baetidae	280	120	100
Acentrella	0	0	0
Baetis	0	0	0
Baetis fuscatus gr.	0	0	0
Baetis rhodani group	140	0	120
Baetis bicaudatus	20	180	0
Diphetor hageni	0	0	0
| Family: Ephemerellidae	500	560	380
Caudatella	0	0	0
Drunella	0	0	0
Drunella grandis group	0	20	0
Drunella doddsii	80	40	20
Ephemerella	0	0	0
| Family: Heptageniidae	100	100	120
Cinygmula	2820	2100	1680
Epeorus	120	0	40
Rhithrogena	60	20	20
| Order: Plecoptera	0	0	0
| Family: Capniidae	20	40	20
Mesocapnia	0	0	0
| Family: Chloroperlidae	0	0	0
Haploperla	0	0	0
Plumiperla	0	0	0
Sweltsa	60	0	0
| Family: Leuctridae	0	0	0
Paraleuctra	0	0	0
| Family: Nemouridae	20	40	60
Malenka	0	0	0
Visoka cataractae	0	0	0
Zapada	100	80	60
Zapada oregonensis group	80	0	80
Zapada cinctipes	120	20	160
Zapada columbiana	40	0	0

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Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
| Family: Peltoperlidae	0	0	0
Yoraperla	0	0	0
| Family: Perlidae	0	20	20
Hesperoperla	20	0	40
| Family: Perlodidae	40	0	0
Isoperla	320	60	180
Kogotus	40	40	80
Megarcys	80	0	100
Skwala	0	0	0
| Family: Taeniopterygidae	80	100	80
| Order: Trichoptera	0	0	0
| Family: Apataniidae	0	0	0
Apatania	0	0	20
Pedomoecus sierra	0	0	0
| Family: Brachycentridae	0	0	0
Brachycentrus	40	0	80
Brachycentrus americanus	0	0	0
| Family: Glossosomatidae	20	0	0
Anagapetus	0	0	0
Glossosoma	0	20	0
| Family: Hydropsychidae	60	0	0
Arctopsyche	60	40	20
Parapsyche	160	0	100
Parapsyche elsis	0	60	40
| Family: Limnephilidae	0	0	0
Dicosmoecus	0	0	0
Ecclisomyia	0	0	0
| Family: Rhyacophilidae	0	0	0
Rhyacophila	80	40	180
Rhyacophila betteni group	0	40	0
Rhyacophila brunnea/vemna group	100	40	60
Rhyacophila hyalinata group	0	40	0
Rhyacophila vofixa group	0	0	0
Rhyacophila atrata complex	20	0	0
Rhyacophila narvae	0	0	0
| Family: Thremmatidae	0	0	0
Oligophlebodes	0	20	0
| Family: Uenoidae	0	0	0
Neothremma	0	0	0

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Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
| Order: Coleoptera	40	0	0
| Family: Elmidae	0	0	0
Heterlimnius	40	0	0
Narpus	0	0	0
| Family: Staphylinidae	0	0	0
| Order: Diptera	0	0	0
| Family: Ceratopogonidae	20	0	20
Bezzia/ Palpomyia	0	20	60
Mallochohelea	240	140	580
| Family: Chironomidae	100	140	0
| Subfamily: Chironominae	0	0	0
| Tribe: Tanytarsini	0	0	0
Constempellina sp. C	20	0	0
Micropsectra	0	0	0
Rheotanytarsus	0	0	0
Stempellinella	0	0	0
| Subfamily: Diamesinae	0	0	0
| Tribe: Diamesini	0	0	0
Diamesa	20	0	0
Pagastia	40	0	0
Pseudodiamesa	0	0	0
| Subfamily: Orthocladiinae	0	0	0
Brillia	0	0	0
Corynoneura	0	0	0
Diplocladius cultriger	0	0	0
Eukiefferiella	40	80	20
Hydrobaenus	0	0	0
Limnophyes	0	0	0
Orthocladius complex	200	420	120
Orthocladius lignicola	0	0	0
Parorthocladius	0	0	0
Rheocricotopus	0	0	0
Thienemanniella	0	0	0
Tvetenia	20	0	20
| Subfamily: Tanypodinae	0	0	0
| Tribe: Pentaneurini	0	0	0
Thienemannimyia group	40	0	40

Project: FRO LAEMP (21-11)#2
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
| Family: Empididae	0	0	0
Chelifera/ Metachela	0	0	0
Neoplasta	0	0	0
Oreogeton	0	0	0
Roederiodes	20	0	0
Trichoclinocera	0	0	0
Wiedemannia	0	0	0
| Family: Limoniidae	0	0	0
Eloeophila	0	0	0
| Family: Pelecorhynchidae	0	0	0
Glutops	0	0	0
| Family: Psychodidae	0	0	0
Pericoma/Telmatoscopus	3780	3240	6820
| Family: Simuliidae	20	0	0
Simulium	40	0	0
| Family: Stratiomyidae	0	0	0
Nemotelus	0	0	0
| Family: Tipulidae	0	0	0
Antocha	0	0	0
Dicranota	0	0	40
Hesperoconopa	0	0	0
Hexatoma	0	20	0
Rhabdomastix	0	0	0
Tipula	0	0	0
Subphylum: Chelicerata	0	0	0
| Class: Arachnida	0	0	0
| Order: Trombidiformes	0	0	0
| Family: Aturidae	0	0	0
Aturus	0	20	0
| Family: Feltriidae	0	0	0
Feltria	0	0	0
| Family: Hydryphantidae	0	0	0
Protzia	0	0	0
| Family: Hygrobatidae	0	0	0
Hygrobates	0	0	0
| Family: Lebertiidae	0	0	0
Lebertia	20	160	160

Project: FRO LAEMP (21-11)#2
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
| Family: Sperchontidae	0	0	0
Sperchon	0	0	0
| Family: Torrenticolidae	0	0	0
Testudacarus	0	0	0
| Order: Sarcoptiformes	0	0	0
| Order: Oribatida	0	0	0
| Class: Malacostraca	0	0	0
| Order: Isopoda	0	0	0
Phylum: Mollusca	0	0	0
| Class: Bivalvia	0	0	0
| Order: Veneroida	0	0	0
| Family: Pisidiidae	0	0	0
Pisidium	0	0	0
Phylum: Annelida	0	0	0
Subphylum: Clitellata	0	0	0
| Class: Oligochaeta	0	0	0
| Order: Tubificida	0	0	0
| Family: Enchytraeidae	0	0	0
Enchytraeus	0	0	80
| Family: Naididae	0	0	0
Nais	0	60	20
Totals:	**10400**	**8160**	**11840**

Taxa present but not included:

Phylum: Arthropoda	0	0	0
Subphylum: Hexapoda	0	0	0
| Class: Insecta	0	0	0
| Order: Homoptera	0	0	0
| Family: Aphididae	0	0	0
Subphylum: Crustacea	0	0	0
| Class: Ostracoda	20	20	20
| Class: Maxillipoda	0	0	0
| Class: Copepoda	0	0	0

Project: FRO LAEMP (21-11)#2
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021
Sample:	RG_FOUKI_BIC-1_2021-09-20	RG_FOUKI_BIC-2_2021-09-20	RG_FOUKI_BIC-3_2021-09-20
Sample Collection Date:	20-Sep-21	20-Sep-21	20-Sep-21
CC#:	CC221464	CC221465	CC221466
Phylum: Annelida	0	0	0
Subphylum: Clitellata	0	0	0
| Class: Oligochaeta	0	0	0
| Order: Tubificida	0	0	0
| Family: Lumbricidae	0	0	20
Phylum: Nemata	20	20	20
Phylum: Platyhelminthes	0	0	0
| Class: Turbellaria	20	20	20
Totals:	**60**	**60**	**80**

ND designation of a taxa represents a non·

Methods and QC Report 2022

Project ID: FRO LAEMP (21-11 #3)

Client: Minnow Environmental

CORDILLERA CONSULTING
FRESHWATER INVERTEBRATE TAXONOMY

Prepared by:
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Table of Contents

Sample Reception 3
Sample Sorting 4
Sorting Quality Control - Sorting Efficiency 5
Sorting Quality Control - Sub-Sampling QC 6
Taxonomic Effort 8
Taxonomists 8
Taxonomic QC 9
Error Summary 10
Error Rationale 10
References 12
Taxonomic Keys 12

Sample Reception

On January 3, 2021, Cordillera Consulting received 24 benthic samples from Minnow Environmental. When samples arrived to Cordillera Consulting, exterior packaging was initially inspected for damage or wet spots that would have indicated damage to the interior containers.

Samples were logged into a proprietary software database (INSTAR1) where the clients assigned sample name was recorded along with a Cordillera Consulting (CC) number for cross-reference. Each sample was checked to ensure that all sites and replicates recorded on field sheets or packing lists were delivered intact and with adequate preservative. Any missing, mislabelled or extra samples were reported to the client immediately to confirm the total numbers and correct names on the sample jars. The client representative was notified of the arrival of the shipment and provided a sample inventory once intake was completed.
See table below for sample inventory:

Table 1: Summary of sample information including Cordillera Consulting (CC) number

Sample	CC#	Date	Size	# of Jars
RG_SCOUTDS_BIC-01_2021-12-09	CC222884	12/9/2021	400µM	1
RG_SCOUTDS_BIC-02_2021-12-09	CC222885	12/9/2021	400µM	1
RG_SCOUTDS_BIC-03_2021-12-09	CC222886	12/9/2021	400µM	1
RG_FOUKI_BIC-01_2021-12-14	CC222887	12/14/2021	400µM	1
RG_FOUKI_BIC-02_2021-12-14	CC222888	12/14/2021	400µM	1
RG_FOUKI_BIC-03_2021-12-14	CC222889	12/14/2021	400µM	1
RG_UFR1_BIC-01_2021-12-16	CC222890	12/16/2021	400µM	1
RG_UFR1_BIC-02_2021-12-16	CC222891	12/16/2021	400µM	1
RG_UFR1_BIC-03_2021-12-16	CC222892	12/16/2021	400µM	1
RG_FOBSC_BIC-01_2021-12-09	CC222893	12/9/2021	400µM	1
RG_FOBSC_BIC-02_2021-12-09	CC222894	12/9/2021	400µM	1
RG_FOBSC_BIC-03_2021-12-09	CC222895	12/9/2021	400µM	1
RG_FODPO_BIC-01_2021-12-13	CC222896	12/13/2021	400µM	1
RG_FODPO_BIC-02_2021-12-13	CC222897	12/13/2021	400µM	1
RG_FODPO_BIC-03_2021-12-13	CC222898	12/13/2021	400µM	1
RG_FRUPO_BIC-01_2021-12-13	CC222899	12/13/2021	400µM	2
RG_FRUPO_BIC-02_2021-12-13	CC222900	12/13/2021	400µM	1
RG_FRUPO_BIC-03_2021-12-13	CC222901	12/13/2021	400µM	2
RG_FOUEW_BIC-01_2021-12-13	CC222902	12/13/2021	400µM	1
RG_FOUEW_BIC-02_2021-12-13	CC222903	12/13/2021	400µM	1
RG_FOUEW_BIC-03_2021-12-13	CC222904	12/13/2021	400µM	1
RG_FO22_BIC-01_2021-12-13	CC222905	12/13/2021	400µM	1
RG_FO22_BIC-02_2021-12-13	CC222906	12/13/2021	400µM	1
RG_FO22_BIC-03_2021-12-13	CC222907	12/13/2021	400µM	1

Sample Sorting

- Using a gridded Petri dish, fine forceps and a low power stereo-microscope (Olympus, Nikon, Leica) the sorting technicians removed the invertebrates and sorted them into family/orders.
- The sorting technician kept a running tally of total numbers excluding organisms from Porifera, Nemata, Platyhelminthes, Ostracoda, Copepoda, Cladocera and terrestrial drop-ins such as aphids. These organisms were marked for their presence (given a value of 1) only and left in the sample. They were not included towards the 300-organism subsample count.
- Where specimens are broken or damaged, only heads were counted.
- Subsampling was conducted with the use of a Marchant Box.
- When using the Marchant box, cells were extracted at the same time in the order indicated by a random number table. If the 300th organism was found part way into sorting a cell then the balance of that cell was sorted. If the organism count had not reached 300 by the 50th cell then the entire sample was sorted.
- The total number of cells sorted and the number of organisms removed were recorded manually on a bench sheet and then recorded into INSTAR1
- Organisms were stored in vials containing 80% ethanol and an interior label indicating the site names, date of sampling, site code numbers and portion subsampled. This information was also recorded on the laboratory bench sheet and on INSTAR1.
- The sorted portion of the debris was preserved and labeled separately from the unsorted portion and was tested for sorting efficiency (Sorting Quality Control – Sorting Efficiency). The unsorted portion was also labeled and preserved in separate jars.

Percent sub-sampled and total countable invertebrates pulled from the samples were summarized in the table below.

Table 2: Percent sub-sample and invertebrate count for each sample

Sample	Date	CC#	400 micron fraction	
			% Sampled	# Invertebrates
RG_SCOUTDS_BIC-01_2021-12-09	09-Dec-21	CC222884	5%	1420
RG_SCOUTDS_BIC-02_2021-12-09	09-Dec-21	CC222885	5%	498
RG_SCOUTDS_BIC-03_2021-12-09	09-Dec-21	CC222886	5%	806
RG_FOUKI_BIC-01_2021-12-14	14-Dec-21	CC222887	5%	547
RG_FOUKI_BIC-02_2021-12-14	14-Dec-21	CC222888	5%	775
RG_FOUKI_BIC-03_2021-12-14	14-Dec-21	CC222889	5%	491
RG_UFR1_BIC-01_2021-12-16	16-Dec-21	CC222890	5%	1578
RG_UFR1_BIC-02_2021-12-16	16-Dec-21	CC222891	5%	1305
RG_UFR1_BIC-03_2021-12-16	16-Dec-21	CC222892	5%	571

RG_FOBSC_BIC-01_2021-12-09	09-Dec-21	CC222893	15%	320
RG_FOBSC_BIC-02_2021-12-09	09-Dec-21	CC222894	50%	369
RG_FOBSC_BIC-03_2021-12-09	09-Dec-21	CC222895	30%	431
RG_FODPO_BIC-01_2021-12-13	13-Dec-21	CC222896	5%	809
RG_FODPO_BIC-02_2021-12-13	13-Dec-21	CC222897	5%	1166
RG_FODPO_BIC-03_2021-12-13	13-Dec-21	CC222898	5%	1075
RG_FRUPO_BIC-01_2021-12-13	13-Dec-21	CC222899	5%	1032
RG_FRUPO_BIC-02_2021-12-13	13-Dec-21	CC222900	5%	1394
RG_FRUPO_BIC-03_2021-12-13	13-Dec-21	CC222901	5%	2408
RG_FOUEW_BIC-01_2021-12-13	13-Dec-21	CC222902	5%	1092
RG_FOUEW_BIC-02_2021-12-13	13-Dec-21	CC222903	5%	1014
RG_FOUEW_BIC-03_2021-12-13	13-Dec-21	CC222904	5%	750
RG_FO22_BIC-01_2021-12-13	13-Dec-21	CC222905	5%	559
RG_FO22_BIC-02_2021-12-13	13-Dec-21	CC222906	5%	851
RG_FO22_BIC-03_2021-12-13	13-Dec-21	CC222907	5%	965

Sorting Quality Control - Sorting Efficiency

As a part of Cordillera's laboratory policy, all projects undergo sorting efficiency checks.

- As sorting progresses, 10% of samples were randomly chosen by senior members of the sorting team for resorting.
- All sorters working on a project had at least 1 sample resorted by another sorter.
- An efficiency of 90 % was expected (95% for CABIN samples).
- If 90/95% efficiency was not met, samples from that sorter were resorted.
- To calculated sorting efficiency the following formula was used:

$$\frac{\#OrganismsMissed}{TotalOrganismsFound}*100=\%OM$$

Table 3 Summary of sorting efficiency

		Total from Sample	Percent Efficiency
Site - QC, Sample - QC 1, CC# - CC222893, Percent sampled = 15%, Sieve size = 400			
No Invertebrates Found	0		
Total:	**0**	**320**	**100%**

Site - QC, Sample - QC 2, CC# - CC222896, Percent sampled = 5%, Sieve size = 400				
Heptageniidae		1		
Plecoptera		7		
	Total:	**8**	**809**	**99%**

Sorting Quality Control - Sub-Sampling QC

Certain Provincial and Mining projects require additional sorting checks in the form of sub-sampling QC, (Environmental Effects Monitoring (EEM) protocol). This ensured that any fraction of the total sample that was examined was actually an accurate representation of the number of total organisms. Organisms from the additional sub-samples were not identified; rather total organism count only was compared.

Sub-Sampling efficiency was measured on 10% of the number of sub-sampled samples in the project. Ex. In a project where 50 of 100 total samples were processed through subsampling using a Marchant box, then 10% of 50; or 5 samples were used for sub sampling efficiency.

Sub-Sampling efficiency was performed by fractioning the entire sample into sub-sample percentages. On each sub-sampled portion, a total organism count was recorded and compared to the rest of the sub-samples. In order to pass, all fractions were required to be within 20% of total organism count.

Example: If 300 organisms are found in 10% of the sample, the sorter will continue to sample in 10% fractions until the entire sample is separated. They will then count the total number of organisms in each of the 10 fractions of 10% and compare the organism count.

When divergence is >20% the sorting manager examines for the source of the problem and takes steps to correct it. With the Marchant box, the problem typically rested with how the box is flipped back to the upright position. For this reason, subsampling was performed by experienced employees only. Another common source of error would be the type of debris in the sample. Samples with algae or heavy with periphyton have a higher incident of failure due to clumping than clear samples.

Table 4 Summary of Sub Sample efficiency

Station ID		Organisms in Subsample																				Sorter		Actual Total	Precision		Accuracy	
CC#	Sample Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	By	Time		Percent Range		Min	Max
222894	RG_FOBSC_BIC-02	377	385																			KC	60	762	2.08	2.08	1.05	1.05
222885	RG_SCOUTDS_BIC-02	498	553	495	508	467																RH	405	2521	0.60	15.55	0.75	9.68

Taxonomic Effort

The next procedure was the identification to genus-species level where possible of all the organisms in the sample.

- Identifications were made at the genus/species level for all insect organisms found including Chironomidae (Based on CABIN protocol).
- Non-insect organisms (except those not included in CABIN count) were identified to genus/species where possible and to a minimum of family level with intact and mature specimens.
- The Standard Taxonomic Effort lists compiled by the CABIN manual[1], SAFIT[2] , and PNAMP[3] were used as a guide line for what level of identification to achieve where the condition and maturity of the organism enabled.
- Organisms from the same families/order were kept in separate vials with 80% ethanol and an interior label of printed laser paper.
- Chironomidae was identified to genus/species level where possible and was aided by slide mounts. CMC-10 was used to clear and mount the slide.
- Oligochaetes was identified to family/genus level with the aid of slide mounts. CMC-10 was used to clear and mount the slide.
- Other Annelida (leeches, polychaetes) were identified to the family/genus/species level with undamaged, mature specimens.
- Mollusca was identified to family and genus/species where possible
- Decapoda, Amphipoda and Isopoda were identified at family/genus/species level where possible.
- Bryozoans and Nemata remained at the phylum level
- Hydrachnidae and Cnidaria were identified at the family/genus level where possible.
- When requested, reference collections were made containing at least one individual from each taxa listed. Organisms represented will have been identified to the lowest practical level.
- Reference collection specimens were stored in 55 mm glass vials with screw-cap lids with polyseal inserts (museum quality). They were labeled with taxa name, site code, date identified and taxonomist name. The same information was applied to labels on the slide mounts.

Taxonomists

The taxonomists for this project were certified by the Society of Freshwater Science (SFS) Taxonomic Certification Program at level 2 which is the required certification for CABIN projects:

Scott Finlayson: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae (East/West); Group 4 Oligochaeta

Adam Bliss: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae
Rita Avery: Group 1 General Arthropods (East/West); Group 2 EPT (East/West)

Taxonomic QC

Taxonomic QC was performed in house by someone other than the original taxonomist.

- Quality control protocol involved complete, blind re-identification and re-enumeration of at least 10% of samples by a second SFS-certified taxonomist.
- Samples for taxonomic quality control were randomly selected and quality control procedures were conducted as the project progresses through the laboratories.

- The second (QC) taxonomist will calculate and record four types of errors:
    1. Misidentification error
    2. Enumeration error
    3. Questionable taxonomic resolution error
    4. Insufficient taxonomic resolution error

The QC coordinator then calculates the following estimates of taxonomic precision.

1. The percent total identification error rate is calculated as:

$$\frac{Sum\ of\ incorrect\ identifications}{total\ organisms\ counted\ in\ audit} * (100)$$

The average total identification error rate of audited samples did not exceed 5%. All samples that exceed a 5% error rate were re-evaluated to determine whether repeated errors or patterns in error contributed.

2. The percent difference in enumeration (PDE) to quantify the consistency of specimen counts.

$$PDE = \frac{|n_1 - n_2|}{n_1 + n_2} x100$$

3. The percent taxonomic disagreement (PTD) to quantify the shared precision between two sets of identifications.

$$PTD = \left(1 - \left[\frac{a}{N}\right]\right) x100$$

4. Bray Curtis dissimilarity Index to quantify the differences in identifications.

$$BC_{ij} = 1 - \frac{2C_{ij}}{S_j + S_i}$$

Error Summary

All samples report errors within the acceptable limits for CABIN Laboratory methods (less than 5% error).

Table 5 Summary of taxonomic error following QC

Site	Taxa Identified	% Error	PDE	PTD	Bray - Curtis Dissimilarity index
Site - 2021, Sample - RG_SCOUTDS_BIC-02_2021-12-09, CC# - CC222885, Percent sampled = 5%, Sieve size = 400	496	0.00	0.20120724	0.40160643	0.00201207
Site - 2021, Sample - RG_FOBSC_BIC-01_2021-12-09, CC# - CC222893, Percent sampled = 15%, Sieve size = 400	320	0.00	0	0.625	0.00625

There will always be disagreements between taxonomists regarding the degree of taxonomic resolution in immature specimens and when laboratories make use of different keys for certain groups (Mollusks is an especially disputed group). It is always possible that some taxa found by the original taxonomist were overlooked in QC.

All of the Taxonomic QC samples that were observed passed testing according to the CABIN misidentification protocols. See the tables below for results from taxonomic QC audit.

Error Rationale

Site - 2021, Sample - RG_SCOUTDS_BIC-02_2021-12-09, CC# - CC222885, Percent sampled = 5%, Sieve size = 400	Laboratory Count	QC Audit Count	Agreement	Misidentification	Questionable Taxonomic Resolution	Enumeration	Insufficient Taxonomic Resolution	Comments
Baetis	21	21						
Capniidae	15	15						
Chloroperlidae	2	2						
Cinygmula	1	1						
Diamesa	10	10						

Doddsia occidentalis	4	4						
Ephemerellidae	4	4						
Eukiefferiella	2	2						
Heptageniidae	84	83	No			X		
Kogotus	1	1						
Lebertia	1	1						
Mallochohelea	5	5						
Nemouridae	289	288	No			X		
Pagastia	7	7						
Pericoma/Telmatoscopus	24	24						
Perlodidae	2	2						
Rhyacophila	1	1						
Rhyacophila atrata complex	3	3						
Rhyacophila brunnea/vemna group	9	9						
Roederiodes	2	2						
Taeniopterygidae	5	5						
Tanytarsus	1	1						
Tvetenia	1	1						
Zapada cinctipes	3	3						
Zapada columbiana	1	1						
Total:	**498**	**496**						
					0	**2**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				

Site - 2021, Sample - RG_FOBSC_BIC-01_2021-12-09, CC# - CC222893, Percent sampled = 15%, Sieve size = 400	**Laboratory Count**	**QC Audit Count**	**Agreement**	**Misidentification**	**Questionable Taxonomic Resolution**	**Enumeration**	**Insufficient Taxonomic Resolution**	**Comments**
Ameletus	1	1						
Arctopsyche	2	2						
Baetis	2	2						
Capniidae	36	36						
Dicranota	1	1						
Ephemerellidae	3	3						
Eukiefferiella	2	2						
Heptageniidae	33	34	No			X		
Isoperla	1	1						

Kogotus	1	1						
Lebertia	2	2						
Megarcys	1	1						
Nemouridae	128	127	No			X		
Neoplasta	2	2						
Pagastia	3	3						
Parapsyche	1	1						
Pericoma/Telmatoscopus	38	38						
Perlodidae	3	3						
Plecoptera	4	4						
Rhyacophila	2	2						
Rhyacophila brunnea/vemna group	3	3						
Simulium	1	1						
Taeniopterygidae	12	12						
Tanytarsini	1	1						
Thienemannimyia group	1	1						
Tipulidae	1	1						
Tvetenia	4	4						
Zapada	28	27	No			X		
Zapada cinctipes	3	4	No			X		
Total:	**320**	**320**						
					0	**4**	**0**	
% Total Misidentification Rate =	misidentifications / total number	x100 =	0.00	**Pass**				

References

[1] McDermott, H., Paull, T., Strachan, S. (May 2014). Laboratory Methods: Processing, Taxonomy, and Quality Control of Benthic Macroinvertebrate Samples, Environment Canada. ISBN: 978-1-100-25417-3

[2] Southwest Association of Freshwater Invertebrate Taxonomists. (2015). www.safit.org

[3] Pacific Northwest Aquatic Monitoring Partnership (Accessed 2015). www.pnamp.org

Taxonomic Keys

Below is a reference list of taxonomic keys utilized by taxonomists at Cordillera Consulting. Cordillera taxonomists routinely seek out new literature to ensure the most accurate identification keys are being utilized. This is not reflective of the exhaustive list of resources that we use for identification. A more complete list of taxonomic resources can be found at Southwest Association of Freshwater Invertebrate

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Project: FRO LAEMP (21-11)#3
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_SCOUTDS_BIC-01_2021-12-09	RG_SCOUTDS_BIC-02_2021-12-09	RG_SCOUTDS_BIC-03_2021-12-09	RG_FOUKI_BIC-01_2021-12-14	RG_FOUKI_BIC-02_2021-12-14	RG_FOUKI_BIC-03_2021-12-14	RG_UFR1_BIC-01_2021-12-16	RG_UFR1_BIC-02_2021-12-16	RG_UFR1_BIC-03_2021-12-16	RG_FOBSC_BIC-01_2021-12-09	RG_FOBSC_BIC-02_2021-12-09	RG_FOBSC_BIC-03_2021-12-09
Sample Collection Date:	09-Dec-21	09-Dec-21	09-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	16-Dec-21	16-Dec-21	16-Dec-21	09-Dec-21	09-Dec-21	09-Dec-21
CC#:	CC222884	CC222885	CC222886	CC222887	CC222888	CC222889	CC222890	CC222891	CC222892	CC222893	CC222894	CC222895
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	20	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	0	0	0	0	40	20	40	7	0	0
| Family: Baetidae	40	0	0	20	0	20	0	0	0	0	10	3
Acentrella	0	0	0	0	0	0	0	0	0	0	0	10
Baetis	820	420	160	340	60	140	960	2160	620	13	8	3
Baetis rhodani group	0	0	40	40	20	0	0	0	0	0	0	0
| Family: Ephemerellidae	40	80	40	80	80	0	3900	3040	640	20	4	0
Drunella doddsii	0	0	0	0	40	20	120	60	40	0	0	0
Drunella spinifera	0	0	0	0	0	0	0	0	0	0	0	0
Ephemerella	0	0	0	0	0	0	40	0	0	0	0	0
| Family: Heptageniidae	4720	1680	960	2440	3080	2760	8240	5460	1220	220	80	103
Cinygmula	80	20	0	40	20	80	760	40	0	0	0	3
Epeorus	0	0	0	0	0	0	0	0	40	0	0	0
Rhithrogena	0	0	40	0	0	0	120	20	20	0	0	0
| Order: Plecoptera	120	0	0	100	40	0	0	60	0	27	12	57
| Family: Capniidae	4940	300	2580	300	1040	420	0	0	20	240	116	270
| Family: Chloroperlidae	40	40	0	0	40	0	140	100	0	0	4	7
Haploperla	0	0	0	0	0	0	0	0	0	0	0	0
Sweltsa	0	0	0	0	0	0	180	160	20	0	0	0
| Family: Leuctridae	20	0	0	0	0	0	100	20	40	0	0	0
Paraleuctra	60	0	0	20	0	0	0	100	0	0	0	0
| Family: Nemouridae	13680	5780	10140	3280	6900	3040	8420	7840	3720	853	310	333
Podmosta	0	0	20	0	80	140	320	0	0	0	0	0
Zapada	0	0	0	0	0	0	1380	1140	1640	187	6	0
Zapada oregonensis group	0	0	0	0	0	0	100	180	80	0	0	0
Zapada cinctipes	420	60	260	40	100	20	40	40	0	20	0	50
Zapada columbiana	0	20	0	20	20	0	160	260	40	0	0	3
| Family: Peltoperlidae	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	20	0	0	0	0	0	0	0	0	0	0	0
Hesperoperla	0	0	0	0	0	20	0	0	0	0	0	0

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Sample:	RG_SCOUTDS_BIC-01_2021-12-09	RG_SCOUTDS_BIC-02_2021-12-09	RG_SCOUTDS_BIC-03_2021-12-09	RG_FOUKI_BIC-01_2021-12-14	RG_FOUKI_BIC-02_2021-12-14	RG_FOUKI_BIC-03_2021-12-14	RG_UFR1_BIC-01_2021-12-16	RG_UFR1_BIC-02_2021-12-16	RG_UFR1_BIC-03_2021-12-16	RG_FOBSC_BIC-01_2021-12-09	RG_FOBSC_BIC-02_2021-12-09	RG_FOBSC_BIC-03_2021-12-09
Sample Collection Date:	09-Dec-21	09-Dec-21	09-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	16-Dec-21	16-Dec-21	16-Dec-21	09-Dec-21	09-Dec-21	09-Dec-21
CC#:	CC222884	CC222885	CC222886	CC222887	CC222888	CC222889	CC222890	CC222891	CC222892	CC222893	CC222894	CC222895
| Family: Perlodidae	180	40	40	0	80	20	0	120	40	20	10	43
Isoperla	240	0	100	40	60	40	0	0	0	7	0	0
Kogotus	40	20	60	0	60	0	320	280	100	7	0	7
Megarcys	0	0	0	60	80	80	80	0	120	7	0	0
Skwala	0	0	0	0	0	0	0	0	0	0	0	3
| Family: Taeniopterygidae	300	100	160	120	80	20	180	400	180	80	12	13
Doddsia occidentalis	240	80	20	0	0	0	60	20	0	0	0	0
| Order: Trichoptera	0	0	0	0	0	20	0	0	0	0	0	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	0	0	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Brachycentridae	0	0	0	0	20	0	0	0	0	0	0	3
Micrasema	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	0	0	0	0	0	0	0	2	3
Glossosoma	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydropsychidae	0	0	0	20	0	0	20	0	20	0	0	7
Arctopsyche	0	0	0	20	0	0	0	0	0	13	0	0
Parapsyche	0	0	0	40	60	0	20	80	40	7	0	0
Parapsyche elsis	0	0	0	0	0	0	0	0	20	0	0	3
| Family: Leptoceridae	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0
Dicosmoecus	0	0	0	0	0	0	0	0	0	0	0	0
Ecclisomyia	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	80	20	0	80	40	20	360	520	840	13	8	43
Rhyacophila betteni group	20	0	0	0	0	0	40	100	0	0	2	0
Rhyacophila brunnea/vemna group	140	180	60	0	60	20	40	0	120	20	6	20
Rhyacophila hyalinata group	40	0	0	100	60	0	80	180	120	0	0	7
Rhyacophila vofixa group	0	0	0	0	0	0	60	40	20	0	0	0
Rhyacophila atrata complex	0	60	40	0	0	20	300	100	140	0	4	0
Rhyacophila narvae	0	0	0	0	0	0	60	20	0	0	0	0
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	0	0	0	0	80	60	20	0	0	3
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	0	0	0	0	0	0	0	0	0	0	0	0
Heterlimnius	0	0	0	0	0	0	0	0	0	0	0	0

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Sample Collection Date:	09-Dec-21	09-Dec-21	09-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	16-Dec-21	16-Dec-21	16-Dec-21	09-Dec-21	09-Dec-21	09-Dec-21
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| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	0	0	0	0	0	0	0
Mallochohelea	0	100	0	0	40	0	0	0	0	0	4	17
| Family: Chironomidae	0	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	0	0	0	0	0	0	740	320	0	7	0	0
Micropsectra	0	0	0	100	80	160	0	0	0	0	0	0
Stempellinella	20	0	0	0	0	0	0	0	0	0	0	0
Tanytarsus	20	20	0	0	0	0	440	220	40	0	2	3
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0	0
Diamesa	160	200	40	140	20	0	0	0	20	0	8	7
Pagastia	280	140	160	480	640	480	120	160	0	20	12	13
Pseudodiamesa	0	0	40	80	120	220	0	20	0	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0	0
Brillia	20	0	0	0	0	0	20	100	0	0	0	0
Eukiefferiella	140	40	0	780	240	20	40	60	40	13	2	7
Hydrobaenus	0	0	0	40	20	260	0	0	0	0	0	0
Limnophyes	0	0	0	0	20	0	20	0	0	0	0	3
Orthocladius complex	40	0	0	600	280	160	20	140	60	0	8	7
Parametriocnemus	0	0	0	0	0	0	40	0	0	0	0	0
Rheocricotopus	0	0	0	20	20	0	0	20	0	0	0	0
Tvetenia	180	20	80	580	200	220	720	1300	220	27	32	37
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	40	40	60	80	0	0	0	7	4	7
| Family: Empididae	0	0	0	0	80	40	60	20	0	0	0	0
Clinocera	0	0	0	0	0	0	0	40	0	0	0	3
Neoplasta	0	0	0	0	0	20	80	80	560	13	2	0
Oreogeton	0	0	0	0	0	0	20	20	0	0	0	0
Roederiodes	0	40	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	1000	480	1020	740	1480	1080	1920	640	360	253	62	293
| Family: Simuliidae	0	0	0	0	0	0	0	0	0	0	2	17
Simulium	40	0	0	0	20	0	0	20	0	7	0	0
| Family: Tipulidae	0	0	0	0	0	40	0	0	20	7	0	0
Antocha	0	0	0	0	0	0	0	0	0	0	0	3
Dicranota	100	0	0	0	0	60	120	80	80	7	2	10
Tipula	20	0	0	0	0	20	0	0	0	0	0	0

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Sample:	RG_SCOUTDS_BIC-01_2021-12-09	RG_SCOUTDS_BIC-02_2021-12-09	RG_SCOUTDS_BIC-03_2021-12-09	RG_FOUKI_BIC-01_2021-12-14	RG_FOUKI_BIC-02_2021-12-14	RG_FOUKI_BIC-03_2021-12-14	RG_UFR1_BIC-01_2021-12-16	RG_UFR1_BIC-02_2021-12-16	RG_UFR1_BIC-03_2021-12-16	RG_FOBSC_BIC-01_2021-12-09	RG_FOBSC_BIC-02_2021-12-09	RG_FOBSC_BIC-03_2021-12-09
Sample Collection Date:	09-Dec-21	09-Dec-21	09-Dec-21	14-Dec-21	14-Dec-21	14-Dec-21	16-Dec-21	16-Dec-21	16-Dec-21	09-Dec-21	09-Dec-21	09-Dec-21
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Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0	0
Lebertia	20	20	0	0	40	40	260	40	20	13	2	0
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	0	20	0	20	0	100	100	40	0	2	7
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	0	0	0	0	0	0	0	3
Suborder: Prostigmata	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Stygothrombidiidae	0	0	0	0	0	0	0	0	0	0	0	0
Stygothrombium	0	0	0	0	0	0	120	100	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	0	0	0	0	0	0	0	0	0	0	0	0
Pisidium	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	20	0	0	0	0	0	0	0	0
Rhynchelmis	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	0	0	0	0	0	0	0	0
Enchytraeus	80	0	0	0	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	120	0	0	0	0	0	0	0	0
Phylum: Cnidaria	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Hydrozoa	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Anthoathecatae	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydridae	0	0	0	0	0	0	0	0	0	0	0	0
Hydra	0	0	0	0	0	0	0	0	0	0	0	0
Totals:	**28400**	**9960**	**16120**	**10940**	**15500**	**9820**	**31560**	**26100**	**11420**	**2135**	**738**	**1434**

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CC#:	CC222884	CC222885	CC222886	CC222887	CC222888	CC222889	CC222890	CC222891	CC222892	CC222893	CC222894	CC222895
Taxa present but not included:												
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	20	20	20	20	20	0	20	20	0	2	3
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	7	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Nemata	0	0	0	20	20	20	0	20	20	0	0	3
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	0	20	20	0	20	20	20	20	20	0	0	0
Totals:	**20**	**40**	**40**	**40**	**60**	**60**	**20**	**60**	**60**	**7**	**2**	**6**

ND designation of a taxa represents a non-distinct taxa. This adjusts where the associated taxa fall in the metrics for this sample because the individuals are likely represented by Genus or Species level identifications.

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODPO_BIC-01_2021-12-13	RG_FODPO_BIC-02_2021-12-13	RG_FODPO_BIC-03_2021-12-13	RG_FRUPO_BIC-01_2021-12-13	RG_FRUPO_BIC-02_2021-12-13	RG_FRUPO_BIC-03_2021-12-13	RG_FOUEW_BIC-01_2021-12-13	RG_FOUEW_BIC-02_2021-12-13	RG_FOUEW_BIC-03_2021-12-13	RG_FO22_BIC-01_2021-12-13	RG_FO22_BIC-02_2021-12-13	RG_FO22_BIC-03_2021-12-13
Sample Collection Date:	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21
CC#:	CC222896	CC222897	CC222898	CC222899	CC222900	CC222901	CC222902	CC222903	CC222904	CC222905	CC222906	CC222907
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Collembola	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Hexapoda	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Insecta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Ephemeroptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ameletidae	0	0	0	0	0	0	0	0	0	0	0	0
Ameletus	0	0	0	0	0	0	0	20	40	0	0	0
| Family: Baetidae	120	0	0	0	0	0	0	20	0	0	60	0
Acentrella	0	0	0	0	0	0	0	20	0	0	0	0
Baetis	260	560	440	180	260	160	380	480	200	420	480	200
Baetis rhodani group	0	0	0	0	0	0	0	0	0	0	0	60
| Family: Ephemerellidae	20	0	20	0	0	0	60	60	140	20	20	60
Drunella doddsii	0	0	20	20	0	0	0	0	0	0	0	0
Drunella spinifera	0	0	40	0	0	0	0	0	0	0	0	0
Ephemerella	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Heptageniidae	380	160	280	240	260	420	1000	960	1120	60	120	140
Cinygmula	0	0	0	0	0	0	0	0	0	0	0	0
Epeorus	0	0	0	0	0	0	0	0	0	0	0	0
Rhithrogena	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Plecoptera	60	60	0	220	1160	0	60	200	80	80	120	180
| Family: Capniidae	960	980	580	320	0	980	560	160	360	3040	2420	2820
| Family: Chloroperlidae	20	80	0	160	200	140	160	0	120	120	300	0
Haploperla	0	0	0	0	0	0	0	0	0	40	0	0
Sweltsa	0	0	0	40	80	0	40	0	80	0	0	0
| Family: Leuctridae	0	0	0	0	0	0	0	0	0	0	0	0
Paraleuctra	0	0	0	0	0	20	20	0	0	0	0	0
| Family: Nemouridae	10880	16360	14020	9600	13800	23480	9600	9280	5620	2860	5900	5380
Podmosta	0	0	0	0	0	0	340	0	100	0	0	0
Zapada	120	280	2000	3700	2480	10720	5160	3220	2800	900	2220	2820
Zapada oregonensis group	20	80	80	20	60	20	60	60	280	0	140	80
Zapada cinctipes	440	600	340	420	820	960	1000	2020	420	460	660	1620
Zapada columbiana	20	60	220	40	160	0	0	0	0	40	360	60
| Family: Peltoperlidae	20	0	0	0	0	0	0	0	0	0	0	0
| Family: Perlidae	20	0	0	0	0	0	0	0	0	0	0	0
Hesperoperla	0	0	20	0	0	0	20	0	40	0	0	0

Project: FRO LAEMP (21-11)#3
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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODPO_BIC-01_2021-12-13	RG_FODPO_BIC-02_2021-12-13	RG_FODPO_BIC-03_2021-12-13	RG_FRUPO_BIC-01_2021-12-13	RG_FRUPO_BIC-02_2021-12-13	RG_FRUPO_BIC-03_2021-12-13	RG_FOUEW_BIC-01_2021-12-13	RG_FOUEW_BIC-02_2021-12-13	RG_FOUEW_BIC-03_2021-12-13	RG_FO22_BIC-01_2021-12-13	RG_FO22_BIC-02_2021-12-13	RG_FO22_BIC-03_2021-12-13
Sample Collection Date:	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21
CC#:	CC222896	CC222897	CC222898	CC222899	CC222900	CC222901	CC222902	CC222903	CC222904	CC222905	CC222906	CC222907
| Family: Perlodidae	560	840	660	240	1460	140	80	360	140	520	360	220
Isoperla	60	560	360	2180	2560	2860	320	1040	260	740	1240	1820
Kogotus	200	380	120	380	420	920	320	400	200	240	240	200
Megarcys	0	0	0	0	0	0	40	0	80	20	40	60
Skwala	20	0	0	0	0	0	0	0	0	0	0	0
| Family: Taeniopterygidae	160	140	0	20	0	80	80	100	40	220	180	200
Doddsia occidentalis	0	0	0	0	0	0	0	0	0	140	0	20
| Order: Trichoptera	0	0	0	0	40	40	0	0	100	0	20	0
| Family: Apataniidae	0	0	0	0	0	0	0	0	0	0	0	0
Apatania	0	0	40	0	0	0	0	0	0	0	0	0
Pedomoecus sierra	0	0	0	0	0	0	0	0	20	0	0	0
| Family: Brachycentridae	20	0	0	0	0	0	0	0	0	0	0	20
Micrasema	0	0	0	20	0	0	0	0	0	0	0	0
| Family: Glossosomatidae	0	0	0	140	0	0	20	20	20	20	20	40
Glossosoma	0	0	0	80	40	140	0	0	60	140	20	60
| Family: Hydropsychidae	0	0	0	20	0	0	0	0	0	0	0	0
Arctopsyche	0	0	0	0	0	0	0	0	0	0	0	0
Parapsyche	0	0	0	20	0	0	40	0	0	0	0	0
Parapsyche elsis	0	0	0	0	20	0	20	20	0	0	0	0
| Family: Leptoceridae	0	0	0	0	0	0	0	0	20	0	0	0
| Family: Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0
Dicosmoecus	0	0	0	0	0	0	20	0	0	0	0	0
Ecclisomyia	20	0	40	0	0	20	0	0	80	0	120	100
| Family: Rhyacophilidae	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila	120	260	20	60	60	140	100	40	80	40	60	0
Rhyacophila betteni group	0	0	0	0	0	0	0	0	0	0	0	0
Rhyacophila brunnea/vemna group	280	140	60	240	280	220	280	380	320	60	20	240
Rhyacophila hyalinata group	0	0	0	0	0	0	0	0	20	0	0	0
Rhyacophila vofixa group	0	0	0	0	0	0	20	0	0	0	0	0
Rhyacophila atrata complex	0	0	0	0	20	40	20	60	100	0	0	0
Rhyacophila narvae	140	60	220	40	40	100	0	20	0	60	0	60
| Family: Thremmatidae	0	0	0	0	0	0	0	0	0	0	0	0
Oligophlebodes	0	0	0	0	0	20	60	60	200	0	0	0
| Order: Coleoptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Elmidae	20	0	0	0	20	20	40	120	40	40	260	380
Heterlimnius	100	40	80	20	0	60	160	240	220	480	840	400

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Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODPO_BIC-01_2021-12-13	RG_FODPO_BIC-02_2021-12-13	RG_FODPO_BIC-03_2021-12-13	RG_FRUPO_BIC-01_2021-12-13	RG_FRUPO_BIC-02_2021-12-13	RG_FRUPO_BIC-03_2021-12-13	RG_FOUEW_BIC-01_2021-12-13	RG_FOUEW_BIC-02_2021-12-13	RG_FOUEW_BIC-03_2021-12-13	RG_FO22_BIC-01_2021-12-13	RG_FO22_BIC-02_2021-12-13	RG_FO22_BIC-03_2021-12-13
Sample Collection Date:	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21
CC#:	CC222896	CC222897	CC222898	CC222899	CC222900	CC222901	CC222902	CC222903	CC222904	CC222905	CC222906	CC222907
| Order: Diptera	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Ceratopogonidae	0	0	0	0	0	20	20	0	0	0	0	0
Mallochohelea	0	0	0	0	0	0	20	0	0	0	0	0
| Family: Chironomidae	0	0	0	0	0	0	0	0	0	0	0	0
| Subfamily: Chironominae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Tanytarsini	20	0	0	0	0	140	20	0	40	0	0	20
Micropsectra	0	0	0	0	0	0	0	0	0	0	0	0
Stempellinella	0	0	0	0	0	0	0	0	0	0	0	0
Tanytarsus	0	20	0	20	100	280	0	0	40	0	0	0
| Subfamily: Diamesinae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Diamesini	0	0	0	0	0	0	0	0	0	0	0	0
Diamesa	0	0	0	40	20	40	40	0	20	0	0	0
Pagastia	620	660	1000	1380	1800	3300	480	260	280	200	400	720
Pseudodiamesa	0	0	40	20	0	20	0	40	20	0	0	0
| Subfamily: Orthocladiinae	0	0	0	0	0	0	0	0	0	0	0	0
Brillia	0	0	0	0	0	0	0	0	0	0	0	20
Eukiefferiella	40	180	80	140	360	320	100	0	40	0	20	140
Hydrobaenus	20	0	60	0	20	60	0	20	160	0	0	0
Limnophyes	0	0	0	0	20	20	60	0	0	0	0	0
Orthocladius complex	140	300	100	140	620	1280	400	80	160	0	0	720
Parametriocnemus	0	0	0	0	0	0	0	0	0	0	0	0
Rheocricotopus	0	0	0	0	0	0	0	0	0	0	0	0
Tvetenia	40	80	60	40	60	260	80	60	0	0	20	40
| Subfamily: Tanypodinae	0	0	0	0	0	0	0	0	0	0	0	0
| Tribe: Pentaneurini	0	0	0	0	0	0	0	0	0	0	0	0
Thienemannimyia group	0	0	40	0	0	0	0	0	60	0	0	0
| Family: Empididae	0	40	0	20	60	0	60	40	60	0	0	40
Clinocera	0	0	0	0	0	0	0	0	0	0	0	0
Neoplasta	40	40	40	0	40	20	140	160	160	0	20	40
Oreogeton	0	0	0	0	0	0	0	0	0	0	0	0
Roederiodes	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pelecorhynchidae	0	0	0	0	0	0	0	0	0	0	0	0
Glutops	0	0	0	0	0	0	0	0	20	0	0	0
| Family: Psychodidae	0	0	0	0	0	0	0	0	0	0	0	0
Pericoma/Telmatoscopus	40	260	20	40	160	160	80	0	80	20	40	60
| Family: Simuliidae	0	20	0	0	0	0	0	0	0	0	20	0
Simulium	20	0	0	20	0	20	0	0	0	0	0	20
| Family: Tipulidae	0	0	80	0	0	20	0	20	0	40	120	60
Antocha	0	0	0	0	0	0	20	0	0	0	0	0
Dicranota	40	40	40	60	140	140	40	0	20	120	100	40
Tipula	20	0	0	0	0	0	0	0	0	0	0	0

CORDILLERA CONSULTING
FRESHWATER INVERTEBRATE TAXONOMY

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODPO_BIC-01_2021-12-13	RG_FODPO_BIC-02_2021-12-13	RG_FODPO_BIC-03_2021-12-13	RG_FRUPO_BIC-01_2021-12-13	RG_FRUPO_BIC-02_2021-12-13	RG_FRUPO_BIC-03_2021-12-13	RG_FOUEW_BIC-01_2021-12-13	RG_FOUEW_BIC-02_2021-12-13	RG_FOUEW_BIC-03_2021-12-13	RG_FO22_BIC-01_2021-12-13	RG_FO22_BIC-02_2021-12-13	RG_FO22_BIC-03_2021-12-13
Sample Collection Date:	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21
CC#:	CC222896	CC222897	CC222898	CC222899	CC222900	CC222901	CC222902	CC222903	CC222904	CC222905	CC222906	CC222907
Subphylum: Chelicerata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Arachnida	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Trombidiformes	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lebertiidae	0	0	0	0	0	0	0	0	0	0	0	0
Lebertia	60	40	140	280	200	300	80	200	320	0	40	60
| Family: Sperchontidae	0	0	0	0	0	0	0	0	0	0	0	0
Sperchon	0	0	20	20	0	40	20	0	40	40	0	0
| Family: Torrenticolidae	0	0	0	0	0	0	0	0	0	0	0	0
Testudacarus	0	0	0	0	20	0	0	0	0	0	0	0
Suborder: Prostigmata	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Stygothrombidiidae	0	0	0	0	0	0	0	0	0	0	0	0
Stygothrombium	20	0	0	0	0	0	40	0	0	0	0	0
Phylum: Mollusca	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Bivalvia	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Veneroida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Pisidiidae	20	0	100	0	0	0	0	0	40	0	20	80
Pisidium	0	0	20	0	0	0	20	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Lumbriculida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbriculidae	0	0	0	0	0	0	20	0	40	0	0	0
Rhynchelmis	0	0	0	0	0	0	20	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Enchytraeidae	0	0	0	0	20	0	0	40	0	0	0	0
Enchytraeus	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Naididae	0	0	0	0	0	0	0	0	0	0	0	0
Nais	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Cnidaria	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Hydrozoa	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Anthoathecatae	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Hydridae	0	0	0	0	0	0	0	0	0	0	0	0
Hydra	0	0	0	0	0	20	0	0	0	0	0	0
Totals:	**16180**	**23320**	**21500**	**20640**	**27880**	**48160**	**21840**	**20280**	**15000**	**11180**	**17020**	**19300**

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250-494-7553

Site:	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Sample:	RG_FODPO_BIC-01_2021-12-13	RG_FODPO_BIC-02_2021-12-13	RG_FODPO_BIC-03_2021-12-13	RG_FRUPO_BIC-01_2021-12-13	RG_FRUPO_BIC-02_2021-12-13	RG_FRUPO_BIC-03_2021-12-13	RG_FOUEW_BIC-01_2021-12-13	RG_FOUEW_BIC-02_2021-12-13	RG_FOUEW_BIC-03_2021-12-13	RG_FO22_BIC-01_2021-12-13	RG_FO22_BIC-02_2021-12-13	RG_FO22_BIC-03_2021-12-13
Sample Collection Date:	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21	13-Dec-21
CC#:	CC222896	CC222897	CC222898	CC222899	CC222900	CC222901	CC222902	CC222903	CC222904	CC222905	CC222906	CC222907
Taxa present but not included:												
Phylum: Arthropoda	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Crustacea	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Ostracoda	20	20	20	20	0	20	20	20	20	0	20	20
| Class: Branchiopoda	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Cladocera	0	0	0	0	0	0	0	0	0	0	0	20
| Class: Maxillipoda	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Copepoda	0	0	0	0	0	0	0	0	0	0	0	0
Phylum: Annelida	0	0	0	0	0	0	0	0	0	0	0	0
Subphylum: Clitellata	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Oligochaeta	0	0	0	0	0	0	0	0	0	0	0	0
| Order: Tubificida	0	0	0	0	0	0	0	0	0	0	0	0
| Family: Lumbricidae	0	0	0	20	0	0	0	0	0	0	0	0
Phylum: Nemata	20	0	0	0	20	0	20	20	20	0	0	20
Phylum: Platyhelminthes	0	0	0	0	0	0	0	0	0	0	0	0
| Class: Turbellaria	20	20	0	20	0	20	20	20	20	20	20	20
Totals:	**60**	**40**	**20**	**60**	**20**	**40**	**60**	**60**	**60**	**20**	**40**	**80**

ND designation of a taxa represents a non

Project: FRO LAEMP (21-11)#3
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250-494-7553

Site:

Sample:
Sample Collection Date:
CC#:

Phylum: Arthropoda
| Order: Collembola

Subphylum: Hexapoda
| Class: Insecta
| Order: Ephemeroptera
| Family: Ameletidae
Ameletus
| Family: Baetidae
Acentrella
Baetis
Baetis rhodani group
| Family: Ephemerellidae
Drunella doddsii
Drunella spinifera
Ephemerella
| Family: Heptageniidae
Cinygmula
Epeorus
Rhithrogena

| Order: Plecoptera
| Family: Capniidae
| Family: Chloroperlidae
Haploperla
Sweltsa
| Family: Leuctridae
Paraleuctra
| Family: Nemouridae
Podmosta
Zapada
Zapada oregonensis group
Zapada cinctipes
Zapada columbiana
| Family: Peltoperlidae
| Family: Perlidae
Hesperoperla

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:

Sample:
Sample Collection Date:
CC#:

| Family: Perlodidae
Isoperla
Kogotus
Megarcys
Skwala
| Family: Taeniopterygidae
Doddsia occidentalis

| Order: Trichoptera
| Family: Apataniidae
Apatania
Pedomoecus sierra
| Family: Brachycentridae
Micrasema
| Family: Glossosomatidae
Glossosoma
| Family: Hydropsychidae
Arctopsyche
Parapsyche
Parapsyche elsis
| Family: Leptoceridae
| Family: Limnephilidae
Dicosmoecus
Ecclisomyia
| Family: Rhyacophilidae
Rhyacophila
Rhyacophila betteni group
Rhyacophila brunnea/vemna group
Rhyacophila hyalinata group
Rhyacophila vofixa group
Rhyacophila atrata complex
Rhyacophila narvae
| Family: Thremmatidae
Oligophlebodes

| Order: Coleoptera
| Family: Elmidae
Heterlimnius

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
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250-494-7553

Site:

Sample:
Sample Collection Date:
CC#:

| Order: Diptera
| Family: Ceratopogonidae
Mallochohelea
| Family: Chironomidae
| Subfamily: Chironominae
| Tribe: Tanytarsini
Micropsectra
Stempellinella
Tanytarsus
| Subfamily: Diamesinae
| Tribe: Diamesini
Diamesa
Pagastia
Pseudodiamesa
| Subfamily: Orthocladiinae
Brillia
Eukiefferiella
Hydrobaenus
Limnophyes
Orthocladius complex
Parametriocnemus
Rheocricotopus
Tvetenia
| Subfamily: Tanypodinae
| Tribe: Pentaneurini
Thienemannimyia group
| Family: Empididae
Clinocera
Neoplasta
Oreogeton
Roederiodes
| Family: Pelecorhynchidae
Glutops
| Family: Psychodidae
Pericoma/Telmatoscopus
| Family: Simuliidae
Simulium
| Family: Tipulidae
Antocha
Dicranota
Tipula

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:

Sample:
Sample Collection Date:
CC#:

Subphylum: Chelicerata
| Class: Arachnida
| Order: Trombidiformes
| Family: Lebertiidae
Lebertia
| Family: Sperchontidae
Sperchon
| Family: Torrenticolidae
Testudacarus

Suborder: Prostigmata
| Family: Stygothrombidiidae
Stygothrombium

Phylum: Mollusca
| Class: Bivalvia
| Order: Veneroida
| Family: Pisidiidae
Pisidium

Phylum: Annelida
Subphylum: Clitellata
| Class: Oligochaeta
| Order: Lumbriculida
| Family: Lumbriculidae
Rhynchelmis

| Order: Tubificida
| Family: Enchytraeidae
Enchytraeus
| Family: Naididae
Nais

Phylum: Cnidaria
| Class: Hydrozoa
| Order: Anthoathecatae
| Family: Hydridae
Hydra

Totals:

Project: FRO LAEMP (21-11)#3
Minnow Environmental (BC)
Taxonomist: Scott Finlayson
scottfinlayson@cordilleraconsulting.ca
250-494-7553

Site:

Sample:
Sample Collection Date:
CC#:

Taxa present but not included:

Phylum: Arthropoda
Subphylum: Crustacea
| Class: Ostracoda
| Class: Branchiopoda
| Order: Cladocera

| Class: Maxillipoda
| Class: Copepoda

Phylum: Annelida
Subphylum: Clitellata
| Class: Oligochaeta
| Order: Tubificida
| Family: Lumbricidae

Phylum: Nemata
Phylum: Platyhelminthes
| Class: Turbellaria

Totals:

ND designation of a taxa represents a non

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client:	Peter Schnurr	Date Received:	28 Sep 2021
	Aquatic Scientist	Date of Analysis:	13 Oct 2021
	Minnow Environmental		14 Oct 2021
Phone:	(250) 595-1627	Final Report Date:	18 Oct 2021
Email:	pshnurr@minnow.ca	Project No.:	2021-261
		Method No.:	MET-002.05

Client Project: FRO LAEMP (21-11) (PO 748530)

Analytical Request: Composite-taxa Benthic Invertebrate Tissue (total metals and moisture) - 91 samples.
See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in parts per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.
Client specific DQO for Selenium accuracy is 90-110% of the certified value; result achieved 102% (ranging from 91-110%).

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio — Date: 18 Oct 2021

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FRUPO_INV-1_2021-09-19	RG_FRUPO_INV-2_2021-09-19	RG_FRUPO_INV-3_2021-09-19	RG_FRUPO_INV-4_2021-09-19	RG_FRUPO_INV-5_2021-09-19
		Lab ID	420	421	422	423	424
		Wet Weight (g)	0.3608	0.4787	0.3719	0.2355	0.2072
		Dry Weight (g)	0.0870	0.0687	0.0709	0.0466	0.0400
		Moisture (%)	75.9	85.6	80.9	80.2	80.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	0.667	1.1	0.788	0.931	1.5
11B	0.114	0.380	0.658	1.3	0.488	2.1	2.2
23Na	2.1	7.0	3,139	2,257	1,872	3,300	4,408
24Mg	0.026	0.087	1,478	2,217	1,786	1,814	2,184
27Al	0.037	0.123	200	496	164	807	1,114
31P	36	120	11,456	11,026	9,288	11,465	12,996
39K	3.7	12	10,139	7,765	5,931	10,137	12,130
44Ca	15	50	1,644	4,535	2,927	4,654	4,044
49Ti	0.300	1.0	9.7	33	8.3	37	75
51V	0.068	0.227	0.352	0.977	0.325	1.5	2.1
52Cr	0.433	1.4	3.8	11	4.3	15	29
55Mn	0.023	0.077	30	21	12	50	40
57Fe	1.3	4.3	150	353	154	565	823
59Co	0.009	0.030	0.524	0.567	0.464	0.951	0.821
60Ni	0.070	0.233	4.2	13	5.4	23	45
63Cu	0.039	0.130	13	19	12	17	19
66Zn	0.441	1.5	152	269	190	182	183
75As	0.471	1.6	<0.471	<0.471	<0.471	<0.471	0.871
77Se	0.311	1.0	9.3	5.1	5.9	5.7	6.3
88Sr	0.001	0.003	2.4	4.8	2.7	5.5	5.5
95Mo	0.001	0.003	0.165	0.202	0.165	0.257	0.514
107Ag	0.001	0.003	0.075	0.180	0.098	0.105	0.117
111Cd	0.085	0.283	0.663	1.2	0.860	1.0	1.2
118Sn	0.022	0.073	0.237	1.0	0.405	1.0	0.817
121Sb	0.005	0.017	0.025	0.030	0.017	0.037	0.058
137Ba	0.001	0.003	20	20	10	36	38
202Hg	0.034	0.113	<0.034	0.035	0.035	<0.034	0.035
205Tl	0.001	0.003	0.009	0.010	0.007	0.014	0.025
208Pb	0.001	0.003	0.068	0.125	0.068	0.180	0.266
238U	0.001	0.003	0.028	0.084	0.032	0.093	0.099

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FRGHSC_INV-1_2021-09-19	RG_FRGHSC_INV-2_2021-09-19	RG_FRGHSC_INV-3_2021-09-19	RG_FRGHSC_INV-4_2021-09-19	RG_FRGHSC_INV-5_2021-09-19
		Lab ID	425	426	427	428	429
		Wet Weight (g)	0.1512	0.0896	0.1435	0.1976	0.1715
		Dry Weight (g)	0.0389	0.0208	0.0291	0.0494	0.0440
		Moisture (%)	74.3	76.8	79.7	75.0	74.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	3.6	2.0	2.4	4.4	8.2
11B	0.114	0.380	9.3	3.5	7.4	9.1	31
23Na	2.1	7.0	2,809	2,596	2,607	2,554	2,074
24Mg	0.026	0.087	2,279	1,789	2,151	2,425	3,130
27Al	0.037	0.123	9,773	3,339	5,342	10,626	34,624
31P	36	120	10,732	9,298	9,790	9,873	9,020
39K	3.7	12	14,064	9,692	10,900	11,904	15,264
44Ca	15	50	6,317	4,072	5,655	6,236	7,794
49Ti	0.300	1.0	841	176	459	710	2,879
51V	0.068	0.227	21	5.1	13	17	65
52Cr	0.433	1.4	317	85	211	94	409
55Mn	0.023	0.077	147	53	88	84	305
57Fe	1.3	4.3	6,793	2,938	5,304	5,176	15,058
59Co	0.009	0.030	12	1.6	9.5	3.0	17
60Ni	0.070	0.233	420	117	292	135	580
63Cu	0.039	0.130	14	13	14	15	15
66Zn	0.441	1.5	188	115	173	165	213
75As	0.471	1.6	2.4	0.926	1.9	2.5	5.2
77Se	0.311	1.0	19	5.5	13	18	28
88Sr	0.001	0.003	12	5.3	8.2	13	29
95Mo	0.001	0.003	0.899	1.0	0.661	1.3	1.4
107Ag	0.001	0.003	0.079	0.051	0.070	0.075	0.096
111Cd	0.085	0.283	3.9	2.0	3.2	6.2	5.7
118Sn	0.022	0.073	1.3	1.1	1.0	2.1	2.3
121Sb	0.005	0.017	0.208	0.131	0.147	0.218	0.624
137Ba	0.001	0.003	201	80	161	217	646
202Hg	0.034	0.113	0.042	0.042	0.042	0.078	0.078
205Tl	0.001	0.003	0.116	0.031	0.070	0.123	0.524
208Pb	0.001	0.003	1.9	0.627	1.1	1.8	5.2
238U	0.001	0.003	0.447	0.222	0.367	0.481	1.1

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

Parameter	DL (ppm)	LOQ (ppm)	RG_UFR1_INV-1_2021-09-20	RG_UFR1_INV-2_2021-09-20	RG_UFR1_INV-3_2021-09-20	RG_UFR1_INV-4_2021-09-20	RG_UFR1_INV-5_2021-09-20
		Client ID	RG_UFR1_INV-1_2021-09-20	RG_UFR1_INV-2_2021-09-20	RG_UFR1_INV-3_2021-09-20	RG_UFR1_INV-4_2021-09-20	RG_UFR1_INV-5_2021-09-20
		Lab ID	430	431	432	433	434
		Wet Weight (g)	0.7859	0.5488	0.4393	0.4986	0.5620
		Dry Weight (g)	0.1677	0.1019	0.0911	0.0872	0.1223
		Moisture (%)	78.7	81.4	79.3	82.5	78.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	0.357	0.376	0.500	0.300	0.271
11B	0.114	0.380	14	16	19	10	10
23Na	2.1	7.0	3,618	4,957	3,124	4,495	3,622
24Mg	0.026	0.087	1,576	1,595	1,375	1,367	1,205
27Al	0.037	0.123	1,037	1,056	1,102	664	543
31P	36	120	12,008	14,357	13,114	13,551	10,950
39K	3.7	12	12,949	15,234	13,687	12,998	10,149
44Ca	15	50	2,941	2,172	2,371	2,245	1,954
49Ti	0.300	1.0	53	59	75	35	41
51V	0.068	0.227	1.5	2.0	1.9	1.3	0.870
52Cr	0.433	1.4	14	20	17	15	9.8
55Mn	0.023	0.077	51	49	45	50	34
57Fe	1.3	4.3	499	679	515	385	314
59Co	0.009	0.030	0.674	1.1	0.561	0.855	0.373
60Ni	0.070	0.233	24	34	29	23	13
63Cu	0.039	0.130	15	14	12	16	11
66Zn	0.441	1.5	203	212	186	223	132
75As	0.471	1.6	1.5	1.2	0.940	1.1	1.0
77Se	0.311	1.0	4.8	5.6	4.5	4.9	4.8
88Sr	0.001	0.003	4.9	3.9	4.3	3.8	3.2
95Mo	0.001	0.003	0.531	0.436	0.531	0.398	0.417
107Ag	0.001	0.003	0.078	0.066	0.066	0.081	0.060
111Cd	0.085	0.283	3.8	2.8	2.3	3.0	1.7
118Sn	0.022	0.073	0.358	0.613	0.380	0.659	0.261
121Sb	0.005	0.017	0.067	0.051	0.058	0.043	0.038
137Ba	0.001	0.003	71	56	64	53	39
202Hg	0.034	0.113	0.060	0.048	0.060	0.052	0.045
205Tl	0.001	0.003	0.031	0.030	0.032	0.023	0.020
208Pb	0.001	0.003	0.238	0.250	0.232	0.184	0.145
238U	0.001	0.003	0.063	0.060	0.062	0.053	0.033

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOUKI_INV-1_2021-09-20	RG_FOUKI_INV-2_2021-09-20	RG_FOUKI_INV-3_2021-09-20	RG_FOUKI_INV-4_2021-09-20	RG_FOUKI_INV-5_2021-09-20
		Lab ID	435	436	437	438	439
		Wet Weight (g)	0.3272	0.8719	0.7205	0.6720	0.9741
		Dry Weight (g)	0.0752	0.1965	0.1717	0.1521	0.3097
		Moisture (%)	77.0	77.5	76.2	77.4	68.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.4	1.5	2.3	0.460	0.706
11B	0.114	0.380	1.7	0.871	0.914	0.639	0.457
23Na	2.1	7.0	3,623	2,571	3,603	763	2,099
24Mg	0.026	0.087	1,601	1,200	1,405	311	1,450
27Al	0.037	0.123	837	349	596	160	118
31P	36	120	12,234	8,882	10,814	2,239	9,940
39K	3.7	12	13,365	7,992	10,014	2,156	8,129
44Ca	15	50	5,337	4,700	6,923	2,535	2,843
49Ti	0.300	1.0	68	27	47	9.1	7.4
51V	0.068	0.227	1.7	0.710	0.986	0.285	0.355
52Cr	0.433	1.4	15	3.7	9.4	2.3	2.6
55Mn	0.023	0.077	129	269	432	148	139
57Fe	1.3	4.3	1,062	406	608	205	238
59Co	0.009	0.030	4.8	5.8	9.1	3.8	5.5
60Ni	0.070	0.233	33	17	34	6.9	12
63Cu	0.039	0.130	18	11	15	5.9	23
66Zn	0.441	1.5	219	145	227	46	250
75As	0.471	1.6	0.792	0.619	0.589	<0.471	<0.471
77Se	0.311	1.0	6.2	5.5	7.0	4.5	4.9
88Sr	0.001	0.003	7.9	4.3	6.7	3.2	3.3
95Mo	0.001	0.003	0.265	0.303	0.433	0.130	0.325
107Ag	0.001	0.003	0.151	0.096	0.120	0.032	0.145
111Cd	0.085	0.283	1.2	0.656	0.666	0.305	0.611
118Sn	0.022	0.073	0.923	0.169	0.255	0.142	0.418
121Sb	0.005	0.017	0.104	0.089	0.125	0.051	0.088
137Ba	0.001	0.003	93	59	56	12	12
202Hg	0.034	0.113	0.037	<0.034	0.056	<0.034	0.040
205Tl	0.001	0.003	0.034	0.022	0.026	0.016	0.016
208Pb	0.001	0.003	0.177	0.094	0.127	0.033	0.036
238U	0.001	0.003	0.137	0.071	0.086	0.028	0.030

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_SCOUTDS_INV-1_2021-09-14	RG_SCOUTDS_INV-2_2021-09-14	RG_SCOUTDS_INV-3_2021-09-14	RG_SCOUTDS_INV-4_2021-09-14	RG_SCOUTDS_INV-5_2021-09-14
		Lab ID	440	441	442	443	444
		Wet Weight (g)	1.4332	0.6166	1.1982	1.0826	0.5059
		Dry Weight (g)	0.3465	0.1582	0.3061	0.2534	0.1186
		Moisture (%)	75.8	74.3	74.5	76.6	76.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.2	0.862	1.0	1.1	1.6
11B	0.114	0.380	0.944	0.761	0.624	0.716	1.6
23Na	2.1	7.0	2,627	2,739	2,743	2,813	3,701
24Mg	0.026	0.087	1,190	1,226	1,677	1,659	1,524
27Al	0.037	0.123	772	402	192	381	888
31P	36	120	8,676	8,677	9,601	9,275	11,967
39K	3.7	12	8,801	8,225	8,916	8,466	11,770
44Ca	15	50	1,993	1,886	2,184	2,727	2,534
49Ti	0.300	1.0	44	33	10	29	55
51V	0.068	0.227	1.1	0.618	0.362	0.795	1.4
52Cr	0.433	1.4	2.3	4.0	3.9	5.9	5.1
55Mn	0.023	0.077	344	131	125	142	470
57Fe	1.3	4.3	504	346	191	377	674
59Co	0.009	0.030	8.6	4.6	4.8	5.0	13
60Ni	0.070	0.233	17	17	13	18	31
63Cu	0.039	0.130	15	13	22	20	21
66Zn	0.441	1.5	233	278	306	377	325
75As	0.471	1.6	0.508	0.535	<0.471	<0.471	0.669
77Se	0.311	1.0	9.8	10	7.7	8.1	11
88Sr	0.001	0.003	3.4	2.9	2.7	3.5	4.8
95Mo	0.001	0.003	0.433	0.281	0.260	0.260	0.422
107Ag	0.001	0.003	0.145	0.126	0.151	0.214	0.139
111Cd	0.085	0.283	2.9	2.9	1.9	2.0	4.3
118Sn	0.022	0.073	0.286	0.270	0.263	0.257	0.527
121Sb	0.005	0.017	0.092	0.074	0.048	0.063	0.108
137Ba	0.001	0.003	54	30	11	25	52
202Hg	0.034	0.113	0.064	0.064	<0.034	0.056	0.064
205Tl	0.001	0.003	0.036	0.027	0.025	0.031	0.045
208Pb	0.001	0.003	0.172	0.078	0.033	0.093	0.199
238U	0.001	0.003	0.071	0.053	0.019	0.052	0.086

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow
Tissue Analysis Results

		Client ID	RG_MP1_INV_1_2021-09-14	RG_MP1_INV_2_2021-09-14	RG_MP1_INV_3_2021-09-14	RG_FRCP1SW_INV_1_2021-09-14	RG_FRCP1SW_INV_2_2021-09-14
		Lab ID	445	446	447	448	449
		Wet Weight (g)	0.3855	0.5306	0.3917	0.6353	0.8470
		Dry Weight (g)	0.0925	0.1072	0.0768	0.1386	0.2322
		Moisture (%)	76.0	79.8	80.4	78.2	72.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	2.4	5.0	5.1	0.971	1.3
11B	0.114	0.380	1.4	1.2	0.582	0.626	1.0
23Na	2.1	7.0	4,596	8,305	10,100	2,279	3,369
24Mg	0.026	0.087	1,236	1,516	1,743	1,199	2,162
27Al	0.037	0.123	1,420	1,142	449	249	337
31P	36	120	8,105	12,315	11,477	6,538	12,595
39K	3.7	12	8,333	12,991	11,603	6,479	9,181
44Ca	15	50	1,906	2,123	2,931	1,751	4,872
49Ti	0.300	1.0	116	79	32	16	17
51V	0.068	0.227	1.8	1.8	0.759	0.392	0.578
52Cr	0.433	1.4	14	12	7.1	3.9	4.4
55Mn	0.023	0.077	29	39	64	94	105
57Fe	1.3	4.3	694	541	339	199	311
59Co	0.009	0.030	1.8	1.6	2.9	2.4	4.3
60Ni	0.070	0.233	25	25	16	13	14
63Cu	0.039	0.130	16	13	20	13	28
66Zn	0.441	1.5	255	196	201	241	399
75As	0.471	1.6	<0.471	0.595	<0.471	<0.471	0.487
77Se	0.311	1.0	5.0	8.5	8.4	7.7	8.0
88Sr	0.001	0.003	2.9	3.0	3.0	2.0	5.0
95Mo	0.001	0.003	0.325	0.242	0.435	0.266	0.387
107Ag	0.001	0.003	0.167	0.113	0.239	0.095	0.214
111Cd	0.085	0.283	1.6	1.7	7.0	1.4	2.9
118Sn	0.022	0.073	0.355	0.348	0.518	0.438	0.321
121Sb	0.005	0.017	0.043	0.041	0.032	0.032	0.045
137Ba	0.001	0.003	29	50	19	11	16
202Hg	0.034	0.113	0.044	0.051	0.063	0.051	0.051
205Tl	0.001	0.003	0.038	0.056	0.037	0.030	0.030
208Pb	0.001	0.003	0.232	0.293	0.178	0.062	0.099
238U	0.001	0.003	0.050	0.057	0.062	0.032	0.041

Notes:
ppm = parts per million
DL = detection limit
LOQ = limit of quantitation
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g = grams
% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FRCP1SW_INV_3_2021-09-14	RG_FRCP1SW_INV_4_2021-09-14	RG_FRCP1SW_INV_5_2021-09-14	RG_FRSCH2_INV_1_2021-09-14	RG_FRSCH2_INV_2_2021-09-14
		Lab ID	450	451	452	453	454
		Wet Weight (g)	0.3862	0.3372	0.3448	0.6530	0.7852
		Dry Weight (g)	0.0680	0.0653	0.0600	0.1667	0.1307
		Moisture (%)	82.4	80.6	82.6	74.5	83.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.0	1.4	1.5	2.6	3.3
11B	0.114	0.380	1.2	3.3	1.8	1.1	4.5
23Na	2.1	7.0	2,075	2,305	3,545	3,721	10,340
24Mg	0.026	0.087	1,269	1,336	1,589	1,812	1,736
27Al	0.037	0.123	398	888	697	432	2,226
31P	36	120	6,432	7,879	8,931	14,884	10,813
39K	3.7	12	5,688	6,919	8,455	15,795	18,097
44Ca	15	50	3,278	3,396	3,568	2,129	3,369
49Ti	0.300	1.0	25	56	45	28	194
51V	0.068	0.227	0.857	1.4	1.1	0.691	2.3
52Cr	0.433	1.4	12	9.7	13	5.1	29
55Mn	0.023	0.077	61	90	66	195	114
57Fe	1.3	4.3	413	674	536	371	1,881
59Co	0.009	0.030	1.9	2.2	2.0	5.5	5.7
60Ni	0.070	0.233	23	26	35	15	74
63Cu	0.039	0.130	12	17	15	15	18
66Zn	0.441	1.5	249	262	407	264	119
75As	0.471	1.6	0.487	0.920	0.554	<0.471	2.4
77Se	0.311	1.0	4.9	6.1	6.9	9.6	7.3
88Sr	0.001	0.003	3.7	4.3	4.6	2.7	4.6
95Mo	0.001	0.003	0.290	0.338	0.266	0.314	0.846
107Ag	0.001	0.003	0.091	0.117	0.126	0.132	0.132
111Cd	0.085	0.283	0.992	1.4	1.4	1.2	2.3
118Sn	0.022	0.073	0.515	0.495	0.520	0.526	0.610
121Sb	0.005	0.017	0.039	0.055	0.045	0.051	0.164
137Ba	0.001	0.003	18	25	23	24	61
202Hg	0.034	0.113	<0.034	0.059	0.051	0.051	0.055
205Tl	0.001	0.003	0.023	0.032	0.031	0.030	0.077
208Pb	0.001	0.003	0.112	0.183	0.153	0.185	0.793
238U	0.001	0.003	0.047	0.076	0.064	0.065	0.154

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FRSCH2_INV_3_2021-09-14	RG_FRSCH2_INV_4_2021-09-14	RG_FRSCH2_INV_5_2021-09-14	RG_FOUCL_INV_1_2021-09-13	RG_FOUCL_INV_2_2021-09-13
		Lab ID	455	456	457	458	459
		Wet Weight (g)	0.2161	0.3677	0.2291	0.4004	0.5022
		Dry Weight (g)	0.0485	0.1166	0.0537	0.0860	0.1054
		Moisture (%)	77.6	68.3	76.6	78.5	79.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.2	0.712	1.3	1.3	1.2
11B	0.114	0.380	2.4	0.339	2.0	2.1	0.876
23Na	2.1	7.0	4,446	3,454	5,021	5,234	8,516
24Mg	0.026	0.087	1,827	1,923	2,172	1,774	2,076
27Al	0.037	0.123	891	95	864	1,104	499
31P	36	120	12,518	11,535	14,268	18,493	12,040
39K	3.7	12	12,945	9,762	15,532	21,611	13,923
44Ca	15	50	3,464	3,176	3,478	1,873	2,635
49Ti	0.300	1.0	50	5.9	51	69	31
51V	0.068	0.227	1.6	0.255	1.7	1.7	0.901
52Cr	0.433	1.4	22	3.7	29	13	9.7
55Mn	0.023	0.077	70	22	52	76	45
57Fe	1.3	4.3	625	135	875	461	351
59Co	0.009	0.030	3.0	1.3	4.1	1.3	1.5
60Ni	0.070	0.233	46	4.8	62	26	18
63Cu	0.039	0.130	18	17	22	15	17
66Zn	0.441	1.5	219	322	296	180	176
75As	0.471	1.6	0.678	<0.471	<0.471	1.1	0.654
77Se	0.311	1.0	6.7	3.5	6.7	11	8.8
88Sr	0.001	0.003	4.6	3.0	4.5	3.3	3.1
95Mo	0.001	0.003	0.378	0.189	0.630	0.305	0.294
107Ag	0.001	0.003	0.151	0.129	0.195	0.088	0.198
111Cd	0.085	0.283	1.2	0.562	1.5	1.8	3.8
118Sn	0.022	0.073	0.550	0.257	1.2	0.397	0.481
121Sb	0.005	0.017	0.066	0.017	0.093	0.050	0.026
137Ba	0.001	0.003	24	7.8	23	110	35
202Hg	0.034	0.113	0.037	0.037	<0.034	0.037	0.045
205Tl	0.001	0.003	0.041	0.015	0.044	0.061	0.043
208Pb	0.001	0.003	0.245	0.040	0.240	0.270	0.110
238U	0.001	0.003	0.108	0.018	0.127	0.150	0.062

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

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g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOUCL_INV_3_2021-09-13	RG_FODHE_INV_1_2021-09-13	RG_FODHE_INV_2_2021-09-13	RG_FODHE_INV_3_2021-09-13	RG_FOBSC_INV_1_2021-09-13
		Lab ID	460	461	462	463	464
		Wet Weight (g)	0.4190	0.8548	0.5235	0.4546	0.8550
		Dry Weight (g)	0.0641	0.1651	0.1005	0.0850	0.2090
		Moisture (%)	84.7	80.7	80.8	81.3	75.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	4.4	0.767	5.7	0.757	3.3
11B	0.114	0.380	0.537	1.1	1.0	0.848	1.9
23Na	2.1	7.0	7,539	3,919	7,169	4,411	5,756
24Mg	0.026	0.087	2,519	1,198	1,464	1,408	1,826
27Al	0.037	0.123	369	254	382	265	1,415
31P	36	120	14,428	10,858	12,760	17,363	17,293
39K	3.7	12	12,577	9,771	10,514	18,413	17,587
44Ca	15	50	3,120	1,788	2,189	1,251	3,594
49Ti	0.300	1.0	18	13	24	16	90
51V	0.068	0.227	0.698	0.420	0.653	0.448	3.2
52Cr	0.433	1.4	9.3	4.4	4.1	3.5	19
55Mn	0.023	0.077	32	102	132	95	601
57Fe	1.3	4.3	383	255	287	218	1,302
59Co	0.009	0.030	1.4	0.584	1.1	0.861	18
60Ni	0.070	0.233	17	10	10	7.0	77
63Cu	0.039	0.130	18	16	19	14	24
66Zn	0.441	1.5	223	174	179	220	322
75As	0.471	1.6	0.654	<0.471	0.605	0.714	1.0
77Se	0.311	1.0	11	7.4	7.9	12	15
88Sr	0.001	0.003	2.7	2.5	2.7	2.1	6.9
95Mo	0.001	0.003	0.231	0.567	0.462	0.441	0.799
107Ag	0.001	0.003	0.151	0.120	0.176	0.113	0.126
111Cd	0.085	0.283	3.0	2.2	2.6	2.0	5.3
118Sn	0.022	0.073	0.602	0.215	0.363	0.637	0.107
121Sb	0.005	0.017	0.027	0.018	0.032	0.042	0.145
137Ba	0.001	0.003	33	26	26	24	68
202Hg	0.034	0.113	0.060	0.075	0.052	0.052	0.059
205Tl	0.001	0.003	0.071	0.027	0.045	0.055	0.072
208Pb	0.001	0.003	0.103	0.192	0.207	0.117	0.374
238U	0.001	0.003	0.087	0.059	0.065	0.039	0.117

Notes:

ppm = parts per million

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% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOBSC_INV_2_2021-09-13	RG_FOBSC_INV_3_2021-09-13	RG_FOBSC_INV_4_2021-09-13	RG_FOBSC_INV_5_2021-09-13	RG_FOUEW_INV_1_2021-09-11
		Lab ID	465	466	467	468	469
		Wet Weight (g)	0.6708	0.8642	1.0096	1.3720	0.9059
		Dry Weight (g)	0.1637	0.1713	0.2021	0.4085	0.2176
		Moisture (%)	75.6	80.2	80.0	70.2	76.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	8.3	2.9	5.8	1.7	1.6
11B	0.114	0.380	8.9	5.0	5.9	0.917	2.9
23Na	2.1	7.0	5,759	5,326	5,551	3,690	3,680
24Mg	0.026	0.087	3,368	2,351	2,676	1,593	1,762
27Al	0.037	0.123	10,333	4,998	6,432	716	2,432
31P	36	120	17,725	14,457	13,544	13,600	13,265
39K	3.7	12	22,868	13,776	17,116	11,353	11,935
44Ca	15	50	6,666	6,464	8,875	3,267	4,155
49Ti	0.300	1.0	706	284	494	39	200
51V	0.068	0.227	14	10	8.6	1.8	5.8
52Cr	0.433	1.4	120	41	47	12	39
55Mn	0.023	0.077	434	306	529	330	150
57Fe	1.3	4.3	7,905	3,053	3,629	644	2,215
59Co	0.009	0.030	12	15	15	9.0	2.4
60Ni	0.070	0.233	190	99	115	37	66
63Cu	0.039	0.130	41	31	33	24	20
66Zn	0.441	1.5	530	498	456	246	167
75As	0.471	1.6	1.7	1.4	1.2	0.589	0.909
77Se	0.311	1.0	16	14	13	10	8.9
88Sr	0.001	0.003	17	11	21	4.9	7.0
95Mo	0.001	0.003	2.2	0.836	0.909	0.418	0.983
107Ag	0.001	0.003	0.210	0.179	0.231	0.184	0.142
111Cd	0.085	0.283	7.9	8.5	11	4.4	2.6
118Sn	0.022	0.073	0.590	0.346	0.407	0.111	0.297
121Sb	0.005	0.017	0.313	0.250	0.278	0.071	0.098
137Ba	0.001	0.003	227	104	225	45	74
202Hg	0.034	0.113	0.110	0.076	0.093	0.051	0.051
205Tl	0.001	0.003	0.217	0.107	0.182	0.049	0.066
208Pb	0.001	0.003	1.8	0.970	1.3	0.192	0.857
238U	0.001	0.003	0.303	0.261	0.333	0.055	0.190

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

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g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOUEW_INV_2_2021-09-11	RG_FOUEW_INV_3_2021-09-11	RG_FOUEW_INV_4_2021-09-11	RG_FOUEW_INV_5_2021-09-11	RG_HENUP_INV_1_2021-09-16
		Lab ID	470	471	472	473	474
		Wet Weight (g)	2.8040	0.9277	1.2035	2.4397	1.2409
		Dry Weight (g)	0.7637	0.1783	0.3892	0.4907	0.3146
		Moisture (%)	72.8	80.8	67.7	79.9	74.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.3	1.8	1.2	1.4	0.745
11B	0.114	0.380	1.9	3.7	2.1	2.5	2.0
23Na	2.1	7.0	3,218	3,283	2,627	2,765	2,783
24Mg	0.026	0.087	1,331	1,578	1,706	1,818	1,634
27Al	0.037	0.123	1,092	3,711	1,468	1,827	525
31P	36	120	9,991	9,764	10,623	12,437	10,108
39K	3.7	12	10,526	11,581	12,761	9,730	9,442
44Ca	15	50	3,739	6,156	4,083	5,831	6,663
49Ti	0.300	1.0	62	173	99	117	37
51V	0.068	0.227	2.7	6.4	3.1	3.6	1.4
52Cr	0.433	1.4	11	34	12	4.6	8.9
55Mn	0.023	0.077	136	94	164	114	16
57Fe	1.3	4.3	1,055	2,171	1,177	772	376
59Co	0.009	0.030	2.0	2.7	2.6	1.3	0.651
60Ni	0.070	0.233	27	65	26	13	16
63Cu	0.039	0.130	16	17	21	15	8.4
66Zn	0.441	1.5	163	165	275	162	192
75As	0.471	1.6	0.639	0.982	1.0	0.751	1.2
77Se	0.311	1.0	11	6.2	7.9	8.5	4.8
88Sr	0.001	0.003	4.5	8.5	4.2	7.2	8.9
95Mo	0.001	0.003	0.516	0.811	0.787	0.665	0.281
107Ag	0.001	0.003	0.113	0.089	0.116	0.144	0.079
111Cd	0.085	0.283	2.5	2.4	2.9	1.4	0.887
118Sn	0.022	0.073	0.266	0.284	0.225	0.407	0.375
121Sb	0.005	0.017	0.052	0.093	0.066	0.125	0.029
137Ba	0.001	0.003	51	82	62	68	13
202Hg	0.034	0.113	<0.034	<0.034	0.051	0.041	0.057
205Tl	0.001	0.003	0.042	0.091	0.045	0.060	0.038
208Pb	0.001	0.003	0.476	0.837	0.571	0.433	0.193
238U	0.001	0.003	0.142	0.175	0.106	0.342	0.101

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_HENUP_INV_2_2021-09-16	RG_HENUP_INV_3_2021-09-16	RG_FOUNGD_INV_1_2021-09-17	RG_FOUNGD_INV_2_2021-09-17	RG_FOUNGD_INV_3_2021-09-17
		Lab ID	475	476	477	478	479
		Wet Weight (g)	1.6855	1.1238	0.7154	0.5555	1.8523
		Dry Weight (g)	0.2998	0.2265	0.1320	0.1152	0.3413
		Moisture (%)	82.2	79.8	81.5	79.3	81.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	0.285	0.273	1.3	1.6	2.5
11B	0.114	0.380	1.1	1.7	1.8	2.2	4.8
23Na	2.1	7.0	3,276	2,268	3,610	3,065	4,375
24Mg	0.026	0.087	1,294	1,168	1,832	1,385	2,015
27Al	0.037	0.123	236	232	779	1,554	2,831
31P	36	120	9,567	9,406	12,978	9,202	12,421
39K	3.7	12	9,048	6,689	12,315	10,015	13,690
44Ca	15	50	2,998	3,704	5,076	2,786	4,691
49Ti	0.300	1.0	17	8.6	52	167	234
51V	0.068	0.227	0.478	0.455	1.5	3.4	5.3
52Cr	0.433	1.4	3.1	2.1	5.2	17	15
55Mn	0.023	0.077	9.3	15	55	48	86
57Fe	1.3	4.3	154	134	427	704	1,034
59Co	0.009	0.030	0.241	0.172	2.6	2.5	2.6
60Ni	0.070	0.233	6.3	4.9	22	38	47
63Cu	0.039	0.130	7.7	8.0	12	13	14
66Zn	0.441	1.5	187	140	267	256	215
75As	0.471	1.6	2.0	1.6	1.1	1.1	1.6
77Se	0.311	1.0	6.0	6.0	8.1	8.1	7.8
88Sr	0.001	0.003	6.0	7.4	7.1	5.3	9.1
95Mo	0.001	0.003	0.269	0.333	0.486	0.435	0.435
107Ag	0.001	0.003	0.091	0.060	0.083	0.174	0.129
111Cd	0.085	0.283	0.856	0.520	4.1	2.6	2.2
118Sn	0.022	0.073	0.420	0.188	0.515	0.591	0.493
121Sb	0.005	0.017	0.020	0.025	0.050	0.094	0.126
137Ba	0.001	0.003	9.5	12	59	50	105
202Hg	0.034	0.113	0.049	<0.034	0.041	0.049	0.061
205Tl	0.001	0.003	0.032	0.034	0.050	0.051	0.078
208Pb	0.001	0.003	0.090	0.094	0.249	0.400	0.746
238U	0.001	0.003	0.072	0.053	0.115	0.156	0.301

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FO22_INV_1_ 2021-09-12	RG_FO22_INV_2_ 2021-09-12	RG_FO22_INV_3_ 2021-09-12	RG_FO22_INV_4_ 2021-09-12	RG_FO22_INV_5_ 2021-09-12
		Lab ID	480	481	482	483	484
		Wet Weight (g)	0.5796	0.6126	1.1944	0.5992	1.9540
		Dry Weight (g)	0.1328	0.1265	0.2298	0.1361	0.3971
		Moisture (%)	77.1	79.4	80.8	77.3	79.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	5.2	1.8	1.4	4.6	4.5
11B	0.114	0.380	14	3.5	2.8	7.6	9.8
23Na	2.1	7.0	3,574	2,891	4,001	4,095	5,768
24Mg	0.026	0.087	2,308	1,971	1,753	2,207	2,182
27Al	0.037	0.123	13,822	4,027	2,702	8,611	8,858
31P	36	120	8,022	11,385	11,731	10,254	10,145
39K	3.7	12	11,392	10,734	12,221	11,516	13,139
44Ca	15	50	3,651	4,330	2,995	4,972	6,162
49Ti	0.300	1.0	1,253	279	197	705	798
51V	0.068	0.227	37	5.9	5.5	18	15
52Cr	0.433	1.4	66	23	33	231	57
55Mn	0.023	0.077	230	93	92	201	139
57Fe	1.3	4.3	9,168	2,324	1,697	6,583	4,110
59Co	0.009	0.030	5.8	4.3	2.7	13	4.7
60Ni	0.070	0.233	107	46	57	337	88
63Cu	0.039	0.130	16	21	20	24	20
66Zn	0.441	1.5	150	256	184	194	241
75As	0.471	1.6	2.1	0.859	0.814	1.7	1.4
77Se	0.311	1.0	8.7	9.2	8.6	8.9	8.3
88Sr	0.001	0.003	14	7.1	5.9	11	15
95Mo	0.001	0.003	1.1	0.486	0.715	1.6	1.2
107Ag	0.001	0.003	0.151	0.189	0.115	0.110	0.121
111Cd	0.085	0.283	1.7	3.0	2.2	2.5	3.4
118Sn	0.022	0.073	0.770	0.646	1.0	0.971	0.854
121Sb	0.005	0.017	0.419	0.106	0.125	0.313	0.351
137Ba	0.001	0.003	275	82	62	163	192
202Hg	0.034	0.113	<0.034	0.045	<0.034	0.056	0.040
205Tl	0.001	0.003	0.228	0.077	0.064	0.137	0.164
208Pb	0.001	0.003	2.9	1.0	0.652	1.9	1.9
238U	0.001	0.003	0.501	0.218	0.195	0.305	0.503

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow
Tissue Analysis Results

		Client ID	RG_FOBCP_INV_1_2021-09-13	RG_FOBCP_INV_2_2021-09-13	RG_FOBCP_INV_3_2021-09-13	RG_FOBCP_INV_4_2021-09-13	RG_FOBCP_INV_5_2021-09-13
		Lab ID	485	486	487	488	489
		Wet Weight (g)	1.1620	0.5026	0.5578	2.3406	0.9868
		Dry Weight (g)	0.3038	0.1292	0.1297	0.4988	0.2273
		Moisture (%)	73.9	74.3	76.7	78.7	77.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	0.754	2.9	2.8	1.0	2.5
11B	0.114	0.380	0.517	6.6	6.0	1.1	0.909
23Na	2.1	7.0	1,952	3,824	3,405	2,156	5,908
24Mg	0.026	0.087	1,305	2,322	2,303	845	1,772
27Al	0.037	0.123	171	5,417	5,358	539	553
31P	36	120	8,486	11,773	11,510	6,116	12,013
39K	3.7	12	6,433	14,099	12,853	7,307	12,259
44Ca	15	50	1,649	5,997	4,900	1,451	2,739
49Ti	0.300	1.0	13	484	530	31	34
51V	0.068	0.227	0.436	11	8.7	1.1	1.1
52Cr	0.433	1.4	3.9	46	44	6.9	9.1
55Mn	0.023	0.077	54	153	212	106	142
57Fe	1.3	4.3	218	3,233	2,322	393	525
59Co	0.009	0.030	2.6	8.7	6.5	3.2	4.8
60Ni	0.070	0.233	12	88	89	21	29
63Cu	0.039	0.130	12	21	17	9.3	16
66Zn	0.441	1.5	157	381	322	156	285
75As	0.471	1.6	<0.471	1.5	2.0	<0.471	0.534
77Se	0.311	1.0	4.7	8.7	12	8.1	10
88Sr	0.001	0.003	2.1	11	9.7	2.9	3.3
95Mo	0.001	0.003	0.199	0.576	0.477	0.258	0.377
107Ag	0.001	0.003	0.066	0.175	0.131	0.038	0.110
111Cd	0.085	0.283	0.705	3.8	6.2	1.2	4.0
118Sn	0.022	0.073	0.161	0.610	0.790	0.183	0.474
121Sb	0.005	0.017	0.034	0.295	0.217	0.056	0.081
137Ba	0.001	0.003	8.1	85	91	20	30
202Hg	0.034	0.113	<0.034	0.056	0.071	0.044	0.064
205Tl	0.001	0.003	0.014	0.107	0.144	0.032	0.045
208Pb	0.001	0.003	0.050	0.882	0.971	0.116	0.165
238U	0.001	0.003	0.026	0.226	0.240	0.049	0.076

Notes:
ppm = parts per million
DL = detection limit
LOQ = limit of quantitation
< = less than detection limit
g = grams
% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FO26_INV_1_ 2021-09-15	RG_FO26_INV_2_ 2021-09-15	RG_FO26_INV_3_ 2021-09-15	RG_FO26_INV_4_ 2021-09-15	RG_FO26_INV_5_ 2021-09-15
		Lab ID	490	491	492	493	494
		Wet Weight (g)	1.5644	2.2334	4.2563	2.1119	1.7869
		Dry Weight (g)	0.3185	0.3924	0.7609	0.4023	0.3566
		Moisture (%)	79.6	82.4	82.1	81.0	80.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	0.860	0.248	0.754	0.394	0.376
11B	0.114	0.380	3.1	0.726	2.4	1.1	1.1
23Na	2.1	7.0	4,811	4,206	5,397	4,784	5,038
24Mg	0.026	0.087	1,864	1,224	1,564	1,533	1,314
27Al	0.037	0.123	2,134	279	1,352	629	638
31P	36	120	14,417	13,482	14,572	14,200	13,057
39K	3.7	12	15,576	12,395	16,975	16,100	14,585
44Ca	15	50	4,126	1,532	2,982	2,500	1,765
49Ti	0.300	1.0	164	17	101	28	36
51V	0.068	0.227	4.0	0.564	2.6	1.3	1.3
52Cr	0.433	1.4	20	3.2	11	7.1	8.5
55Mn	0.023	0.077	88	45	66	67	67
57Fe	1.3	4.3	1,139	193	782	439	450
59Co	0.009	0.030	1.5	0.300	1.1	0.679	0.673
60Ni	0.070	0.233	31	4.9	18	11	14
63Cu	0.039	0.130	12	11	13	12	13
66Zn	0.441	1.5	150	119	127	125	120
75As	0.471	1.6	2.5	1.5	2.1	2.2	2.1
77Se	0.311	1.0	4.2	3.7	3.8	2.9	3.8
88Sr	0.001	0.003	8.2	2.2	6.2	3.8	3.1
95Mo	0.001	0.003	0.358	0.278	0.387	0.363	0.459
107Ag	0.001	0.003	0.060	0.035	0.047	0.041	0.052
111Cd	0.085	0.283	1.1	0.670	0.717	0.655	0.842
118Sn	0.022	0.073	0.551	0.165	0.328	0.399	0.351
121Sb	0.005	0.017	0.086	0.018	0.063	0.052	0.034
137Ba	0.001	0.003	86	36	54	50	44
202Hg	0.034	0.113	<0.034	0.035	<0.034	<0.034	0.035
205Tl	0.001	0.003	0.051	0.026	0.058	0.034	0.032
208Pb	0.001	0.003	0.572	0.155	0.464	0.289	0.289
238U	0.001	0.003	0.135	0.033	0.123	0.064	0.053

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOBKS_INV_1_2021-09-09	RG_FOBKS_INV_2_2021-09-09	RG_FOBKS_INV_3_2021-09-09	RG_FOBKS_INV_4_2021-09-09	RG_FOBKS_INV_5_2021-09-09
		Lab ID	495	496	497	498	499
		Wet Weight (g)	2.6023	1.1185	0.9212	1.0404	1.6626
		Dry Weight (g)	0.5595	0.2430	0.2403	0.1634	0.3843
		Moisture (%)	78.5	78.3	73.9	84.3	76.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	2.2	2.4	3.4	1.4	2.7
11B	0.114	0.380	0.712	3.0	4.9	0.626	1.6
23Na	2.1	7.0	3,752	3,544	3,120	2,302	2,843
24Mg	0.026	0.087	1,984	1,616	1,903	1,277	1,402
27Al	0.037	0.123	483	3,019	3,715	329	1,201
31P	36	120	11,702	9,952	9,750	7,931	8,560
39K	3.7	12	8,977	10,927	10,596	7,055	10,120
44Ca	15	50	5,834	7,275	17,147	4,517	5,871
49Ti	0.300	1.0	29	239	326	18	96
51V	0.068	0.227	0.815	6.1	6.3	0.692	2.5
52Cr	0.433	1.4	5.4	22	19	6.6	17
55Mn	0.023	0.077	92	238	428	169	368
57Fe	1.3	4.3	319	1,752	2,175	377	808
59Co	0.009	0.030	7.4	12	14	6.9	12
60Ni	0.070	0.233	25	72	75	26	49
63Cu	0.039	0.130	23	22	18	16	16
66Zn	0.441	1.5	311	206	158	154	169
75As	0.471	1.6	0.549	0.898	0.873	<0.471	0.558
77Se	0.311	1.0	6.9	7.8	7.6	7.2	7.8
88Sr	0.001	0.003	6.0	11	16	4.5	7.1
95Mo	0.001	0.003	0.242	0.459	0.749	0.411	0.353
107Ag	0.001	0.003	0.221	0.166	0.145	0.151	0.116
111Cd	0.085	0.283	2.0	2.7	3.0	1.7	1.7
118Sn	0.022	0.073	0.234	0.370	0.425	0.421	0.226
121Sb	0.005	0.017	0.134	0.280	0.247	0.116	0.145
137Ba	0.001	0.003	19	74	127	23	66
202Hg	0.034	0.113	0.035	<0.034	0.035	0.044	0.034
205Tl	0.001	0.003	0.034	0.082	0.108	0.024	0.057
208Pb	0.001	0.003	0.101	0.546	0.755	0.098	0.251
238U	0.001	0.003	0.064	0.185	0.296	0.077	0.146

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue Analysis Results

		Client ID	RG_FODPO_INV_1_2021-09-11	RG_FODPO_INV_2_2021-09-11	RG_FODPO_INV_3_2021-09-11	RG_FODPO_INV_4_2021-09-11	RG_FODPO_INV_5_2021-09-11
		Lab ID	500	501	502	503	504
		Wet Weight (g)	1.2543	1.9648	1.2214	1.8748	1.7187
		Dry Weight (g)	0.3143	0.4401	0.2732	0.3543	0.4195
		Moisture (%)	74.9	77.6	77.6	81.1	75.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	1.4	2.4	2.1	1.2	1.4
11B	0.114	0.380	3.4	5.6	5.4	2.6	2.8
23Na	2.1	7.0	3,786	4,152	3,435	3,138	2,774
24Mg	0.026	0.087	1,782	1,791	2,340	2,290	2,115
27Al	0.037	0.123	2,590	4,668	5,438	1,592	1,468
31P	36	120	9,258	7,168	11,612	10,777	9,704
39K	3.7	12	10,995	10,025	12,148	9,919	9,039
44Ca	15	50	3,788	3,876	5,289	5,950	5,309
49Ti	0.300	1.0	165	317	326	123	115
51V	0.068	0.227	5.3	8.5	10	3.2	4.0
52Cr	0.433	1.4	17	30	60	12	29
55Mn	0.023	0.077	81	97	178	96	130
57Fe	1.3	4.3	1,108	2,823	2,882	916	1,313
59Co	0.009	0.030	2.4	4.0	5.4	5.0	3.9
60Ni	0.070	0.233	31	61	110	32	54
63Cu	0.039	0.130	15	14	26	20	17
66Zn	0.441	1.5	146	105	216	206	171
75As	0.471	1.6	0.815	1.3	1.2	0.772	0.715
77Se	0.311	1.0	4.9	4.6	7.5	6.8	6.1
88Sr	0.001	0.003	7.1	7.9	13	8.6	7.9
95Mo	0.001	0.003	0.462	0.544	1.5	0.435	0.353
107Ag	0.001	0.003	0.110	0.076	0.134	0.105	0.093
111Cd	0.085	0.283	1.7	1.8	2.3	1.9	1.5
118Sn	0.022	0.073	0.313	0.262	0.555	0.410	0.313
121Sb	0.005	0.017	0.131	0.175	0.249	0.117	0.122
137Ba	0.001	0.003	58	77	105	52	67
202Hg	0.034	0.113	0.043	0.034	0.043	0.034	0.034
205Tl	0.001	0.003	0.038	0.114	0.133	0.068	0.089
208Pb	0.001	0.003	0.368	0.987	1.3	0.491	0.484
238U	0.001	0.003	0.151	0.195	0.493	0.243	0.218

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FODNGD_INV_1_2021-09-17	RG_FODNGD_INV_2_2021-09-17	RG_FODNGD_INV_3_2021-09-17	RG_FOUSH_INV_1_2021-09-16	RG_FOUSH_INV_2_2021-09-16
		Lab ID	505	506	507	508	509
		Wet Weight (g)	0.3434	0.6212	0.8461	0.3554	1.0224
		Dry Weight (g)	0.0695	0.1086	0.1526	0.0820	0.1865
		Moisture (%)	79.8	82.5	82.0	76.9	81.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.009	0.030	2.0	9.3	2.6	1.6	2.7
11B	0.114	0.380	3.0	2.9	2.9	1.2	0.987
23Na	2.1	7.0	3,774	8,347	4,798	2,888	5,510
24Mg	0.026	0.087	2,007	1,795	1,917	1,320	1,234
27Al	0.037	0.123	2,692	2,862	1,796	915	682
31P	36	120	12,933	11,959	12,520	9,952	10,972
39K	3.7	12	11,237	11,693	14,164	9,380	9,519
44Ca	15	50	4,918	4,957	4,130	3,529	3,579
49Ti	0.300	1.0	182	183	131	45	36
51V	0.068	0.227	5.6	6.0	4.5	2.8	2.0
52Cr	0.433	1.4	19	39	20	13	8.8
55Mn	0.023	0.077	64	66	73	285	101
57Fe	1.3	4.3	928	1,694	948	3,059	2,385
59Co	0.009	0.030	10	6.7	2.3	10	3.6
60Ni	0.070	0.233	44	83	50	37	23
63Cu	0.039	0.130	21	19	20	19	19
66Zn	0.441	1.5	277	234	260	239	180
75As	0.471	1.6	0.801	1.2	1.1	0.822	0.723
77Se	0.311	1.0	7.7	8.0	11	7.5	7.3
88Sr	0.001	0.003	9.7	9.8	8.4	6.6	6.0
95Mo	0.001	0.003	0.353	0.517	0.472	0.497	0.609
107Ag	0.001	0.003	0.110	0.128	0.122	0.130	0.162
111Cd	0.085	0.283	2.5	2.8	2.2	0.808	1.6
118Sn	0.022	0.073	0.538	0.550	0.639	0.245	0.393
121Sb	0.005	0.017	0.128	0.165	0.119	0.086	0.077
137Ba	0.001	0.003	77	91	66	65	44
202Hg	0.034	0.113	0.047	0.034	0.068	<0.034	0.045
205Tl	0.001	0.003	0.098	0.099	0.089	0.035	0.037
208Pb	0.001	0.003	0.514	1.2	0.759	0.284	0.233
238U	0.001	0.003	0.235	0.252	0.325	0.128	0.105

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue Analysis Results

		Client ID	RG_FOUSH_INV_3_2021-09-16
		Lab ID	510
		Wet Weight (g)	0.1566
		Dry Weight (g)	0.0354
		Moisture (%)	77.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)
7Li	0.009	0.030	2.6
11B	0.114	0.380	3.0
23Na	2.1	7.0	3,488
24Mg	0.026	0.087	1,640
27Al	0.037	0.123	2,041
31P	36	120	11,184
39K	3.7	12	12,580
44Ca	15	50	8,434
49Ti	0.300	1.0	155
51V	0.068	0.227	6.0
52Cr	0.433	1.4	30
55Mn	0.023	0.077	100
57Fe	1.3	4.3	4,334
59Co	0.009	0.030	8.2
60Ni	0.070	0.233	64
63Cu	0.039	0.130	22
66Zn	0.441	1.5	250
75As	0.471	1.6	1.2
77Se	0.311	1.0	5.7
88Sr	0.001	0.003	16
95Mo	0.001	0.003	0.472
107Ag	0.001	0.003	0.162
111Cd	0.085	0.283	1.3
118Sn	0.022	0.073	0.546
121Sb	0.005	0.017	0.164
137Ba	0.001	0.003	80
202Hg	0.034	0.113	0.068
205Tl	0.001	0.003	0.062
208Pb	0.001	0.003	0.513
238U	0.001	0.003	0.331

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Minnow

Tissue QA/QC Relative Percent Difference Results

		RG_FRUPO_INV-1_2021-09-19			RG_UFR1_INV-1_2021-09-20			RG_UFR1_INV-4_2021-09-20		
	Lab ID	420			430			433		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.009	0.667	0.681	2.1	0.357	0.309	14	0.300	0.333	10
11B	0.114	0.658	0.840	-	14	10	33	10	12	18
23Na	2.1	3,139	2,661	17	3,618	3,761	3.9	4,495	4,317	4.0
24Mg	0.026	1,478	1,431	3.2	1,576	1,508	4.4	1,367	1,443	5.4
27Al	0.037	200	281	34	1,037	769	30	664	814	20
31P	36	11,456	12,018	4.8	12,008	12,894	7.1	13,551	12,627	7.1
39K	3.7	10,139	9,318	8.4	12,949	12,273	5.4	12,998	12,565	3.4
44Ca	15	1,644	1,912	15	2,941	2,436	19	2,245	2,259	0.6
49Ti	0.300	9.7	12	21	53	57	7.3	35	38	8.2
51V	0.068	0.352	0.579	-	1.5	1.4	6.9	1.3	1.6	21
52Cr	0.433	3.8	3.6	-	14	14	0.0	15	11	31
55Mn	0.023	30	36	18	51	45	13	50	51	2.0
57Fe	1.3	150	180	18	499	450	10	385	448	15
59Co	0.009	0.524	0.654	22	0.674	0.579	15	0.855	0.772	10
60Ni	0.070	4.2	4.4	4.7	24	21	13	23	19	19
63Cu	0.039	13	14	7.4	15	14	6.9	16	14	13
66Zn	0.441	152	151	0.7	203	188	7.7	223	195	13
75As	0.471	<0.471	<0.471	-	1.5	1.3	-	1.1	1.1	-
77Se	0.311	9.3	8.1	14	4.8	5.1	6.1	4.9	5.1	4.0
88Sr	0.001	2.4	2.1	13	4.9	4.2	15	3.8	4.0	5.1
95Mo	0.001	0.165	0.198	18	0.531	0.607	13	0.398	0.341	15
107Ag	0.001	0.075	0.084	11	0.078	0.081	3.8	0.081	0.081	0.0
111Cd	0.085	0.663	0.934	-	3.8	3.3	14	3.0	3.2	6.5
118Sn	0.022	0.237	0.262	10	0.358	0.297	19	0.659	0.790	18
121Sb	0.005	0.025	0.031	-	0.067	0.059	13	0.043	0.050	-
137Ba	0.001	20	25	22	71	58	20	53	53	0.0
202Hg	0.034	<0.034	<0.034	-	0.060	0.048	-	0.052	0.056	-
205Tl	0.001	0.009	0.016	-	0.031	0.029	6.7	0.023	0.028	20
208Pb	0.001	0.068	0.080	16	0.238	0.256	7.3	0.184	0.207	12
238U	0.001	0.028	0.038	30	0.063	0.057	10	0.053	0.064	19

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_FOUKI_INV-3_2021-09-20			RG_MP1_INV_2_2021-09-14			RG_FRSCH2_INV_4_2021-09-14		
Lab ID		437			446			456		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.009	2.3	1.9	19	5.0	3.5	35	0.712	0.848	17
11B	0.114	0.914	1.0	-	1.2	1.1	-	0.339	0.396	-
23Na	2.1	3,603	3,156	13	8,305	6,121	30	3,454	3,860	11
24Mg	0.026	1,405	1,386	1.4	1,516	1,437	5.4	1,923	2,127	10
27Al	0.037	596	572	4.1	1,142	1,130	1.1	95	104	9.0
31P	36	10,814	9,667	11	12,315	12,298	0.1	11,535	12,682	9.5
39K	3.7	10,014	8,780	13	12,991	11,028	16	9,762	9,254	5.3
44Ca	15	6,923	7,331	5.7	2,123	1,965	7.7	3,176	3,715	16
49Ti	0.300	47	42	11	79	82	3.7	5.9	5.4	8.8
51V	0.068	0.986	1.1	11	1.8	1.9	5.4	0.255	0.245	-
52Cr	0.433	9.4	7.5	23	12	15	22	3.7	3.4	-
55Mn	0.023	432	558	26	39	44	12	22	21	4.7
57Fe	1.3	608	578	5.1	541	665	21	135	167	21
59Co	0.009	9.1	12	28	1.6	2.0	22	1.3	1.4	7.4
60Ni	0.070	34	32	6.1	25	31	21	4.8	4.7	2.1
63Cu	0.039	15	14	6.9	13	14	7.4	17	23	30
66Zn	0.441	227	223	1.8	196	209	6.4	322	393	20
75As	0.471	0.589	0.589	-	0.595	0.757	-	<0.471	<0.471	-
77Se	0.311	7.0	5.9	17	8.5	9.4	10	3.5	4.6	27
88Sr	0.001	6.7	7.0	4.4	3.0	3.0	0.0	3.0	3.6	18
95Mo	0.001	0.433	0.368	16	0.242	0.290	18	0.189	0.231	20
107Ag	0.001	0.120	0.095	23	0.113	0.107	5.5	0.129	0.139	7.5
111Cd	0.085	0.666	0.805	-	1.7	1.3	27	0.562	0.647	-
118Sn	0.022	0.255	0.283	10	0.348	0.353	1.4	0.257	0.242	6.0
121Sb	0.005	0.125	0.129	3.1	0.041	0.046	-	0.017	0.023	-
137Ba	0.001	56	66	16	50	67	29	7.8	9.0	14
202Hg	0.034	0.056	0.048	-	0.051	0.051	-	0.037	<0.034	-
205Tl	0.001	0.026	0.026	0.0	0.056	0.049	13	0.015	0.016	6.5
208Pb	0.001	0.127	0.137	7.6	0.293	0.329	12	0.040	0.040	0.0
238U	0.001	0.086	0.106	21	0.057	0.068	18	0.018	0.020	11

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

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Tissue QA/QC Relative Percent Difference Results

	Client ID	RG_FOBSC_INV_1_2021-09-13			RG_FOUEW_INV_5_2021-09-11			RG_FO22_INV_4_2021-09-12		
	Lab ID	464			473			483		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.009	3.3	3.0	9.5	1.4	1.5	6.9	4.6	3.9	17
11B	0.114	1.9	2.0	5.1	2.5	2.8	11	7.6	6.8	11
23Na	2.1	5,756	5,194	10	2,765	3,037	9.4	4,095	3,799	7.5
24Mg	0.026	1,826	1,686	8.0	1,818	1,544	16	2,207	1,943	13
27Al	0.037	1,415	1,561	9.8	1,827	1,568	15	8,611	7,310	16
31P	36	17,293	15,512	11	12,437	10,300	19	10,254	8,509	19
39K	3.7	17,587	15,218	14	9,730	10,583	8.4	11,516	9,995	14
44Ca	15	3,594	3,018	17	5,831	4,432	27	4,972	4,161	18
49Ti	0.300	90	88	2.2	117	128	9.0	705	660	6.6
51V	0.068	3.2	3.7	15	3.6	3.5	2.8	18	18	0.0
52Cr	0.433	19	17	11	4.6	4.7	2.2	231	234	1.3
55Mn	0.023	601	544	10	114	141	21	201	159	23
57Fe	1.3	1,302	1,126	15	772	881	13	6,583	5,607	16
59Co	0.009	18	15	18	1.3	1.6	21	13	11	17
60Ni	0.070	77	70	9.5	13	16	21	337	291	15
63Cu	0.039	24	22	8.7	15	14	6.9	24	18	29
66Zn	0.441	322	309	4.1	162	157	3.1	194	151	25
75As	0.471	1.0	0.860	-	0.751	0.590	-	1.7	1.3	-
77Se	0.311	15	13	14	8.5	7.9	7.3	8.9	7.4	18
88Sr	0.001	6.9	6.5	6.0	7.2	7.0	2.8	11	9.7	13
95Mo	0.001	0.799	0.700	13	0.665	0.589	12	1.6	1.4	13
107Ag	0.001	0.126	0.126	0.0	0.144	0.129	11	0.110	0.082	29
111Cd	0.085	5.3	5.4	1.9	1.4	1.4	0.0	2.5	1.9	27
118Sn	0.022	0.107	0.119	-	0.407	0.527	26	0.971	0.735	28
121Sb	0.005	0.145	0.123	16	0.125	0.119	4.9	0.313	0.228	31
137Ba	0.001	68	73	7.1	68	69	1.5	163	143	13
202Hg	0.034	0.059	0.068	-	0.041	0.041	-	0.056	0.040	-
205Tl	0.001	0.072	0.072	0.0	0.060	0.047	24	0.137	0.118	15
208Pb	0.001	0.374	0.463	21	0.433	0.562	26	1.9	1.7	11
238U	0.001	0.117	0.124	5.8	0.342	0.335	2.1	0.305	0.232	27

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

		Client ID	RG_FO26_INV_3_2021-09-15	
		Lab ID	492	
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.009	0.754	0.678	11
11B	0.114	2.4	2.6	8.0
23Na	2.1	5,397	3,969	31
24Mg	0.026	1,564	1,579	1.0
27Al	0.037	1,352	1,445	6.6
31P	36	14,572	13,306	9.1
39K	3.7	16,975	15,577	8.6
44Ca	15	2,982	3,060	2.6
49Ti	0.300	101	92	9.3
51V	0.068	2.6	2.8	7.4
52Cr	0.433	11	9.5	15
55Mn	0.023	66	65	1.5
57Fe	1.3	782	959	20
59Co	0.009	1.1	1.1	0.0
60Ni	0.070	18	17	5.7
63Cu	0.039	13	14	7.4
66Zn	0.441	127	112	13
75As	0.471	2.1	2.2	-
77Se	0.311	3.8	4.4	15
88Sr	0.001	6.2	7.0	12
95Mo	0.001	0.387	0.447	14
107Ag	0.001	0.047	0.052	10
111Cd	0.085	0.717	0.686	-
118Sn	0.022	0.328	0.288	13
121Sb	0.005	0.063	0.091	36
137Ba	0.001	54	52	3.8
202Hg	0.034	<0.034	0.044	-
205Tl	0.001	0.058	0.054	7.1
208Pb	0.001	0.464	0.672	37
238U	0.001	0.123	0.137	11

Notes:

ppm = parts per million
RPD = relative percent difference
DL = detection limit
< = less than detection limit
% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%
Minimum DQOs apply to individual samples at concentrations above 10x DL

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Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	01			02		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.3	108	8.0	1.2	101	3.5
11B	0.114	4.5	5.2	115	3.0	5.1	113	1.4
23Na	2.1	14,000	15,255	109	4.1	15,177	108	6.8
24Mg	0.026	910	997	110	3.3	968	106	7.0
27Al	0.037	197.2	213	108	3.5	207	105	9.0
31P	36	8,000	8,826	110	4.1	8,677	108	4.6
39K	3.7	15,500	17,268	111	4.3	16,433	106	7.2
44Ca	15	2,360	2,616	111	3.8	2,618	111	2.9
49Ti	0.300	12.24	13	107	5.5	14	116	5.4
51V	0.068	1.57	1.7	110	4.6	1.9	121	14
52Cr	0.433	1.87	2.1	111	2.4	2.2	120	5.6
55Mn	0.023	3.17	3.5	112	5.1	3.5	112	5.7
57Fe	1.3	343	380	111	4.5	386	112	4.7
59Co	0.009	0.25	0.289	116	2.9	0.277	111	4.4
60Ni	0.070	1.34	1.5	116	3.9	1.5	115	7.2
63Cu	0.039	15.7	18	116	5.4	17	110	3.7
66Zn	0.441	51.6	55	106	2.5	58	112	5.1
75As	0.471	6.87	7.5	110	3.5	7.3	106	4.3
77Se	0.311	3.45	3.8	110	5.2	3.7	107	6.6
88Sr	0.001	10.1	11	109	4.8	11	113	2.5
95Mo	0.001	0.29	0.327	113	7.3	0.305	105	3.4
107Ag	0.001	0.0252	0.026	104	9.8	0.028	112	9.8
111Cd	0.085	0.299	0.312	104	14	0.321	107	13
118Sn	0.022	0.061	0.060	98	9.4	0.073	120	15
121Sb	0.005	0.011	0.010	89	15	0.012	121	12
137Ba	0.001	8.6	9.0	105	4.9	9.5	111	3.9
202Hg	0.034	0.412	0.435	106	7.1	0.462	112	1.2
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.411	102	9.7	0.508	126	16
238U	0.001	0.05	0.052	103	5.0	0.062	123	9.2

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	03			04		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.3	111	4.3	1.3	109	10
11B	0.114	4.5	4.9	108	2.0	4.3	96	3.5
23Na	2.1	14,000	15,061	108	4.1	14,827	106	5.1
24Mg	0.026	910	978	108	3.7	994	109	4.0
27Al	0.037	197.2	207	105	4.4	188	96	4.6
31P	36	8,000	8,261	103	2.6	8,701	109	2.9
39K	3.7	15,500	17,454	113	6.0	15,677	101	7.0
44Ca	15	2,360	2,530	107	1.7	2,436	103	2.1
49Ti	0.300	12.24	13	106	6.9	13	102	17
51V	0.068	1.57	1.6	102	11	1.6	102	8.9
52Cr	0.433	1.87	1.9	104	1.7	1.9	104	3.3
55Mn	0.023	3.17	3.4	108	3.1	3.3	105	4.8
57Fe	1.3	343	370	108	3.4	364	106	3.8
59Co	0.009	0.25	0.272	109	8.4	0.253	101	3.3
60Ni	0.070	1.34	1.4	106	4.7	1.4	105	6.1
63Cu	0.039	15.7	18	112	7.2	16	105	2.5
66Zn	0.441	51.6	58	112	3.6	54	105	2.3
75As	0.471	6.87	7.4	108	1.9	7.1	104	4.0
77Se	0.311	3.45	3.8	110	5.5	3.5	102	2.9
88Sr	0.001	10.1	11	112	3.0	11	104	4.8
95Mo	0.001	0.29	0.331	114	4.4	0.324	112	8.5
107Ag	0.001	0.0252	0.032	125	14	0.025	100	18
111Cd	0.085	0.299	0.329	110	9.1	0.332	111	0.0
118Sn	0.022	0.061	0.065	106	9.4	0.063	104	8.8
121Sb	0.005	0.011	0.012	107	8.1	0.012	105	18
137Ba	0.001	8.6	9.2	107	3.6	8.3	97	3.4
202Hg	0.034	0.412	0.443	108	4.4	0.433	105	2.5
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.437	108	7.2	0.418	103	6.4
238U	0.001	0.05	0.049	99	4.2	0.052	104	7.7

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	05			06		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.3	105	4.8	1.3	104	6.6
11B	0.114	4.5	5.1	114	4.3	5.1	113	4.8
23Na	2.1	14,000	16,497	118	2.2	14,785	106	2.5
24Mg	0.026	910	1,036	114	4.6	983	108	3.4
27Al	0.037	197.2	217	110	3.7	206	104	3.3
31P	36	8,000	9,155	114	2.4	8,505	106	1.6
39K	3.7	15,500	17,443	112	3.3	16,314	105	1.0
44Ca	15	2,360	2,738	116	5.7	2,538	108	3.3
49Ti	0.300	12.24	13	110	9.5	13	108	7.0
51V	0.068	1.57	1.8	115	13	1.7	109	6.9
52Cr	0.433	1.87	2.2	118	5.9	2.1	111	4.1
55Mn	0.023	3.17	3.7	116	5.8	3.4	108	4.2
57Fe	1.3	343	403	118	5.1	384	112	4.5
59Co	0.009	0.25	0.314	126	5.0	0.278	111	4.7
60Ni	0.070	1.34	1.7	124	6.7	1.5	108	5.3
63Cu	0.039	15.7	19	123	7.8	18	112	4.1
66Zn	0.441	51.6	60	117	5.9	55	107	3.2
75As	0.471	6.87	7.8	113	5.0	7.3	106	2.3
77Se	0.311	3.45	3.8	110	0.0	3.6	104	5.8
88Sr	0.001	10.1	12	116	5.7	11	111	5.9
95Mo	0.001	0.29	0.332	114	9.4	0.300	103	6.9
107Ag	0.001	0.0252	0.035	139	12	0.026	104	14
111Cd	0.085	0.299	0.357	119	9.4	0.374	125	0.0
118Sn	0.022	0.061	0.066	108	5.4	0.056	92	7.6
121Sb	0.005	0.011	0.015	136	0.0	0.011	103	12
137Ba	0.001	8.6	9.2	107	3.7	9.0	104	3.8
202Hg	0.034	0.412	0.470	114	8.1	0.455	110	5.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.510	126	8.3	0.444	110	11
238U	0.001	0.05	0.058	116	4.9	0.059	117	4.2

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	07			08		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.2	97	7.6	1.1	94	6.6
11B	0.114	4.5	4.6	103	2.6	4.8	106	4.8
23Na	2.1	14,000	14,661	105	6.5	13,265	95	3.3
24Mg	0.026	910	916	101	6.1	861	95	5.6
27Al	0.037	197.2	188	95	4.6	207	105	6.4
31P	36	8,000	8,309	104	4.9	7,565	95	2.9
39K	3.7	15,500	15,455	100	5.4	14,303	92	4.0
44Ca	15	2,360	2,404	102	4.0	2,231	94	3.3
49Ti	0.300	12.24	13	108	13	13	107	10
51V	0.068	1.57	1.7	106	10	1.5	98	3.1
52Cr	0.433	1.87	1.9	100	2.6	1.7	93	2.9
55Mn	0.023	3.17	3.1	97	6.3	3.0	95	0.9
57Fe	1.3	343	359	105	5.0	339	99	2.9
59Co	0.009	0.25	0.267	107	5.9	0.252	101	2.9
60Ni	0.070	1.34	1.4	103	2.9	1.3	98	1.0
63Cu	0.039	15.7	16	100	4.1	15	98	6.8
66Zn	0.441	51.6	53	102	1.8	50	97	2.0
75As	0.471	6.87	7.0	102	1.2	6.5	94	2.3
77Se	0.311	3.45	3.3	97	4.9	3.2	93	8.6
88Sr	0.001	10.1	9.9	98	6.5	9.7	96	4.4
95Mo	0.001	0.29	0.328	113	3.5	0.266	92	4.1
107Ag	0.001	0.0252	0.030	120	0.0	0.024	96	20
111Cd	0.085	0.299	0.323	108	8.8	0.287	96	4.9
118Sn	0.022	0.061	0.056	92	4.9	0.059	96	8.5
121Sb	0.005	0.011	0.011	104	20	0.012	110	20
137Ba	0.001	8.6	8.6	101	3.6	9.1	106	2.0
202Hg	0.034	0.412	0.413	100	13	0.378	92	4.3
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.409	101	7.1	0.360	89	13
238U	0.001	0.05	0.050	101	8.5	0.047	94	8.1

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	09			10		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.2	103	6.2	1.2	98	2.9
11B	0.114	4.5	4.7	106	2.8	4.7	105	1.7
23Na	2.1	14,000	14,173	101	5.8	14,904	106	2.8
24Mg	0.026	910	915	100	2.8	964	106	3.7
27Al	0.037	197.2	215	109	7.1	202	102	8.2
31P	36	8,000	7,741	97	2.1	7,657	96	8.6
39K	3.7	15,500	14,818	96	2.2	15,872	102	3.7
44Ca	15	2,360	2,219	94	5.0	2,511	106	4.4
49Ti	0.300	12.24	13	103	8.5	11	92	11
51V	0.068	1.57	1.5	96	9.8	1.6	103	9.2
52Cr	0.433	1.87	1.8	96	3.9	2.0	105	4.0
55Mn	0.023	3.17	3.1	99	3.5	3.4	108	4.1
57Fe	1.3	343	340	99	3.5	369	108	5.1
59Co	0.009	0.25	0.247	99	3.8	0.281	112	7.3
60Ni	0.070	1.34	1.4	105	2.0	1.5	108	4.1
63Cu	0.039	15.7	15	98	4.1	18	118	3.7
66Zn	0.441	51.6	53	102	3.3	54	104	4.7
75As	0.471	6.87	6.6	96	3.2	6.1	89	3.9
77Se	0.311	3.45	3.4	99	1.9	3.1	91	8.6
88Sr	0.001	10.1	9.5	94	7.2	11	110	3.9
95Mo	0.001	0.29	0.285	98	8.8	0.310	107	10
107Ag	0.001	0.0252	0.028	111	17	0.026	102	12
111Cd	0.085	0.299	0.239	80	7.2	0.327	109	16
118Sn	0.022	0.061	0.063	103	20	0.042	68	10
121Sb	0.005	0.011	0.012	111	3.3	0.012	109	14
137Ba	0.001	8.6	8.9	103	6.0	8.5	99	4.0
202Hg	0.034	0.412	0.430	104	5.2	0.410	99	8.9
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.410	102	15	0.437	108	4.9
238U	0.001	0.05	0.044	88	10	0.058	115	9.1

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow

Tissue QA/QC Accuracy and Precision Results

Sample Group ID			11		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.009	1.21	1.3	104	5.2
11B	0.114	4.5	4.5	100	3.9
23Na	2.1	14,000	14,591	104	5.4
24Mg	0.026	910	950	104	4.5
27Al	0.037	197.2	191	97	5.1
31P	36	8,000	8,110	101	3.8
39K	3.7	15,500	16,020	103	5.1
44Ca	15	2,360	2,472	105	4.3
49Ti	0.300	12.24	12	94	7.0
51V	0.068	1.57	1.5	94	12
52Cr	0.433	1.87	2.0	106	2.7
55Mn	0.023	3.17	3.3	105	4.2
57Fe	1.3	343	359	105	2.8
59Co	0.009	0.25	0.254	102	3.7
60Ni	0.070	1.34	1.3	97	7.7
63Cu	0.039	15.7	17	106	3.8
66Zn	0.441	51.6	56	108	4.5
75As	0.471	6.87	7.2	105	3.9
77Se	0.311	3.45	3.5	102	8.1
88Sr	0.001	10.1	10	104	4.8
95Mo	0.001	0.29	0.298	103	13
107Ag	0.001	0.0252	0.025	99	12
111Cd	0.085	0.299	0.344	115	9.3
118Sn	0.022	0.061	0.054	88	14
121Sb	0.005	0.011	0.009	84	16
137Ba	0.001	8.6	8.6	100	4.5
202Hg	0.034	0.412	0.470	114	6.3
205Tl	0.001	0.0013	-	-	-
208Pb	0.001	0.404	0.392	97	9.5
238U	0.001	0.05	0.052	104	4.5

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Minnow
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_FRUPO_INV-1_2021-09-19	420	14 Oct 2021
	RG_FRUPO_INV-2_2021-09-19	421	
	RG_FRUPO_INV-3_2021-09-19	422	
	RG_FRUPO_INV-4_2021-09-19	423	
	RG_FRUPO_INV-5_2021-09-19	424	
	RG_FRGHSC_INV-1_2021-09-19	425	
	RG_FRGHSC_INV-2_2021-09-19	426	
	RG_FRGHSC_INV-3_2021-09-19	427	
	RG_FRGHSC_INV-4_2021-09-19	428	
02	RG_FRGHSC_INV-5_2021-09-19	429	13 Oct 2021
	RG_UFR1_INV-1_2021-09-20	430	
	RG_UFR1_INV-2_2021-09-20	431	
	RG_UFR1_INV-3_2021-09-20	432	
	RG_UFR1_INV-4_2021-09-20	433	
	RG_UFR1_INV-5_2021-09-20	434	
	RG_FOUKI_INV-1_2021-09-20	435	
	RG_FOUKI_INV-2_2021-09-20	436	
03	RG_FOUKI_INV-3_2021-09-20	437	13 Oct 2021
	RG_FOUKI_INV-4_2021-09-20	438	
	RG_FOUKI_INV-5_2021-09-20	439	
	RG_SCOUTDS_INV-1_2021-09-14	440	
	RG_SCOUTDS_INV-2_2021-09-14	441	
	RG_SCOUTDS_INV-3_2021-09-14	442	
	RG_SCOUTDS_INV-4_2021-09-14	443	
	RG_SCOUTDS_INV-5_2021-09-14	444	
	RG_MP1_INV_1_2021-09-14	445	
04	RG_MP1_INV_2_2021-09-14	446	13 Oct 2021
	RG_MP1_INV_3_2021-09-14	447	
	RG_FRCP1SW_INV_1_2021-09-14	448	
	RG_FRCP1SW_INV_2_2021-09-14	449	
	RG_FRCP1SW_INV_3_2021-09-14	450	
	RG_FRCP1SW_INV_4_2021-09-14	451	
	RG_FRCP1SW_INV_5_2021-09-14	452	
	RG_FRSCH2_INV_1_2021-09-14	453	
	RG_FRSCH2_INV_2_2021-09-14	454	
05	RG_FRSCH2_INV_3_2021-09-14	455	13 Oct 2021
	RG_FRSCH2_INV_4_2021-09-14	456	
	RG_FRSCH2_INV_5_2021-09-14	457	
	RG_FOUCL_INV_1_2021-09-13	458	
	RG_FOUCL_INV_2_2021-09-13	459	

Teck Minnow
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
05	RG_FOUCL_INV_3_2021-09-13	460	13 Oct 2021
	RG_FODHE_INV_1_2021-09-13	461	
	RG_FODHE_INV_2_2021-09-13	462	
	RG_FODHE_INV_3_2021-09-13	463	
06	RG_FOBSC_INV_1_2021-09-13	464	14 Oct 2021
	RG_FOBSC_INV_2_2021-09-13	465	
	RG_FOBSC_INV_3_2021-09-13	466	
	RG_FOBSC_INV_4_2021-09-13	467	
	RG_FOBSC_INV_5_2021-09-13	468	
	RG_FOUEW_INV_1_2021-09-11	469	
	RG_FOUEW_INV_2_2021-09-11	470	
	RG_FOUEW_INV_3_2021-09-11	471	
	RG_FOUEW_INV_4_2021-09-11	472	
07	RG_FOUEW_INV_5_2021-09-11	473	13 Oct 2021
	RG_HENUP_INV_1_2021-09-16	474	
	RG_HENUP_INV_2_2021-09-16	475	
	RG_HENUP_INV_3_2021-09-16	476	
	RG_FOUNGD_INV_1_2021-09-17	477	
	RG_FOUNGD_INV_2_2021-09-17	478	
	RG_FOUNGD_INV_3_2021-09-17	479	
	RG_FO22_INV_1_2021-09-12	480	
	RG_FO22_INV_2_2021-09-12	481	
08	RG_FO22_INV_3_2021-09-12	482	14 Oct 2021
	RG_FO22_INV_4_2021-09-12	483	
	RG_FO22_INV_5_2021-09-12	484	
	RG_FOBCP_INV_1_2021-09-13	485	
	RG_FOBCP_INV_2_2021-09-13	486	
	RG_FOBCP_INV_3_2021-09-13	487	
	RG_FOBCP_INV_4_2021-09-13	488	
	RG_FOBCP_INV_5_2021-09-13	489	
	RG_FO26_INV_1_2021-09-15	490	
09	RG_FO26_INV_2_2021-09-15	491	14 Oct 2021
	RG_FO26_INV_3_2021-09-15	492	
	RG_FO26_INV_4_2021-09-15	493	
	RG_FO26_INV_5_2021-09-15	494	
	RG_FOBKS_INV_1_2021-09-09	495	
	RG_FOBKS_INV_2_2021-09-09	496	
	RG_FOBKS_INV_3_2021-09-09	497	
	RG_FOBKS_INV_4_2021-09-09	498	
10	RG_FOBKS_INV_5_2021-09-09	499	14 Oct 2021

Sample Group ID	Client ID	Lab ID	Date of Analysis
10	RG_FODPO_INV_1_2021-09-11	500	14 Oct 2021
	RG_FODPO_INV_2_2021-09-11	501	
	RG_FODPO_INV_3_2021-09-11	502	
	RG_FODPO_INV_4_2021-09-11	503	
	RG_FODPO_INV_5_2021-09-11	504	
	RG_FODNGD_INV_1_2021-09-17	505	
	RG_FODNGD_INV_2_2021-09-17	506	
11	RG_FODNGD_INV_3_2021-09-17	507	14 Oct 2021
	RG_FOUSH_INV_1_2021-09-16	508	
	RG_FOUSH_INV_2_2021-09-16	509	
	RG_FOUSH_INV_3_2021-09-16	510	

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:	Species	Sample type
	1 RG_FO26_INV-1_2021-09-16 *	Composite	Composite-taxa benthic invertebrate tissue samples
	2 RG_FO26_INV-2_2021-09-16 *	Composite	Composite-taxa benthic invertebrate tissue samples
	3 RG_FO26_INV-3_2021-09-16 *	Composite	Composite-taxa benthic invertebrate tissue samples
	4 RG_CLODE_INV-1_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	5 RG_CLODE_INV-2_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
aw 06 oct 2021	6 RG_CLODE_INV-3_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	7 RG_WED_INV-1_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	8 RG_WED_INV-2_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	9 RG_WED_INV-3_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	10 RG_GRASSY_INV-1_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	11 RG_GRASSY_INV-2_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
	12 RG_GRASSY_INV-3_2021-09-17 *	Composite	Composite-taxa benthic invertebrate tissue samples
420	13 RG_FRUPO_INV-1_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
421	14 RG_FRUPO_INV-2_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
422	15 RG_FRUPO_INV-3_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
423	16 RG_FRUPO_INV-4_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
424	17 RG_FRUPO_INV-5_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
~~424~~ 425	18 RG_FRGHSC_INV-1_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
426	19 RG_FRGHSC_INV-2_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
427	20 RG_FRGHSC_INV-3_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

aw 05oct2021
samples not for this project as confirmed by client

aw 06 oct 2021

Sample(s) Released By:	Sample(s) Received By: Elliot Howell
Signature:	Signature: (Proj #2021-261)
Date Sent:	Date Received: (Lab) 28 sep 2021 (aw 05Oct 2021)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

aw 05Oct 2021 * Samples missing → F026 samples confirmed mistake by client aw 06Oct2021 aw 05 oct 2021

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Sample Identification:		Sample Type:	
TRICH ID		Species	Sample type
428	21 RG_FRGHSC_INV-4_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
429	22 RG_FRGHSC_INV-5_2021-09-19 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
430	23 RG_UFR1_INV-1_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
431	24 RG_UFR1_INV-2_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
432	25 RG_UFR1_INV-3_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
433	26 RG_UFR1_INV-4_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
434	27 RG_UFR1_INV-5_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
435	28 RG_FOUKI_INV-1_2021-09-20 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
436	29 RG_FOUKI_INV-2_2021-09-20 * ✓	Composite	Composite-taxa benthic invertebrate tissue samples
437	30 RG_FOUKI_INV-3_2021-09-20 *	Composite	Composite-taxa benthic invertebrate tissue samples
438	31 RG_FOUKI_INV-4_2021-09-20 *	Composite	Composite-taxa benthic invertebrate tissue samples
439	32 RG_FOUKI_INV-5_2021-09-20 *	Composite	Composite-taxa benthic invertebrate tissue samples
440	33 RG_SCOUTDS_INV-1_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
441	34 RG_SCOUTDS_INV-2_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
442	35 RG_SCOUTDS_INV-3_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
443	36 RG_SCOUTDS_INV-4_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
444	37 RG_SCOUTDS_INV-5_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
445	38 RG_MP1_INV_1_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
446	39 RG_MP1_INV_2_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
447	40 RG_MP1_INV_3_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (Lab) 28 Sep 2021 (Proj # 2021-261) (AW 05 Oct. 2021)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

AW 05 Oct 2021 * Discrepency between container label and container lid. → AW 25 Oct 2021 COC correct as per client

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID		Sample Identification:	Sample Type: Species	Sample type
448	41	RG_FRCP1SW_INV_1_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
449	42	RG_FRCP1SW_INV_2_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
450	43	RG_FRCP1SW_INV_3_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
451	44	RG_FRCP1SW_INV_4_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
452	45	RG_FRCP1SW_INV_5_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
453	46	RG_FRSCH2_INV_1_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
454	47	RG_FRSCH2_INV_2_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
455	48	RG_FRSCH2_INV_3_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
456	49	RG_FRSCH2_INV_4_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
457	50	RG_FRSCH2_INV_5_2021-09-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
458	51	RG_FOUCL_INV_1_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
459	52	RG_FOUCL_INV_2_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
460	53	RG_FOUCL_INV_3_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
461	54	RG_FODHE_INV_1_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
462	55	RG_FODHE_INV_2_2021-09-13 ✓	Composite	Lumbriculidae tissue sample
463	56	RG_FODHE_INV_3_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
464	57	RG_FOBSC_INV_1_2021-09-13 ✓	Composite	Lumbriculidae tissue sample
465	58	RG_FOBSC_INV_2_2021-09-13 *	Composite	Composite-taxa benthic invertebrate tissue samples
466	59	RG_FOBSC_INV_3_2021-09-13 *	Composite	Composite-taxa benthic invertebrate tissue samples
467	60	RG_FOBSC_INV_4_2021-09-13 *	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (Lab) 28 Sep 2021 (Proj. # 2021-261) aw 05 oct 2021
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

aw 05 oct 2021 * Discrepency between COC ID and container ID
↳ COC confirmed correct by client

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:	Sample Type: Species	Sample type
468	61 RG_FOBSC_INV_5_2021-09-13*	Composite	Composite-taxa benthic invertebrate tissue samples
469	62 RG_FOUEW_INV_1_2021-09-11	Composite	Composite-taxa benthic invertebrate tissue samples
470	63 RG_FOUEW_INV_2_2021-09-11	Composite	Composite-taxa benthic invertebrate tissue samples
471	64 RG_FOUEW_INV_3_2021-09-11	Composite	Composite-taxa benthic invertebrate tissue samples
472	65 RG_FOUEW_INV_4_2021-09-11	Composite	Composite-taxa benthic invertebrate tissue samples
473	66 RG_FOUEW_INV_5_2021-09-11	Composite	Composite-taxa benthic invertebrate tissue samples
474	67 RG_HENUP_INV_1_2021-09-16	Composite	Composite-taxa benthic invertebrate tissue samples
475	68 RG_HENUP_INV_2_2021-09-16	Composite	Composite-taxa benthic invertebrate tissue samples
476	69 RG_HENUP_INV_3_2021-09-16	Composite	Composite-taxa benthic invertebrate tissue samples
477	70 RG_FOUNGD_INV_1_2021-09-17	Composite	Composite-taxa benthic invertebrate tissue samples
478	71 RG_FOUNGD_INV_2_2021-09-17	Composite	Composite-taxa benthic invertebrate tissue samples
479	72 RG_FOUNGD_INV_3_2021-09-17	Composite	Composite-taxa benthic invertebrate tissue samples
480	73 RG_FO22_INV_1_2021-09-12	Composite	Composite-taxa benthic invertebrate tissue samples
481	74 RG_FO22_INV_2_2021-09-12	Composite	Composite-taxa benthic invertebrate tissue samples
482	75 RG_FO22_INV_3_2021-09-12	Composite	Composite-taxa benthic invertebrate tissue samples
483	76 RG_FO22_INV_4_2021-09-12	Composite	Composite-taxa benthic invertebrate tissue samples
484	77 RG_FO22_INV_5_2021-09-12	Composite	Composite-taxa benthic invertebrate tissue samples
485	78 RG_FOBCP_INV_1_2021-09-13	Composite	Composite-taxa benthic invertebrate tissue samples
486	79 RG_FOBCP_INV_2_2021-09-13	Composite	Composite-taxa benthic invertebrate tissue samples
487	80 RG_FOBCP_INV_3_2021-09-13	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received (Lab): 28 Sep 2021 (Proj # 2021-261) AW 05 Oct 2021
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

AW 05 Oct 2021 * Discrepency between COC ID and container ID.
↳ COC confirmed correct by client AW 05 Oct 2021

TrichAnalytics Inc.
207-1753 Sean Heights, Saanichton, BC, V8M 0B3
Ph: (250) 532-1084

Chain of Custody (COC)
for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID		Sample Identification:	Species	Sample type
488	81	RG_FOBCP_INV_4_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
489	82	RG_FOBCP_INV_5_2021-09-13 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
490	83	RG_FO26_INV_1_2021-09-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
491	84	RG_FO26_INV_2_2021-09-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
492	85	RG_FO26_INV_3_2021-09-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
493	86	RG_FO26_INV_4_2021-09-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
494	87	RG_FO26_INV_5_2021-09-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
495	88	RG_FOBKS_INV_1_2021-09-09 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
496	89	RG_FOBKS_INV_2_2021-09-09 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
497	90	RG_FOBKS_INV_3_2021-09-09 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
498	91	RG_FOBKS_INV_4_2021-09-09 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
499	92	RG_FOBKS_INV_5_2021-09-09 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
500	93	RG_FODPO_INV_1_2021-09-11 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
501	94	RG_FODPO_INV_2_2021-09-11 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
502	95	RG_FODPO_INV_3_2021-09-11 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
503	96	RG_FODPO_INV_4_2021-09-11 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
504	97	RG_FODPO_INV_5_2021-09-11 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
505	98	RG_FODNGD_INV_1_2021-09-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
506	99	RG_FODNGD_INV_2_2021-09-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
507	100	RG_FODNGD_INV_3_2021-09-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received (lab): 28 Sep 2021 (Proj # 2021-261) aw 05 oct 2021
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Sample Identification:		Sample Type:	
TRICH ID		Species	Sample type
508	81 RG_FOUSH_INV_1_2021-09-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
509	82 RG_FOUSH_INV_2_2021-09-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
510	83 RG_FOUSH_INV_3_2021-09-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
	84	Composite	Composite-taxa benthic invertebrate tissue samples
	85	Composite	Composite-taxa benthic invertebrate tissue samples
	86	Composite	Composite-taxa benthic invertebrate tissue samples
	87	Composite	Composite-taxa benthic invertebrate tissue samples
	88	Composite	Composite-taxa benthic invertebrate tissue samples
	89	Composite	Composite-taxa benthic invertebrate tissue samples
	90	Composite	Composite-taxa benthic invertebrate tissue samples
	91	Composite	Composite-taxa benthic invertebrate tissue samples
	92	Composite	Composite-taxa benthic invertebrate tissue samples
	93	Composite	Composite-taxa benthic invertebrate tissue samples
	94	Composite	Composite-taxa benthic invertebrate tissue samples
	95	Composite	Composite-taxa benthic invertebrate tissue samples
	96	Composite	Composite-taxa benthic invertebrate tissue samples
	97	Composite	Composite-taxa benthic invertebrate tissue samples
	98	Composite	Composite-taxa benthic invertebrate tissue samples
	99	Composite	Composite-taxa benthic invertebrate tissue samples
	100	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Sample(s) Received By: Alex Wade
Signature:	Signature: [signature]
Date Sent:	Date Received (lab): 28Sep2021 (Proj # 2021-261) aw 05 oct 2021
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

COM-011.01

aw 05 oct 2021

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client:	Peter Schnurr	Date Received:	23 Dec 2021
	Aquatic Scientist	Date of Analysis:	06 Jan 2022
	Minnow Environmental	Final Report Date:	13 Jan 2022
Phone:	(250) 595-1627	Project No.:	2021-288
Email:	pschnurr@minnow.ca	Method No.:	MET-002.05

Client Project: FRO LAEMP (21-11) (PO 748530)

Analytical Request: Composite-Taxa Benthic Invertebrate Tissue Microchemistry (total metals and moisture) - 78 samples. See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in parts per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.
Client specific DQO for Selenium accuracy is 90-110% of the certified value; result achieved 104% (ranging from 94-108%).

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio

13 Jan 2022
Date

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FO22_INV-1_2021-12-13	RG_FO22_INV-2_2021-12-13	RG_FO22_INV-3_2021-12-13	RG_FO22_INV-4_2021-12-13	RG_FO22_INV-5_2021-12-13
		Lab ID	193	194	195	196	197
		Wet Weight (g)	0.2973	0.4961	0.2542	0.4271	0.4606
		Dry Weight (g)	0.0589	0.0848	0.0420	0.1009	0.1126
		Moisture (%)	80.2	82.9	83.5	76.4	75.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	0.501	0.929	1.0	0.599	0.572
11B	0.087	0.290	0.783	1.5	2.1	0.693	1.2
23Na	3.9	13	2,225	3,653	2,160	3,114	2,737
24Mg	0.026	0.087	1,225	1,638	1,584	1,415	1,387
27Al	0.450	1.5	691	1,034	1,681	437	831
31P	46	153	8,515	9,258	8,638	9,850	9,023
39K	2.7	9.0	5,781	8,401	6,962	8,123	7,947
44Ca	41	137	2,046	3,276	4,751	2,654	1,978
49Ti	0.198	0.660	28	67	60	27	66
51V	0.077	0.257	1.1	2.3	2.3	1.1	2.6
52Cr	0.067	0.223	5.0	12	12	5.8	22
55Mn	0.009	0.030	52	62	58	23	64
57Fe	0.850	2.8	1,492	1,426	1,291	882	1,354
59Co	0.007	0.023	0.297	0.923	0.917	0.351	0.823
60Ni	0.053	0.177	9.0	29	22	9.9	30
63Cu	0.011	0.037	12	17	13	14	12
66Zn	0.473	1.6	127	178	158	123	149
75As	0.425	1.4	<0.425	0.534	0.620	0.521	0.434
77Se	0.391	1.3	7.4	9.3	8.1	5.6	6.5
88Sr	0.001	0.003	3.5	5.1	5.1	3.0	4.2
95Mo	0.001	0.003	0.272	0.299	0.326	0.245	0.231
107Ag	0.001	0.003	0.072	0.096	0.069	0.069	0.062
111Cd	0.067	0.223	0.405	0.607	0.607	0.388	0.506
118Sn	0.020	0.067	0.444	0.355	0.530	0.298	0.224
121Sb	0.003	0.010	0.035	0.062	0.058	0.030	0.034
137Ba	0.001	0.003	27	48	40	21	37
202Hg	0.033	0.110	0.042	0.050	0.058	<0.033	0.042
205Tl	0.001	0.003	0.013	0.021	0.025	0.013	0.018
208Pb	0.001	0.003	0.243	0.368	0.480	0.164	0.270
238U	0.001	0.003	0.063	0.083	0.115	0.034	0.043

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FOBCP_INV-1_2021-12-14	RG_FOBCP_INV-2_2021-12-14	RG_FOBCP_INV-3_2021-12-14	RG_FOBCP_INV-4_2021-12-14	RG_FOBCP_INV-5_2021-12-14
		Lab ID	198	199	200	201	202
		Wet Weight (g)	0.6480	0.6295	0.4960	0.4458	0.3011
		Dry Weight (g)	0.1326	0.1485	0.1217	0.1077	0.0718
		Moisture (%)	79.5	76.4	75.5	75.8	76.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.2	1.1	0.790	0.894	1.0
11B	0.087	0.290	0.768	0.422	0.873	0.512	0.843
23Na	3.9	13	2,943	4,647	3,892	2,655	3,200
24Mg	0.026	0.087	904	1,170	1,398	1,193	1,329
27Al	0.450	1.5	345	124	350	390	670
31P	46	153	9,711	12,123	9,258	9,305	11,236
39K	2.7	9.0	7,532	9,604	9,358	7,080	11,188
44Ca	41	137	1,347	1,292	1,734	2,220	2,311
49Ti	0.198	0.660	20	6.4	38	20	39
51V	0.077	0.257	0.671	0.295	0.671	0.782	0.961
52Cr	0.067	0.223	2.2	2.1	5.7	3.7	7.2
55Mn	0.009	0.030	145	90	101	53	46
57Fe	0.850	2.8	191	148	220	215	275
59Co	0.007	0.023	5.0	3.9	4.8	2.5	1.7
60Ni	0.053	0.177	20	17	17	13	18
63Cu	0.011	0.037	10	12	15	15	26
66Zn	0.473	1.6	167	202	126	231	281
75As	0.425	1.4	0.496	<0.425	0.633	0.620	0.620
77Se	0.391	1.3	7.3	7.5	8.5	5.5	6.7
88Sr	0.001	0.003	2.3	1.5	3.1	4.0	3.6
95Mo	0.001	0.003	0.272	0.217	0.245	0.326	0.435
107Ag	0.001	0.003	0.041	0.052	0.062	0.048	0.131
111Cd	0.067	0.223	1.2	1.2	0.945	1.8	0.790
118Sn	0.020	0.067	0.268	0.078	0.232	0.214	0.250
121Sb	0.003	0.010	0.048	0.045	0.063	0.053	0.057
137Ba	0.001	0.003	28	19	34	25	20
202Hg	0.033	0.110	0.050	0.058	0.054	0.067	0.058
205Tl	0.001	0.003	0.020	0.017	0.031	0.033	0.031
208Pb	0.001	0.003	0.107	0.052	0.125	0.099	0.125
238U	0.001	0.003	0.037	0.023	0.048	0.029	0.035

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FOBKS_INV-1_2021-12-14	RG_FOBKS_INV-2_2021-12-14	RG_FOBKS_INV-3_2021-12-14	RG_FOBKS_INV-4_2021-12-14	RG_FOBKS_INV-5_2021-12-14
		Lab ID	203	204	205	206	207
		Wet Weight (g)	0.4336	0.2657	0.2466	0.9291	0.3830
		Dry Weight (g)	0.1305	0.0514	0.0567	0.2473	0.0693
		Moisture (%)	69.9	80.7	77.0	73.4	81.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.6	1.8	2.1	1.6	1.5
11B	0.087	0.290	0.889	2.3	0.904	1.3	1.0
23Na	3.9	13	1,879	3,630	3,357	1,792	3,367
24Mg	0.026	0.087	1,301	1,051	1,259	1,463	1,028
27Al	0.450	1.5	562	1,774	517	879	715
31P	46	153	8,091	8,604	8,613	7,248	8,912
39K	2.7	9.0	5,929	9,063	7,550	5,313	8,113
44Ca	41	137	16,814	5,146	14,071	16,122	2,621
49Ti	0.198	0.660	38	139	31	58	52
51V	0.077	0.257	1.2	4.1	1.1	1.7	1.4
52Cr	0.067	0.223	5.0	9.8	4.3	3.6	4.5
55Mn	0.009	0.030	120	78	128	229	65
57Fe	0.850	2.8	409	795	351	397	515
59Co	0.007	0.023	2.6	3.1	3.4	3.7	2.2
60Ni	0.053	0.177	15	26	14	15	13
63Cu	0.011	0.037	11	15	13	12	14
66Zn	0.473	1.6	140	166	177	129	144
75As	0.425	1.4	0.496	0.695	0.546	<0.425	0.459
77Se	0.391	1.3	8.9	5.3	5.9	6.0	4.8
88Sr	0.001	0.003	11	9.0	9.2	13	3.5
95Mo	0.001	0.003	0.381	0.272	0.217	0.435	0.245
107Ag	0.001	0.003	0.076	0.124	0.089	0.096	0.082
111Cd	0.067	0.223	0.675	0.843	1.1	1.0	0.675
118Sn	0.020	0.067	0.148	0.376	0.429	0.275	0.355
121Sb	0.003	0.010	0.110	0.117	0.113	0.110	0.067
137Ba	0.001	0.003	141	134	92	138	73
202Hg	0.033	0.110	0.042	0.058	0.058	0.033	0.038
205Tl	0.001	0.003	0.021	0.043	0.022	0.022	0.026
208Pb	0.001	0.003	0.164	0.375	0.148	0.195	0.177
238U	0.001	0.003	0.108	0.104	0.092	0.124	0.056

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FOBSC_INV-1_2021-12-09	RG_FOBSC_INV-2_2021-12-09	RG_FOBSC_INV-3_2021-12-09	RG_FOBSC_INV-4_2021-12-09	RG_FOBSC_INV-5_2021-12-09
		Lab ID	208	209	210	211	212
		Wet Weight (g)	0.2874	0.3607	0.2078	0.1572	0.3932
		Dry Weight (g)	0.0653	0.0805	0.0694	0.0180	0.0941
		Moisture (%)	77.3	77.7	66.6	88.5	76.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.0	0.850	1.3	6.2	1.1
11B	0.087	0.290	1.4	2.3	3.0	36	3.0
23Na	3.9	13	2,893	2,768	3,303	1,410	3,313
24Mg	0.026	0.087	958	975	1,714	3,984	1,635
27Al	0.450	1.5	727	941	2,886	14,648	648
31P	46	153	8,470	8,521	11,005	9,160	10,075
39K	2.7	9.0	7,576	6,563	8,828	6,767	10,449
44Ca	41	137	1,988	1,909	4,390	22,824	2,010
49Ti	0.198	0.660	41	57	226	1,266	40
51V	0.077	0.257	1.4	1.9	6.7	36	1.3
52Cr	0.067	0.223	6.0	4.8	41	394	8.3
55Mn	0.009	0.030	63	68	85	273	66
57Fe	0.850	2.8	330	356	1,617	9,696	400
59Co	0.007	0.023	1.7	1.5	4.0	18	2.4
60Ni	0.053	0.177	14	11	73	593	17
63Cu	0.011	0.037	11	19	23	30	20
66Zn	0.473	1.6	157	181	314	401	300
75As	0.425	1.4	0.533	0.620	1.3	1.7	0.435
77Se	0.391	1.3	6.3	7.3	8.5	9.9	11
88Sr	0.001	0.003	3.6	4.5	9.0	62	3.8
95Mo	0.001	0.003	0.245	0.353	0.462	2.6	0.268
107Ag	0.001	0.003	0.055	0.117	0.148	0.160	0.113
111Cd	0.067	0.223	0.776	1.0	2.5	5.7	1.2
118Sn	0.020	0.067	0.127	0.307	0.230	2.2	0.117
121Sb	0.003	0.010	0.057	0.072	0.128	0.417	0.048
137Ba	0.001	0.003	43	66	166	1,117	37
202Hg	0.033	0.110	0.050	0.050	0.083	0.127	0.088
205Tl	0.001	0.003	0.027	0.031	0.065	0.135	0.020
208Pb	0.001	0.003	0.199	0.285	0.584	2.6	0.183
238U	0.001	0.003	0.041	0.053	0.107	0.808	0.046

Notes:

ppm = parts per million

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Tissue Analysis Results

		Client ID	RG_FODHE_INV-1_2021-12-15	RG_FODHE_INV-2_2021-12-15	RG_FODHE_INV-3_2021-12-15	RG_FODNGD_INV-1_2021-12-15	RG_FODNGD_INV-2_2021-12-15
		Lab ID	213	214	215	216	217
		Wet Weight (g)	0.5524	0.5844	0.5634	0.6914	0.8452
		Dry Weight (g)	0.1388	0.1210	0.1140	0.1326	0.1835
		Moisture (%)	74.9	79.3	79.8	80.8	78.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	2.0	1.4	1.6	2.7	1.2
11B	0.087	0.290	3.9	2.0	2.4	1.6	1.6
23Na	3.9	13	3,585	3,997	4,462	3,748	2,660
24Mg	0.026	0.087	1,690	1,231	1,499	1,422	1,317
27Al	0.450	1.5	2,070	1,240	1,346	1,244	1,104
31P	46	153	12,033	12,501	10,770	8,757	10,661
39K	2.7	9.0	10,822	10,502	9,455	8,613	8,276
44Ca	41	137	3,779	2,208	2,626	3,482	3,728
49Ti	0.198	0.660	205	119	97	95	94
51V	0.077	0.257	6.8	3.1	3.3	2.7	2.5
52Cr	0.067	0.223	37	18	16	11	15
55Mn	0.009	0.030	105	114	65	42	35
57Fe	0.850	2.8	1,170	667	600	463	489
59Co	0.007	0.023	2.4	1.1	1.5	5.3	4.7
60Ni	0.053	0.177	65	33	25	28	28
63Cu	0.011	0.037	24	24	18	18	17
66Zn	0.473	1.6	254	202	205	237	148
75As	0.425	1.4	1.4	0.841	0.986	0.986	0.870
77Se	0.391	1.3	7.3	7.8	5.9	5.2	4.6
88Sr	0.001	0.003	8.5	4.9	5.4	5.2	5.2
95Mo	0.001	0.003	0.535	0.535	0.301	0.301	0.251
107Ag	0.001	0.003	0.193	0.168	0.160	0.118	0.126
111Cd	0.067	0.223	2.1	0.981	2.1	1.2	0.868
118Sn	0.020	0.067	0.631	0.491	0.747	0.394	0.340
121Sb	0.003	0.010	0.085	0.050	0.054	0.058	0.050
137Ba	0.001	0.003	61	39	38	58	55
202Hg	0.033	0.110	0.078	0.059	0.078	0.078	0.039
205Tl	0.001	0.003	0.033	0.020	0.024	0.023	0.020
208Pb	0.001	0.003	0.547	0.327	0.267	0.304	0.257
238U	0.001	0.003	0.154	0.074	0.076	0.092	0.058

Notes:

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g = grams

% = percent

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FODNGD_INV-3_2021-12-15	RG_FODPO_INV-1_2021-12-14	RG_FODPO_INV-2_2021-12-14	RG_FODPO_INV-3_2021-12-14	RG_FODPO_INV-4_2021-12-14
		Lab ID	218	219	220	221	222
		Wet Weight (g)	0.7588	0.4544	0.5627	0.1912	0.4443
		Dry Weight (g)	0.1670	0.1089	0.1318	0.0514	0.0963
		Moisture (%)	78.0	76.0	76.6	73.1	78.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.9	0.937	1.9	0.866	0.786
11B	0.087	0.290	2.4	53	53	4.6	7.2
23Na	3.9	13	2,825	1,901	2,346	1,649	2,427
24Mg	0.026	0.087	1,384	1,445	1,517	1,486	1,744
27Al	0.450	1.5	1,310	1,184	3,458	1,035	776
31P	46	153	9,572	8,408	7,823	8,872	9,449
39K	2.7	9.0	8,671	6,766	7,323	5,608	7,730
44Ca	41	137	3,564	3,227	3,799	4,897	2,849
49Ti	0.198	0.660	103	79	239	85	58
51V	0.077	0.257	2.9	2.3	7.1	3.2	1.7
52Cr	0.067	0.223	10	17	47	38	15
55Mn	0.009	0.030	32	41	45	38	43
57Fe	0.850	2.8	449	724	1,569	990	548
59Co	0.007	0.023	5.7	1.4	2.9	2.8	1.7
60Ni	0.053	0.177	26	32	79	62	30
63Cu	0.011	0.037	15	17	15	13	14
66Zn	0.473	1.6	200	203	141	238	166
75As	0.425	1.4	0.957	0.464	0.696	<0.425	0.464
77Se	0.391	1.3	5.4	4.7	4.4	4.9	5.4
88Sr	0.001	0.003	5.7	4.9	7.1	5.8	5.1
95Mo	0.001	0.003	0.368	0.535	0.385	0.602	0.335
107Ag	0.001	0.003	0.126	0.092	0.092	0.109	0.067
111Cd	0.067	0.223	1.6	0.675	0.531	0.884	0.547
118Sn	0.020	0.067	0.364	0.253	0.381	0.258	0.312
121Sb	0.003	0.010	0.055	0.050	0.082	0.069	0.042
137Ba	0.001	0.003	62	34	77	34	30
202Hg	0.033	0.110	0.069	0.039	<0.033	0.049	0.039
205Tl	0.001	0.003	0.022	0.015	0.026	0.019	0.012
208Pb	0.001	0.003	0.254	0.257	0.599	0.251	0.184
238U	0.001	0.003	0.083	0.070	0.141	0.280	0.086

Notes:

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Tissue Analysis Results

		Client ID	RG_FODPO_INV-5_2021-12-14	RG_FOUCL_INV-1_2021-12-15	RG_FOUCL_INV-2_2021-12-15	RG_FOUCL_INV-3_2021-12-15	RG_FOUEW_INV-1_2021-12-13
		Lab ID	223	224	225	226	227
		Wet Weight (g)	0.3616	0.7322	0.7451	0.9432	0.6545
		Dry Weight (g)	0.0676	0.1981	0.1822	0.2477	0.1680
		Moisture (%)	81.3	72.9	75.5	73.7	74.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.3	0.893	0.584	0.792	0.574
11B	0.087	0.290	3.1	1.6	1.6	1.6	0.606
23Na	3.9	13	2,178	3,085	2,758	3,387	2,320
24Mg	0.026	0.087	1,819	1,119	1,405	1,366	1,626
27Al	0.450	1.5	1,974	750	745	800	312
31P	46	153	8,836	11,257	10,965	12,700	9,158
39K	2.7	9.0	6,847	10,012	9,538	10,816	8,066
44Ca	41	137	3,602	1,814	2,631	3,311	2,861
49Ti	0.198	0.660	164	85	49	58	16
51V	0.077	0.257	5.4	2.4	1.6	2.2	0.748
52Cr	0.067	0.223	61	7.5	6.5	6.9	5.8
55Mn	0.009	0.030	73	55	57	58	45
57Fe	0.850	2.8	1,734	455	297	378	324
59Co	0.007	0.023	5.8	2.3	1.3	1.5	0.466
60Ni	0.053	0.177	108	16	15	16	8.5
63Cu	0.011	0.037	18	16	17	17	15
66Zn	0.473	1.6	186	186	223	172	241
75As	0.425	1.4	0.638	1.0	1.1	1.2	<0.425
77Se	0.391	1.3	5.4	7.3	7.5	8.7	5.7
88Sr	0.001	0.003	6.7	3.3	3.7	3.7	3.3
95Mo	0.001	0.003	0.636	0.435	0.335	0.351	0.201
107Ag	0.001	0.003	0.084	0.092	0.076	0.092	0.143
111Cd	0.067	0.223	1.3	1.6	1.3	1.3	0.515
118Sn	0.020	0.067	0.375	0.540	0.184	0.234	0.146
121Sb	0.003	0.010	0.072	0.043	0.033	0.033	0.020
137Ba	0.001	0.003	64	79	52	68	18
202Hg	0.033	0.110	0.054	0.059	0.049	0.049	0.039
205Tl	0.001	0.003	0.029	0.019	0.014	0.015	0.004
208Pb	0.001	0.003	0.389	0.289	0.187	0.252	0.083
238U	0.001	0.003	0.122	0.070	0.072	0.085	0.023

Notes:

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Tissue Analysis Results

		Client ID	RG_FOUEW_INV-2_2021-12-13	RG_FOUEW_INV-3_2021-12-13	RG_FOUEW_INV-4_2021-12-13	RG_FOUEW_INV-5_2021-12-13	RG_FOUKI_INV-1_2021-12-14
		Lab ID	228	229	230	231	232
		Wet Weight (g)	0.6665	0.7533	0.6131	1.1011	0.6468
		Dry Weight (g)	0.1402	0.1935	0.1365	0.2996	0.1673
		Moisture (%)	79.0	74.3	77.7	72.8	74.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	0.670	1.1	0.599	0.505	0.464
11B	0.087	0.290	1.3	1.4	0.862	0.551	0.276
23Na	3.9	13	3,222	2,190	3,848	2,136	1,697
24Mg	0.026	0.087	1,754	1,458	1,900	826	593
27Al	0.450	1.5	711	1,354	364	173	187
31P	46	153	9,758	8,492	13,766	4,805	5,556
39K	2.7	9.0	7,978	6,518	10,232	6,672	4,754
44Ca	41	137	3,122	6,876	4,146	2,408	1,919
49Ti	0.198	0.660	41	105	21	9.2	9.8
51V	0.077	0.257	1.4	2.2	0.797	0.479	0.407
52Cr	0.067	0.223	13	6.1	3.8	2.6	3.2
55Mn	0.009	0.030	123	226	99	91	22
57Fe	0.850	2.8	639	942	375	371	184
59Co	0.007	0.023	1.0	1.1	0.625	1.1	0.718
60Ni	0.053	0.177	20	12	7.1	11	5.5
63Cu	0.011	0.037	13	12	15	11	11
66Zn	0.473	1.6	238	141	237	144	189
75As	0.425	1.4	0.499	0.558	<0.425	<0.425	<0.425
77Se	0.391	1.3	5.0	6.6	7.1	5.4	2.5
88Sr	0.001	0.003	4.2	6.4	4.5	2.2	2.7
95Mo	0.001	0.003	0.155	0.404	0.311	0.249	0.233
107Ag	0.001	0.003	0.109	0.084	0.181	0.109	0.084
111Cd	0.067	0.223	0.647	0.768	0.728	1.4	0.283
118Sn	0.020	0.067	0.265	0.219	0.404	0.071	0.067
121Sb	0.003	0.010	0.030	0.053	0.024	0.022	0.037
137Ba	0.001	0.003	39	77	35	26	17
202Hg	0.033	0.110	0.042	0.062	0.062	0.073	<0.033
205Tl	0.001	0.003	0.015	0.024	0.012	0.007	0.012
208Pb	0.001	0.003	0.242	0.491	0.185	0.197	0.050
238U	0.001	0.003	0.044	0.112	0.049	0.079	0.020

Notes:
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Tissue Analysis Results

		Client ID	RG_FOUKI_INV-2_2021-12-14	RG_FOUKI_INV-3_2021-12-14	RG_FOUKI_INV-4_2021-12-14	RG_FOUKI_INV-5_2021-12-14	RG_FOUNGD_INV-1_2021-12-15
		Lab ID	233	234	235	236	237
		Wet Weight (g)	1.0367	0.8727	1.0675	0.8356	0.7807
		Dry Weight (g)	0.2552	0.2046	0.2928	0.2555	0.1707
		Moisture (%)	75.4	76.6	72.6	69.4	78.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.2	0.787	0.970	0.588	0.629
11B	0.087	0.290	0.362	0.517	0.758	0.345	0.741
23Na	3.9	13	3,722	2,027	2,236	1,923	2,166
24Mg	0.026	0.087	1,045	797	1,049	649	996
27Al	0.450	1.5	284	419	521	221	150
31P	46	153	8,157	6,549	7,636	5,980	7,305
39K	2.7	9.0	7,768	6,733	5,879	4,890	7,384
44Ca	41	137	2,241	1,803	5,483	1,928	1,883
49Ti	0.198	0.660	15	23	24	14	8.6
51V	0.077	0.257	0.603	0.869	0.788	0.520	0.299
52Cr	0.067	0.223	2.7	3.1	2.3	1.7	2.1
55Mn	0.009	0.030	47	64	153	112	26
57Fe	0.850	2.8	217	290	316	190	101
59Co	0.007	0.023	1.5	1.6	4.5	3.9	0.764
60Ni	0.053	0.177	6.7	7.7	14	9.2	5.6
63Cu	0.011	0.037	10	7.5	15	13	11
66Zn	0.473	1.6	141	103	180	121	153
75As	0.425	1.4	0.499	0.469	0.499	<0.425	0.425
77Se	0.391	1.3	4.0	2.5	5.5	3.1	4.6
88Sr	0.001	0.003	2.5	2.7	4.7	2.1	2.7
95Mo	0.001	0.003	0.155	0.217	0.404	0.311	0.093
107Ag	0.001	0.003	0.109	0.076	0.113	0.084	0.034
111Cd	0.067	0.223	0.647	2.1	0.728	0.647	1.4
118Sn	0.020	0.067	0.109	0.295	0.122	0.099	0.156
121Sb	0.003	0.010	0.042	0.042	0.088	0.073	0.010
137Ba	0.001	0.003	24	31	63	16	14
202Hg	0.033	0.110	0.042	0.042	<0.033	<0.033	0.052
205Tl	0.001	0.003	0.015	0.018	0.018	0.015	0.009
208Pb	0.001	0.003	0.071	0.112	0.139	0.068	0.071
238U	0.001	0.003	0.024	0.025	0.050	0.022	0.036

Notes:

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Tissue Analysis Results

		Client ID	RG_FOUNGD_INV-2_2021-12-15	RG_FOUNGD_INV-3_2021-12-15	RG_FOUSH_INV-1_2021-12-15	RG_FOUSH_INV-2_2021-12-15	RG_FOUSH_INV-3_2021-12-15
		Lab ID	238	239	240	241	242
		Wet Weight (g)	0.8620	0.7816	1.0906	1.0492	0.8378
		Dry Weight (g)	0.1806	0.1910	0.2531	0.2193	0.1800
		Moisture (%)	79.0	75.6	76.8	79.1	78.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	0.826	0.564	0.858	1.1	0.729
11B	0.087	0.290	1.7	0.793	0.672	0.517	0.465
23Na	3.9	13	1,906	1,662	1,860	2,170	1,607
24Mg	0.026	0.087	1,301	598	826	595	759
27Al	0.450	1.5	353	129	329	481	366
31P	46	153	8,396	5,499	6,944	6,043	6,457
39K	2.7	9.0	5,904	4,691	4,533	5,120	5,274
44Ca	41	137	3,215	1,497	2,398	1,497	2,063
49Ti	0.198	0.660	14	7.0	24	36	30
51V	0.077	0.257	0.786	0.338	1.7	1.6	2.4
52Cr	0.067	0.223	3.0	2.9	2.8	2.4	3.0
55Mn	0.009	0.030	12	29	124	19	14
57Fe	0.850	2.8	149	92	2,214	1,890	3,047
59Co	0.007	0.023	0.631	0.828	3.3	0.615	0.881
60Ni	0.053	0.177	7.4	7.9	12	7.1	7.3
63Cu	0.011	0.037	9.8	6.7	10	9.0	10
66Zn	0.473	1.6	124	85	142	85	136
75As	0.425	1.4	0.763	<0.425	0.719	0.660	0.939
77Se	0.391	1.3	3.3	3.2	5.1	2.4	3.8
88Sr	0.001	0.003	3.7	1.8	4.1	3.1	3.5
95Mo	0.001	0.003	0.155	0.093	0.249	0.155	0.155
107Ag	0.001	0.003	0.050	0.034	0.050	0.050	0.076
111Cd	0.067	0.223	0.809	0.627	0.647	0.607	0.566
118Sn	0.020	0.067	0.351	0.112	0.162	0.240	0.206
121Sb	0.003	0.010	0.023	0.011	0.072	0.044	0.037
137Ba	0.001	0.003	15	11	75	58	62
202Hg	0.033	0.110	<0.033	<0.033	0.052	<0.033	0.042
205Tl	0.001	0.003	0.013	0.009	0.017	0.014	0.012
208Pb	0.001	0.003	0.121	0.060	0.160	0.176	0.224
238U	0.001	0.003	0.044	0.016	0.036	0.033	0.035

Notes:

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g = grams

% = percent

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Tissue Analysis Results

		Client ID	RG_FRGHSC_INV-1_2021-12-13	RG_FRGHSC_INV-2_2021-12-13	RG_FRGHSC_INV-3_2021-12-13	RG_FRGHSC_INV-4_2021-12-13	RG_FRGHSC_INV-5_2021-12-13
		Lab ID	243	244	245	246	247
		Wet Weight (g)	0.4286	0.3960	0.3515	0.2559	0.5725
		Dry Weight (g)	0.0894	0.0737	0.0777	0.0487	0.1163
		Moisture (%)	79.1	81.4	77.9	81.0	79.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	2.2	1.6	1.2	1.1	0.476
11B	0.087	0.290	3.3	3.0	2.4	1.3	0.302
23Na	3.9	13	2,700	2,247	1,898	1,792	1,715
24Mg	0.026	0.087	1,955	1,460	1,248	1,382	579
27Al	0.450	1.5	1,906	2,265	1,745	592	151
31P	46	153	7,560	7,837	6,241	6,611	5,620
39K	2.7	9.0	8,050	7,582	6,324	4,445	5,564
44Ca	41	137	5,066	4,483	3,377	3,279	1,283
49Ti	0.198	0.660	161	145	168	17	6.0
51V	0.077	0.257	3.4	3.8	3.8	1.1	0.274
52Cr	0.067	0.223	5.1	12	16	4.0	1.9
55Mn	0.009	0.030	39	24	22	13	45
57Fe	0.850	2.8	965	1,040	1,050	146	101
59Co	0.007	0.023	0.755	1.1	1.2	0.209	0.091
60Ni	0.053	0.177	8.2	19	26	3.9	1.7
63Cu	0.011	0.037	13	15	10	15	8.0
66Zn	0.473	1.6	120	107	126	133	125
75As	0.425	1.4	1.3	1.4	1.3	<0.425	<0.425
77Se	0.391	1.3	13	17	15	6.5	4.6
88Sr	0.001	0.003	5.9	5.2	5.1	3.4	0.904
95Mo	0.001	0.003	0.311	0.435	0.311	0.165	0.150
107Ag	0.001	0.003	0.050	0.067	0.034	0.043	0.032
111Cd	0.067	0.223	5.2	4.3	3.3	1.5	6.2
118Sn	0.020	0.067	0.638	0.633	0.540	0.506	0.153
121Sb	0.003	0.010	0.075	0.086	0.084	0.032	0.014
137Ba	0.001	0.003	89	68	59	26	49
202Hg	0.033	0.110	0.052	0.062	0.052	0.035	<0.033
205Tl	0.001	0.003	0.033	0.031	0.032	0.015	0.002
208Pb	0.001	0.003	0.701	0.493	0.374	0.176	0.146
238U	0.001	0.003	0.279	0.248	0.207	0.133	0.187

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Minnow Environmental

Tissue Analysis Results

		Client ID	RG_FRSCH2_INV-1_2021-12-14	RG_FRSCH2_INV-2_2021-12-14	RG_FRSCH2_INV-3_2021-12-14	RG_FRSCH2_INV-4_2021-12-14	RG_FRSCH2_INV-5_2021-12-14
		Lab ID	248	249	250	251	252
		Wet Weight (g)	0.9249	0.9483	1.0781	0.8451	0.4795
		Dry Weight (g)	0.2353	0.2067	0.2213	0.1669	0.1134
		Moisture (%)	74.6	78.2	79.5	80.3	76.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	0.935	0.831	1.5	1.0	1.7
11B	0.087	0.290	1.0	0.906	0.873	0.738	3.6
23Na	3.9	13	2,987	3,301	4,332	3,772	3,114
24Mg	0.026	0.087	1,028	1,375	1,684	1,548	1,570
27Al	0.450	1.5	653	452	406	451	2,301
31P	46	153	8,970	10,192	11,219	10,408	10,871
39K	2.7	9.0	7,822	8,549	7,763	9,600	10,136
44Ca	41	137	1,804	1,960	2,692	2,635	3,540
49Ti	0.198	0.660	40	21	27	19	186
51V	0.077	0.257	1.1	0.903	0.858	0.830	6.4
52Cr	0.067	0.223	3.3	3.0	3.5	4.0	18
55Mn	0.009	0.030	75	83	97	29	52
57Fe	0.850	2.8	261	268	283	257	1,489
59Co	0.007	0.023	2.7	2.8	3.0	2.2	3.6
60Ni	0.053	0.177	7.7	9.3	8.0	6.6	29
63Cu	0.011	0.037	14	13	16	15	15
66Zn	0.473	1.6	126	119	155	132	171
75As	0.425	1.4	0.531	0.559	0.503	0.531	1.3
77Se	0.391	1.3	4.4	4.4	5.1	7.4	6.7
88Sr	0.001	0.003	2.5	2.4	2.9	2.7	7.7
95Mo	0.001	0.003	0.300	0.270	0.210	0.240	0.420
107Ag	0.001	0.003	0.130	0.081	0.130	0.157	0.151
111Cd	0.067	0.223	0.748	0.623	0.748	2.1	2.1
118Sn	0.020	0.067	0.231	0.418	0.374	0.300	0.542
121Sb	0.003	0.010	0.044	0.040	0.039	0.033	0.145
137Ba	0.001	0.003	22	18	20	15	124
202Hg	0.033	0.110	<0.033	<0.033	0.040	0.050	0.050
205Tl	0.001	0.003	0.025	0.019	0.022	0.017	0.064
208Pb	0.001	0.003	0.146	0.126	0.156	0.116	0.721
238U	0.001	0.003	0.068	0.052	0.051	0.054	0.171

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue Analysis Results

Parameter	DL (ppm)	LOQ (ppm)	RG_FRUPO_INV-1_2021-12-13	RG_FRUPO_INV-2_2021-12-13	RG_FRUPO_INV-3_2021-12-13	RG_FRUPO_INV-4_2021-12-13	RG_FRUPO_INV-5_2021-12-13
		Lab ID	253	254	255	256	257
		Wet Weight (g)	1.1487	0.8620	0.4648	0.5996	0.6494
		Dry Weight (g)	0.2167	0.1895	0.1111	0.1175	0.1707
		Moisture (%)	81.1	78.0	76.1	80.4	73.7
			(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	2.5	0.898	0.635	0.825	1.1
11B	0.087	0.290	1.6	1.2	0.638	1.2	1.1
23Na	3.9	13	4,703	4,454	2,656	2,496	3,891
24Mg	0.026	0.087	1,899	1,333	1,227	1,521	1,751
27Al	0.450	1.5	1,773	517	382	593	219
31P	46	153	11,062	9,951	9,231	9,064	10,635
39K	2.7	9.0	17,974	8,126	7,309	7,473	10,986
44Ca	41	137	4,480	2,817	2,900	2,964	2,899
49Ti	0.198	0.660	94	28	18	39	11
51V	0.077	0.257	2.8	0.940	0.694	1.4	0.542
52Cr	0.067	0.223	8.2	7.6	6.8	4.8	4.9
55Mn	0.009	0.030	63	36	23	31	37
57Fe	0.850	2.8	1,072	500	262	331	175
59Co	0.007	0.023	1.5	0.517	0.531	0.398	0.499
60Ni	0.053	0.177	20	14	9.6	6.8	5.4
63Cu	0.011	0.037	16	13	12	8.9	6.0
66Zn	0.473	1.6	145	145	135	114	166
75As	0.425	1.4	1.5	<0.425	<0.425	0.531	0.559
77Se	0.391	1.3	6.1	5.2	4.6	6.2	4.6
88Sr	0.001	0.003	4.4	3.1	2.7	3.2	2.7
95Mo	0.001	0.003	0.480	0.240	0.240	0.240	0.300
107Ag	0.001	0.003	0.090	0.086	0.108	0.054	0.038
111Cd	0.067	0.223	1.8	1.6	0.706	0.748	0.332
118Sn	0.020	0.067	0.573	0.418	0.514	0.194	0.101
121Sb	0.003	0.010	0.115	0.034	0.030	0.028	0.031
137Ba	0.001	0.003	65	22	15	29	65
202Hg	0.033	0.110	0.050	0.040	<0.033	0.035	<0.033
205Tl	0.001	0.003	0.049	0.014	0.010	0.015	0.009
208Pb	0.001	0.003	0.630	0.199	0.162	0.167	0.090
238U	0.001	0.003	0.127	0.059	0.037	0.086	0.032

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue Analysis Results

		Client ID	RG_MP1_INV-1_2021-12-15	RG_MP1_INV-2_2021-12-15	RG_MP1_INV-3_2021-12-15	RG_SCOUTDS_INV-1_2021-12-09	RG_SCOUTDS_INV-2_2021-12-09
		Lab ID	258	259	260	261	262
		Wet Weight (g)	0.5750	0.6581	0.4898	0.4991	0.1337
		Dry Weight (g)	0.1595	0.1737	0.1289	0.1314	0.0328
		Moisture (%)	72.3	73.6	73.7	73.7	75.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	1.2	0.721	0.959	0.944	2.1
11B	0.087	0.290	1.2	0.671	1.1	1.8	4.5
23Na	3.9	13	3,878	3,090	3,058	3,132	3,924
24Mg	0.026	0.087	1,074	1,539	1,096	1,654	1,840
27Al	0.450	1.5	660	415	790	449	2,667
31P	46	153	10,931	10,832	10,087	10,804	12,399
39K	2.7	9.0	9,624	7,523	7,837	8,525	12,429
44Ca	41	137	1,982	3,207	2,557	1,802	3,166
49Ti	0.198	0.660	43	19	43	25	159
51V	0.077	0.257	1.3	0.756	1.6	0.844	4.7
52Cr	0.067	0.223	3.8	2.7	4.2	4.5	20
55Mn	0.009	0.030	58	28	26	56	131
57Fe	0.850	2.8	340	170	410	258	1,374
59Co	0.007	0.023	5.6	3.6	3.2	2.7	3.6
60Ni	0.053	0.177	12	9.5	8.5	10	45
63Cu	0.011	0.037	14	12	16	14	16
66Zn	0.473	1.6	179	173	170	266	213
75As	0.425	1.4	0.615	1.2	0.531	<0.425	0.895
77Se	0.391	1.3	6.1	4.1	4.4	6.3	11
88Sr	0.001	0.003	3.0	3.8	3.9	2.9	9.2
95Mo	0.001	0.003	0.270	0.240	0.180	0.120	0.360
107Ag	0.001	0.003	0.108	0.113	0.108	0.130	0.108
111Cd	0.067	0.223	0.831	1.3	1.2	1.6	1.5
118Sn	0.020	0.067	0.205	0.120	0.171	0.124	0.365
121Sb	0.003	0.010	0.041	0.033	0.033	0.042	0.108
137Ba	0.001	0.003	65	16	40	17	210
202Hg	0.033	0.110	0.040	0.040	0.035	0.050	0.070
205Tl	0.001	0.003	0.023	0.028	0.024	0.025	0.073
208Pb	0.001	0.003	0.268	0.106	0.239	0.177	0.592
238U	0.001	0.003	0.051	0.019	0.046	0.029	0.173

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue Analysis Results

		Client ID	RG_SCOUTDS_INV-3_2021-12-09	RG_SCOUTDS_INV-4_2021-12-09	RG_SCOUTDS_INV-5_2021-12-09	RG_UFR1_INV-1_2021-12-16	RG_UFR1_INV-2_2021-12-16
		Lab ID	263	264	265	266	267
		Wet Weight (g)	0.4124	0.3738	0.2596	0.8024	0.6954
		Dry Weight (g)	0.0857	0.0821	0.0529	0.1647	0.1342
		Moisture (%)	79.2	78.0	79.6	79.5	80.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	6.6	5.5	0.499	0.339	0.345
11B	0.087	0.290	0.722	0.719	0.800	1.6	1.5
23Na	3.9	13	7,201	8,464	1,380	2,939	3,139
24Mg	0.026	0.087	1,344	1,210	619	937	946
27Al	0.450	1.5	374	236	513	582	530
31P	46	153	10,101	7,855	4,796	9,970	11,531
39K	2.7	9.0	8,313	7,500	3,136	7,194	8,067
44Ca	41	137	2,237	1,940	2,993	1,481	1,624
49Ti	0.198	0.660	26	11	39	39	26
51V	0.077	0.257	0.717	0.536	0.888	1.1	1.0
52Cr	0.067	0.223	3.0	3.7	4.3	3.8	3.4
55Mn	0.009	0.030	97	47	31	42	21
57Fe	0.850	2.8	244	138	217	253	191
59Co	0.007	0.023	4.2	1.5	0.937	0.451	0.273
60Ni	0.053	0.177	11	8.8	8.5	6.2	4.7
63Cu	0.011	0.037	17	12	14	11	13
66Zn	0.473	1.6	191	125	137	145	130
75As	0.425	1.4	<0.425	<0.425	0.461	0.841	1.2
77Se	0.391	1.3	8.6	4.8	3.7	3.7	4.0
88Sr	0.001	0.003	2.3	1.6	5.6	2.7	2.6
95Mo	0.001	0.003	0.270	0.322	0.258	0.226	0.419
107Ag	0.001	0.003	0.216	0.109	0.092	0.059	0.084
111Cd	0.067	0.223	3.1	3.0	0.827	1.7	1.8
118Sn	0.020	0.067	0.242	0.340	0.277	0.160	0.297
121Sb	0.003	0.010	0.041	0.027	0.026	0.029	0.025
137Ba	0.001	0.003	21	11	35	54	33
202Hg	0.033	0.110	0.060	0.043	<0.033	0.058	0.058
205Tl	0.001	0.003	0.036	0.034	0.030	0.021	0.025
208Pb	0.001	0.003	0.142	0.074	0.106	0.177	0.180
238U	0.001	0.003	0.037	0.019	0.071	0.027	0.042

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue Analysis Results

		Client ID	RG_UFR1_INV-3_2021-12-16	RG_UFR1_INV-4_2021-12-16	RG_UFR1_INV-5_2021-12-16
		Lab ID	268	269	270
		Wet Weight (g)	0.8502	1.1144	1.0034
		Dry Weight (g)	0.1813	0.2529	0.1957
		Moisture (%)	78.7	77.3	80.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)
7Li	0.010	0.033	0.061	0.284	0.306
11B	0.087	0.290	0.261	1.5	1.3
23Na	3.9	13	771	2,662	1,661
24Mg	0.026	0.087	280	735	665
27Al	0.450	1.5	118	511	624
31P	46	153	4,366	8,212	7,385
39K	2.7	9.0	2,412	7,140	4,169
44Ca	41	137	565	1,525	1,099
49Ti	0.198	0.660	4.8	38	41
51V	0.077	0.257	0.233	1.0	1.5
52Cr	0.067	0.223	2.0	4.0	4.2
55Mn	0.009	0.030	12	41	25
57Fe	0.850	2.8	63	216	265
59Co	0.007	0.023	0.167	0.465	0.410
60Ni	0.053	0.177	1.5	5.3	6.0
63Cu	0.011	0.037	11	9.6	13
66Zn	0.473	1.6	71	98	112
75As	0.425	1.4	<0.425	0.922	0.542
77Se	0.391	1.3	1.7	3.0	4.0
88Sr	0.001	0.003	0.865	2.3	2.0
95Mo	0.001	0.003	0.064	0.193	0.419
107Ag	0.001	0.003	0.034	0.055	0.067
111Cd	0.067	0.223	1.2	1.2	0.827
118Sn	0.020	0.067	0.055	0.159	0.171
121Sb	0.003	0.010	0.004	0.026	0.028
137Ba	0.001	0.003	6.0	26	27
202Hg	0.033	0.110	0.058	0.058	0.048
205Tl	0.001	0.003	0.008	0.020	0.024
208Pb	0.001	0.003	0.035	0.163	0.152
238U	0.001	0.003	0.007	0.021	0.023

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

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Tissue QA/QC Relative Percent Difference Results

	Client ID	RG_FO22_INV-1_2021-12-13			RG_FOBCP_INV-5_2021-12-14			RG_FOBSC_INV-5_2021-12-09		
	Lab ID	193			202			212		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.010	0.501	0.722	36	1.0	0.686	37	1.1	0.880	22
11B	0.087	0.783	1.3	-	0.843	0.587	-	3.0	2.6	14
23Na	3.9	2,225	2,714	20	3,200	2,436	27	3,313	2,593	24
24Mg	0.026	1,225	1,259	2.7	1,329	957	33	1,635	1,430	13
27Al	0.450	691	1,016	38	670	477	34	648	580	11
31P	46	8,515	10,030	16	11,236	8,670	26	10,075	9,319	7.8
39K	2.7	5,781	7,692	28	11,188	8,224	31	10,449	7,533	32
44Ca	41	2,046	2,448	18	2,311	1,543	40	2,010	1,450	32
49Ti	0.198	28	28	0.0	39	28	33	40	30	29
51V	0.077	1.1	1.1	0.0	0.961	0.837	14	1.3	0.950	31
52Cr	0.067	5.0	6.0	18	7.2	5.8	22	8.3	6.8	20
55Mn	0.009	52	74	35	46	34	30	66	56	16
57Fe	0.850	1,492	1,562	4.2	275	213	25	400	316	24
59Co	0.007	0.297	0.408	32	1.7	1.2	35	2.4	1.7	34
60Ni	0.053	9.0	13	36	18	12	40	17	14	19
63Cu	0.011	12	15	22	26	20	26	20	17	16
66Zn	0.473	127	153	19	281	218	25	300	200	40
75As	0.425	<0.425	0.521	-	0.620	0.447	-	0.435	<0.425	-
77Se	0.391	7.4	7.7	4.0	6.7	5.0	29	11	12	8.7
88Sr	0.001	3.5	4.1	16	3.6	2.5	36	3.8	3.1	20
95Mo	0.001	0.272	0.381	33	0.435	0.313	33	0.268	0.201	29
107Ag	0.001	0.072	0.089	21	0.131	0.089	38	0.113	0.101	11
111Cd	0.067	0.405	0.573	-	0.790	0.708	11	1.2	0.659	-
118Sn	0.020	0.444	0.549	21	0.250	0.239	4.5	0.117	0.085	-
121Sb	0.003	0.035	0.037	5.6	0.057	0.052	9.2	0.048	0.037	26
137Ba	0.001	27	20	30	20	22	10	37	31	18
202Hg	0.033	0.042	0.050	-	0.058	0.033	-	0.088	0.039	-
205Tl	0.001	0.013	0.016	21	0.031	0.023	30	0.020	0.017	16
208Pb	0.001	0.243	0.308	24	0.125	0.097	25	0.183	0.124	38
238U	0.001	0.063	0.065	3.1	0.035	0.027	26	0.046	0.035	27

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

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Tissue QA/QC Relative Percent Difference Results

		RG_FODNGD_INV-2_2021-12-15			RG_FODPO_INV-1_2021-12-14			RG_FOUEW_INV-2_2021-12-13		
Client ID		RG_FODNGD_INV-2_2021-12-15			RG_FODPO_INV-1_2021-12-14			RG_FOUEW_INV-2_2021-12-13		
Lab ID		217			219			228		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.010	1.2	0.957	23	0.937	0.970	3.5	0.670	0.688	2.7
11B	0.087	1.6	1.3	21	53	50	5.8	1.3	0.896	37
23Na	3.9	2,660	2,169	20	1,901	1,829	3.9	3,222	3,392	5.1
24Mg	0.026	1,317	1,004	27	1,445	1,426	1.3	1,754	1,758	0.2
27Al	0.450	1,104	773	35	1,184	1,228	3.6	711	723	1.7
31P	46	10,661	9,501	12	8,408	8,660	3.0	9,758	11,428	16
39K	2.7	8,276	6,246	28	6,766	7,338	8.1	7,978	8,554	7.0
44Ca	41	3,728	2,798	29	3,227	3,237	0.3	3,122	2,647	17
49Ti	0.198	94	77	20	79	94	17	41	40	2.5
51V	0.077	2.5	2.1	17	2.3	2.7	16	1.4	1.5	6.9
52Cr	0.067	15	10	40	17	23	30	13	10	26
55Mn	0.009	35	30	15	41	37	10	123	129	4.8
57Fe	0.850	489	375	26	724	839	15	639	548	15
59Co	0.007	4.7	4.3	8.9	1.4	1.6	13	1.0	0.924	7.9
60Ni	0.053	28	20	33	32	40	22	20	18	11
63Cu	0.011	17	14	19	17	15	13	13	13	0.0
66Zn	0.473	148	161	8.4	203	188	7.7	238	205	15
75As	0.425	0.870	0.667	-	0.464	0.580	-	0.499	0.440	-
77Se	0.391	4.6	3.7	-	4.7	4.0	16	5.0	6.0	18
88Sr	0.001	5.2	3.7	34	4.9	4.1	18	4.2	4.7	11
95Mo	0.001	0.251	0.234	7.0	0.535	0.569	6.2	0.155	0.155	0.0
107Ag	0.001	0.126	0.092	31	0.092	0.084	9.1	0.109	0.084	26
111Cd	0.067	0.868	0.611	-	0.675	0.643	-	0.647	0.607	-
118Sn	0.020	0.340	0.287	17	0.253	0.371	38	0.265	0.237	11
121Sb	0.003	0.050	0.035	35	0.050	0.075	40	0.030	0.027	-
137Ba	0.001	55	60	8.7	34	34	0.0	39	41	5.0
202Hg	0.033	0.039	0.039	-	0.039	0.049	-	0.042	<0.033	-
205Tl	0.001	0.020	0.016	22	0.015	0.016	6.5	0.015	0.016	6.5
208Pb	0.001	0.257	0.216	17	0.257	0.333	26	0.242	0.196	21
238U	0.001	0.058	0.041	34	0.070	0.100	35	0.044	0.038	15

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Minnow Environmental

Tissue QA/QC Relative Percent Difference Results

		RG_FRGHSC_INV-4_2021-12-13			RG_FRUPO_INV-3_2021-12-13		
Client ID		RG_FRGHSC_INV-4_2021-12-13			RG_FRUPO_INV-3_2021-12-13		
Lab ID		246			255		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.010	1.1	0.846	26	0.635	0.547	15
11B	0.087	1.3	0.738	-	0.638	0.453	-
23Na	3.9	1,792	1,320	30	2,656	2,413	9.6
24Mg	0.026	1,382	1,002	32	1,227	1,080	13
27Al	0.450	592	550	7.4	382	379	0.8
31P	46	6,611	5,085	26	9,231	8,506	8.2
39K	2.7	4,445	3,292	30	7,309	6,686	8.9
44Ca	41	3,279	2,828	15	2,900	2,214	27
49Ti	0.198	17	14	19	18	13	32
51V	0.077	1.1	0.649	-	0.694	0.474	-
52Cr	0.067	4.0	3.5	13	6.8	5.6	19
55Mn	0.009	13	11	17	23	20	14
57Fe	0.850	146	157	7.3	262	186	34
59Co	0.007	0.209	0.175	18	0.531	0.381	33
60Ni	0.053	3.9	3.9	0.0	9.6	8.5	12
63Cu	0.011	15	11	31	12	12	0.0
66Zn	0.473	133	107	22	135	125	7.7
75As	0.425	<0.425	<0.425	-	<0.425	<0.425	-
77Se	0.391	6.5	5.0	26	4.6	3.8	-
88Sr	0.001	3.4	2.5	31	2.7	2.2	20
95Mo	0.001	0.165	0.150	9.5	0.240	0.210	13
107Ag	0.001	0.043	0.032	29	0.108	0.093	15
111Cd	0.067	1.5	1.3	14	0.706	0.457	-
118Sn	0.020	0.506	0.374	30	0.514	0.359	36
121Sb	0.003	0.032	0.033	3.1	0.030	0.020	-
137Ba	0.001	26	24	8.0	15	16	6.5
202Hg	0.033	0.035	<0.033	-	<0.033	<0.033	-
205Tl	0.001	0.015	0.008	-	0.010	0.007	-
208Pb	0.001	0.176	0.125	34	0.162	0.200	21
238U	0.001	0.133	0.094	34	0.037	0.031	18

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Minnow Environmental

Tissue QA/QC Accuracy and Precision Results

Sample Group ID			01			02		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.010	1.21	1.2	97	9.8	1.4	113	8.4
11B	0.087	4.5	5.5	122	5.2	4.7	105	2.2
23Na	3.9	14,000	14,589	104	8.1	14,164	101	3.7
24Mg	0.026	910	953	105	7.5	998	110	8.3
27Al	0.450	197.2	214	108	7.0	181	92	5.9
31P	46	8,000	8,292	104	9.9	8,843	110	7.9
39K	2.7	15,500	15,580	100	7.6	16,583	107	4.7
44Ca	41	2,360	2,407	102	6.0	2,615	111	5.7
49Ti	0.198	12.24	14	116	14	12	96	11
51V	0.077	1.57	1.6	104	10	1.7	110	9.2
52Cr	0.067	1.87	1.9	101	6.4	2.0	104	2.4
55Mn	0.009	3.17	3.3	105	5.9	3.8	119	11
57Fe	0.850	343	362	106	3.9	382	112	9.4
59Co	0.007	0.25	0.264	106	6.4	0.266	106	6.0
60Ni	0.053	1.34	1.4	102	6.2	1.5	113	6.9
63Cu	0.011	15.7	17	106	7.6	18	114	6.5
66Zn	0.473	51.6	53	104	5.4	54	104	6.7
75As	0.425	6.87	6.9	100	2.9	7.1	104	3.3
77Se	0.391	3.45	3.6	104	7.7	3.7	108	3.4
88Sr	0.001	10.1	11	104	5.9	11	111	6.0
95Mo	0.001	0.29	0.315	109	9.8	0.321	111	9.3
107Ag	0.001	0.0252	0.025	98	15	0.029	113	16
111Cd	0.067	0.299	0.373	125	8.6	0.342	114	4.4
118Sn	0.020	0.061	0.062	102	14	0.065	107	17
121Sb	0.003	0.011	0.012	113	16	0.010	95	20
137Ba	0.001	8.6	10	117	3.1	8.6	100	4.3
202Hg	0.033	0.412	0.436	106	7.1	0.439	106	6.4
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.418	104	15	0.429	106	14
238U	0.001	0.05	0.050	100	9.4	0.055	109	8.5

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Minnow Environmental

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	03			04		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.010	1.21	1.2	96	12	1.3	105	1.8
11B	0.087	4.5	4.8	107	1.9	4.8	106	3.2
23Na	3.9	14,000	14,678	105	6.5	14,226	102	2.4
24Mg	0.026	910	889	98	7.1	1,032	113	3.8
27Al	0.450	197.2	209	106	7.0	197	100	2.1
31P	46	8,000	7,962	100	5.2	8,583	107	3.7
39K	2.7	15,500	16,341	105	2.6	16,935	109	5.1
44Ca	41	2,360	2,503	106	5.9	2,635	112	4.0
49Ti	0.198	12.24	15	124	19	13	104	14
51V	0.077	1.57	1.6	101	8.7	1.7	106	3.4
52Cr	0.067	1.87	2.1	110	4.4	1.9	102	2.0
55Mn	0.009	3.17	3.3	103	5.5	3.6	115	4.2
57Fe	0.850	343	367	107	4.5	399	116	6.2
59Co	0.007	0.25	0.276	110	3.4	0.285	114	3.4
60Ni	0.053	1.34	1.5	116	4.3	1.5	115	6.4
63Cu	0.011	15.7	16	104	3.2	18	115	2.5
66Zn	0.473	51.6	57	110	4.6	55	107	4.3
75As	0.425	6.87	7.4	107	2.2	7.3	106	3.4
77Se	0.391	3.45	3.6	106	3.3	3.7	107	5.4
88Sr	0.001	10.1	11	109	5.1	11	110	6.5
95Mo	0.001	0.29	0.308	106	7.5	0.288	99	5.7
107Ag	0.001	0.0252	0.029	113	16	0.032	127	0.0
111Cd	0.067	0.299	0.378	126	10	0.359	120	11
118Sn	0.020	0.061	0.073	120	17	0.061	100	12
121Sb	0.003	0.011	0.012	111	12	0.012	106	13
137Ba	0.001	8.6	9.7	113	9.7	9.2	107	5.1
202Hg	0.033	0.412	0.471	114	6.6	0.438	106	7.9
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.412	102	4.0	0.387	96	6.8
238U	0.001	0.05	0.049	99	2.5	0.052	104	6.6

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.
Accuracy: DQO of 90 - 110% of the certified values for Se.
Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.
Precision: DQO of ≤20% for all elements.
DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.
Tl certified concentration from NIST-2976.
Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Minnow Environmental

Tissue QA/QC Accuracy and Precision Results

Sample Group ID: 05

Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.010	1.21	1.2	97	5.4
11B	0.087	4.5	4.5	101	1.7
23Na	3.9	14,000	13,998	100	5.2
24Mg	0.026	910	904	99	4.3
27Al	0.450	197.2	218	111	7.0
31P	46	8,000	7,693	96	2.8
39K	2.7	15,500	14,814	96	5.3
44Ca	41	2,360	2,212	94	5.0
49Ti	0.198	12.24	14	111	13
51V	0.077	1.57	1.6	99	10
52Cr	0.067	1.87	1.9	102	4.3
55Mn	0.009	3.17	3.1	98	2.6
57Fe	0.850	343	346	101	4.8
59Co	0.007	0.25	0.270	108	8.8
60Ni	0.053	1.34	1.4	105	2.1
63Cu	0.011	15.7	16	99	4.7
66Zn	0.473	51.6	53	103	5.8
75As	0.425	6.87	6.5	95	4.1
77Se	0.391	3.45	3.2	94	4.9
88Sr	0.001	10.1	9.7	96	3.8
95Mo	0.001	0.29	0.296	102	4.9
107Ag	0.001	0.0252	0.025	100	0.0
111Cd	0.067	0.299	0.287	96	8.8
118Sn	0.020	0.061	0.058	95	11
121Sb	0.003	0.011	0.011	100	18
137Ba	0.001	8.6	9.0	105	4.9
202Hg	0.033	0.412	0.471	114	11
205Tl	0.001	0.0013	-	-	-
208Pb	0.001	0.404	0.400	99	13
238U	0.001	0.05	0.052	104	7.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Minnow Environmental
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_FO22_INV-1_2021-12-13	193	06 Jan 2022
	RG_FO22_INV-2_2021-12-13	194	
	RG_FO22_INV-3_2021-12-13	195	
	RG_FO22_INV-4_2021-12-13	196	
	RG_FO22_INV-5_2021-12-13	197	
	RG_FOBCP_INV-1_2021-12-14	198	
	RG_FOBCP_INV-2_2021-12-14	199	
	RG_FOBCP_INV-3_2021-12-14	200	
	RG_FOBCP_INV-4_2021-12-14	201	
	RG_FOBCP_INV-5_2021-12-14	202	
	RG_FOBKS_INV-1_2021-12-14	203	
	RG_FOBKS_INV-2_2021-12-14	204	
	RG_FOBKS_INV-3_2021-12-14	205	
	RG_FOBKS_INV-4_2021-12-14	206	
	RG_FOBKS_INV-5_2021-12-14	207	
	RG_FOBSC_INV-1_2021-12-09	208	
	RG_FOBSC_INV-2_2021-12-09	209	
	RG_FOBSC_INV-3_2021-12-09	210	
02	RG_FOBSC_INV-4_2021-12-09	211	06 Jan 2022
	RG_FOBSC_INV-5_2021-12-09	212	
	RG_FODHE_INV-1_2021-12-15	213	
	RG_FODHE_INV-2_2021-12-15	214	
	RG_FODHE_INV-3_2021-12-15	215	
	RG_FODNGD_INV-1_2021-12-15	216	
	RG_FODNGD_INV-2_2021-12-15	217	
	RG_FODNGD_INV-3_2021-12-15	218	
	RG_FODPO_INV-1_2021-12-14	219	
	RG_FODPO_INV-2_2021-12-14	220	
	RG_FODPO_INV-3_2021-12-14	221	
	RG_FODPO_INV-4_2021-12-14	222	
	RG_FODPO_INV-5_2021-12-14	223	
	RG_FOUCL_INV-1_2021-12-15	224	
	RG_FOUCL_INV-2_2021-12-15	225	
	RG_FOUCL_INV-3_2021-12-15	226	
	RG_FOUEW_INV-1_2021-12-13	227	
03	RG_FOUEW_INV-2_2021-12-13	228	06 Jan 2022
	RG_FOUEW_INV-3_2021-12-13	229	
	RG_FOUEW_INV-4_2021-12-13	230	
	RG_FOUEW_INV-5_2021-12-13	231	
	RG_FOUKI_INV-1_2021-12-14	232	

Minnow Environmental

Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
03	RG_FOUKI_INV-2_2021-12-14	233	06 Jan 2022
	RG_FOUKI_INV-3_2021-12-14	234	
	RG_FOUKI_INV-4_2021-12-14	235	
	RG_FOUKI_INV-5_2021-12-14	236	
	RG_FOUNGD_INV-1_2021-12-15	237	
	RG_FOUNGD_INV-2_2021-12-15	238	
	RG_FOUNGD_INV-3_2021-12-15	239	
	RG_FOUSH_INV-1_2021-12-15	240	
	RG_FOUSH_INV-2_2021-12-15	241	
	RG_FOUSH_INV-3_2021-12-15	242	
	RG_FRGHSC_INV-1_2021-12-13	243	
	RG_FRGHSC_INV-2_2021-12-13	244	
	RG_FRGHSC_INV-3_2021-12-13	245	
04	RG_FRGHSC_INV-4_2021-12-13	246	06 Jan 2022
	RG_FRGHSC_INV-5_2021-12-13	247	
	RG_FRSCH2_INV-1_2021-12-14	248	
	RG_FRSCH2_INV-2_2021-12-14	249	
	RG_FRSCH2_INV-3_2021-12-14	250	
	RG_FRSCH2_INV-4_2021-12-14	251	
	RG_FRSCH2_INV-5_2021-12-14	252	
	RG_FRUPO_INV-1_2021-12-13	253	
	RG_FRUPO_INV-2_2021-12-13	254	
	RG_FRUPO_INV-3_2021-12-13	255	
	RG_FRUPO_INV-4_2021-12-13	256	
	RG_FRUPO_INV-5_2021-12-13	257	
	RG_MP1_INV-1_2021-12-15	258	
	RG_MP1_INV-2_2021-12-15	259	
	RG_MP1_INV-3_2021-12-15	260	
	RG_SCOUTDS_INV-1_2021-12-09	261	
	RG_SCOUTDS_INV-2_2021-12-09	262	
	RG_SCOUTDS_INV-3_2021-12-09	263	
05	RG_SCOUTDS_INV-4_2021-12-09	264	06 Jan 2022
	RG_SCOUTDS_INV-5_2021-12-09	265	
	RG_UFR1_INV-1_2021-12-16	266	
	RG_UFR1_INV-2_2021-12-16	267	
	RG_UFR1_INV-3_2021-12-16	268	
	RG_UFR1_INV-4_2021-12-16	269	
	RG_UFR1_INV-5_2021-12-16	270	

TrichAnalytics Inc.
207-1753 Sean Heights, Saanichton, BC, V8M 0B3
Ph: (250) 532-1084

Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Mike Pope	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	mike.pope@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID		Sample Identification:	Species	Sample type
193	1	RG_FO22_INV-1_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
194	2	RG_FO22_INV-2_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
195	3	RG_FO22_INV-3_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
196	4	RG_FO22_INV-4_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
197	5	RG_FO22_INV-5_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
198	9	RG_FOBCP_INV-1_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
199	10	RG_FOBCP_INV-2_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
200	11	RG_FOBCP_INV-3_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
201	12	RG_FOBCP_INV-4_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
202	13	RG_FOBCP_INV-5_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
203	14	RG_FOBKS_INV-1_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
204	15	RG_FOBKS_INV-2_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
205	16	RG_FOBKS_INV-3_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
206	17	RG_FOBKS_INV-4_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
207	18	RG_FOBKS_INV-5_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
208	19	RG_FOBSC_INV-1_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
209	20	RG_FOBSC_INV-2_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Peter Schnurr	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (LAB) 04JAN2022 (Project # 2021-288)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

TrichAnalytics Inc.
207-1753 Sean Heights, Saanichton, BC, V8M 0B3
Ph: (250) 532-1084

Chain of Custody (COC)
for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:	Species	Sample type
210	21 RG_FOBSC_INV-3_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
211	22 RG_FOBSC_INV-4_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
212	23 RG_FOBSC_INV-5_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
213	24 RG_FODHE_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
214	25 RG_FODHE_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
215	26 RG_FODHE_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
216	27 RG_FODNGD_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
217	28 RG_FODNGD_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
218	29 RG_FODNGD_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
219	30 RG_FODPO_INV-1_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
220	31 RG_FODPO_INV-2_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
221	32 RG_FODPO_INV-3_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
222	33 RG_FODPO_INV-4_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
223	34 RG_FODPO_INV-5_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
224	35 RG_FOUCL_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
225	36 RG_FOUCL_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
226	37 RG_FOUCL_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
227	38 RG_FOUEW_INV-1_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
228	39 RG_FOUEW_INV-2_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
229	40 RG_FOUEW_INV-3_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Peter Schnurr	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (LAB) 04JAN2022 (Project # 2021-288)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

AW
04JAN2022

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:	Species	Sample type
230	41 RG_FOUEW_INV-4_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
231	42 RG_FOUEW_INV-5_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
232	43 RG_FOUKI_INV-1_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
233	44 RG_FOUKI_INV-2_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
234	45 RG_FOUKI_INV-3_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
235	46 RG_FOUKI_INV-4_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
236	47 RG_FOUKI_INV-5_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
237	48 RG_FOUNGD_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
238	49 RG_FOUNGD_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
239	50 RG_FOUNGD_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
240	51 RG_FOUSH_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
241	52 RG_FOUSH_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
242	53 RG_FOUSH_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
243	54 RG_FRGHSC_INV-1_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
244	55 RG_FRGHSC_INV-2_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
245	56 RG_FRGHSC_INV-3_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
246	57 RG_FRGHSC_INV-4_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
247	58 RG_FRGHSC_INV-5_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
248	59 RG_FRSCH2_INV-1_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
249	60 RG_FRSCH2_INV-2_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Peter Schnurr	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (LAB) 04 JAN 2022 (Project # 2021-288)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

COM-011.01

AW
04JAN2022

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:		Sample Type: Species	Sample type
250	61	RG_FRSCH2_INV-3_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
251	62	RG_FRSCH2_INV-4_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
252	63	RG_FRSCH2_INV-5_2021-12-14	Composite	Composite-taxa benthic invertebrate tissue samples
253	64	RG_FRUPO_INV-1_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
254	65	RG_FRUPO_INV-2_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
255	66	RG_FRUPO_INV-3_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
256	67	RG_FRUPO_INV-4_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
257	68	RG_FRUPO_INV-5_2021-12-13	Composite	Composite-taxa benthic invertebrate tissue samples
258	69	RG_MP1_INV-1_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
259	70	RG_MP1_INV-2_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
260	71	RG_MP1_INV-3_2021-12-15	Composite	Composite-taxa benthic invertebrate tissue samples
261	72	RG_SCOUTDS_INV-1_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
262	73	RG_SCOUTDS_INV-2_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
263	74	RG_SCOUTDS_INV-3_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
264	75	RG_SCOUTDS_INV-4_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
265	76	RG_SCOUTDS_INV-5_2021-12-09	Composite	Composite-taxa benthic invertebrate tissue samples
266	77	RG_UFR1_INV-1_2021-12-16	Composite	Composite-taxa benthic invertebrate tissue samples
267	78	RG_UFR1_INV-2_2021-12-16	Composite	Composite-taxa benthic invertebrate tissue samples
268	79	RG_UFR1_INV-3_2021-12-16	Composite	Composite-taxa benthic invertebrate tissue samples
269	80	RG_UFR1_INV-4_2021-12-16	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Peter Schnurr	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (LAB) 04JAN2022 (Project # 2021-288)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

AW
04JAN2022

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

TRICH ID	Sample Identification:	Sample Type: Species	Sample type
270	81 RG_UFR1_INV-5_2021-12-16	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Peter Schnurr	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent:	Date Received: (LAB) 04JAN2022 (Project # 2021-288)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

COM-011.01

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04JAN2022

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client:	Peter Schnurr	Date Received:	29 Jun 2021
	Aquatic Scientist	Date of Analysis:	12 Jul 2021
	Minnow Environmental		13 Jul 2021
Phone:	(905) 873-3371 ext. 323	Final Report Date:	16 Jul 2021
Email:	pschnurr@minnow.ca	Project No.:	2021-235
		Method No.:	MET-002.05

Client Project: Teck Coal Limited/Minnow Environmental FRO LAEMP (21-11)

Analytical Request: Benthic Invertebrate Tissue Microchemistry (total metals and moisture) – 81 samples.
See chain of custody form provided for sample identification numbers.

Notes:
Analytical results are expressed in part per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
Client specific DQO for Selenium accuracy is 90 - 110% of the certified value; (average achieved 104%, range 98 - 110%).
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio

16 Jul 2021
Date

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FO22_INV-1_2021-06-18	RG_FO22_INV-2_2021-06-18	RG_FO22_INV-3_2021-06-18	RG_FO22_INV-4_2021-06-18	RG_FO22_INV-5_2021-06-18
		Lab ID	055	056	057	058	059
		Wet Weight (g)	0.5850	0.5215	0.3564	0.8877	0.7722
		Dry Weight (g)	0.1111	0.0985	0.0805	0.1693	0.1880
		Moisture (%)	81.0	81.1	77.4	80.9	75.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	3.6	2.3	3.1	3.1	5.8
11B	0.094	0.313	7.6	4.3	7.9	6.3	14
23Na	1.0	3.3	3,140	3,769	3,196	3,096	3,707
24Mg	0.034	0.113	2,770	2,732	2,369	2,774	2,742
27Al	0.525	1.8	7,291	4,757	8,567	6,719	11,922
31P	32	107	12,936	13,485	11,553	11,020	8,555
39K	8.1	27	15,645	14,648	13,889	11,880	14,585
44Ca	161	537	6,128	5,578	5,693	6,745	5,666
49Ti	0.561	1.9	519	292	722	485	1,359
51V	0.074	0.247	9.4	6.7	15	9.0	24
52Cr	1.7	5.7	39	28	116	40	86
55Mn	0.014	0.047	221	134	293	204	218
57Fe	2.3	7.7	3,254	1,957	5,667	2,592	5,535
59Co	0.007	0.023	5.5	3.7	15	5.2	10
60Ni	0.032	0.107	65	51	240	66	112
63Cu	0.013	0.043	24	23	23	26	22
66Zn	0.601	2.0	370	343	456	358	424
75As	0.471	1.6	1.5	0.994	1.8	1.6	2.5
77Se	0.374	1.2	9.6	9.6	8.5	6.9	12
88Sr	0.001	0.003	9.1	7.9	12	8.8	16
95Mo	0.001	0.003	0.993	0.607	0.862	0.875	0.666
107Ag	0.001	0.003	0.166	0.153	0.147	0.190	0.134
111Cd	0.082	0.277	4.1	2.8	6.5	2.9	5.6
118Sn	0.033	0.110	0.967	0.365	0.894	0.684	0.880
121Sb	0.005	0.017	0.145	0.100	0.185	0.140	0.265
137Ba	0.001	0.003	142	89	150	130	222
202Hg	0.034	0.113	0.051	<0.034	0.054	0.041	0.108
205Tl	0.001	0.003	0.088	0.064	0.139	0.088	0.207
208Pb	0.001	0.003	1.4	0.870	1.5	1.3	3.0
238U	0.001	0.003	0.204	0.159	0.268	0.195	0.430

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FO26_INV-1_2021-06-14	RG_FO26_INV-2_2021-06-14	RG_FO26_INV-3_2021-06-14	RG_FOBCP_INV-1_2021-06-17	RG_FOBCP_INV-2_2021-06-17
		Lab ID	060	061	062	063	064
		Wet Weight (g)	1.4239	1.4766	1.5517	0.2637	0.3305
		Dry Weight (g)	0.3828	0.3620	0.4155	0.0719	0.0902
		Moisture (%)	73.1	75.5	73.2	72.7	72.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.138	0.152	0.218	0.812	1.1
11B	0.094	0.313	0.447	0.456	1.2	1.2	1.2
23Na	1.0	3.3	4,215	2,998	2,997	2,659	3,670
24Mg	0.034	0.113	2,171	1,467	2,117	1,491	1,732
27Al	0.525	1.8	329	343	656	1,131	1,619
31P	32	107	15,827	11,325	13,336	11,684	11,639
39K	8.1	27	14,524	9,629	11,547	11,536	12,531
44Ca	161	537	4,358	2,982	4,917	3,215	2,685
49Ti	0.561	1.9	17	17	46	69	172
51V	0.074	0.247	0.485	0.549	0.991	1.7	1.4
52Cr	1.7	5.7	3.4	5.5	4.3	24	9.6
55Mn	0.014	0.047	52	36	47	99	73
57Fe	2.3	7.7	243	256	436	728	591
59Co	0.007	0.023	0.809	0.629	0.996	9.5	12
60Ni	0.032	0.107	7.1	6.9	7.4	44	33
63Cu	0.013	0.043	17	11	12	19	22
66Zn	0.601	2.0	204	159	197	452	602
75As	0.471	1.6	1.0	0.716	1.0	0.877	0.933
77Se	0.374	1.2	5.4	3.2	4.4	6.0	6.2
88Sr	0.001	0.003	6.1	5.0	7.8	4.6	3.6
95Mo	0.001	0.003	0.379	0.327	0.392	0.470	0.366
107Ag	0.001	0.003	0.085	0.067	0.070	0.105	0.165
111Cd	0.082	0.277	1.2	1.3	1.3	6.8	8.2
118Sn	0.033	0.110	0.390	0.401	0.215	0.328	0.637
121Sb	0.005	0.017	0.015	0.015	0.025	0.040	0.039
137Ba	0.001	0.003	47	33	52	32	20
202Hg	0.034	0.113	0.041	0.041	0.041	<0.034	<0.034
205Tl	0.001	0.003	0.017	0.014	0.022	0.037	0.056
208Pb	0.001	0.003	0.121	0.107	0.250	0.272	0.232
238U	0.001	0.003	0.029	0.032	0.035	0.053	0.142

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FOBCP_INV-3_2021-06-17	RG_FOBCP_INV-4_2021-06-17	RG_FOBCP_INV-5_2021-06-17	RG_FOBKS_INV-1_2021-06-16	RG_FOBKS_INV-2_2021-06-16
		Lab ID	065	066	067	068	069
		Wet Weight (g)	0.3103	0.3107	0.4597	0.1986	0.2731
		Dry Weight (g)	0.0513	0.0635	0.1083	0.0525	0.0608
		Moisture (%)	83.5	79.6	76.4	73.6	77.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	2.2	1.2	0.918	1.9	4.5
11B	0.094	0.313	3.3	1.9	0.667	2.6	12
23Na	1.0	3.3	3,286	3,553	2,659	3,716	3,038
24Mg	0.034	0.113	1,947	1,676	1,719	1,829	2,107
27Al	0.525	1.8	1,779	1,658	544	3,397	15,759
31P	32	107	11,234	10,817	10,236	11,370	11,215
39K	8.1	27	12,678	11,547	10,361	12,873	15,303
44Ca	161	537	8,368	3,721	1,813	3,465	4,376
49Ti	0.561	1.9	187	114	46	197	1,221
51V	0.074	0.247	4.5	2.7	1.5	5.4	28
52Cr	1.7	5.7	32	17	9.9	54	190
55Mn	0.014	0.047	226	114	52	127	170
57Fe	2.3	7.7	1,440	846	570	1,911	6,618
59Co	0.007	0.023	14	14	14	14	18
60Ni	0.032	0.107	66	43	31	89	232
63Cu	0.013	0.043	19	22	20	19	23
66Zn	0.601	2.0	511	579	480	527	414
75As	0.471	1.6	1.4	1.4	0.704	1.2	2.3
77Se	0.374	1.2	6.8	6.1	7.7	5.7	5.7
88Sr	0.001	0.003	9.1	5.1	2.3	5.7	18
95Mo	0.001	0.003	0.553	0.688	0.314	0.987	1.9
107Ag	0.001	0.003	0.130	0.122	0.096	0.122	0.142
111Cd	0.082	0.277	11	12	7.9	7.9	6.7
118Sn	0.033	0.110	0.882	0.742	0.242	0.516	1.3
121Sb	0.005	0.017	0.099	0.050	0.033	0.094	0.369
137Ba	0.001	0.003	72	30	13	46	195
202Hg	0.034	0.113	0.042	0.053	0.039	0.049	<0.034
205Tl	0.001	0.003	0.065	0.054	0.039	0.082	0.162
208Pb	0.001	0.003	0.581	0.307	0.141	0.679	2.5
238U	0.001	0.003	0.140	0.145	0.051	0.099	0.457

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Parameter	DL (ppm)	LOQ (ppm)	RG_FOBKS_INV-3_2021-06-16	RG_FOBKS_INV-4_2021-06-16	RG_FOBKS_INV-5_2021-06-16	RG_FOBSC_INV-1_2021-06-17	RG_FOBSC_INV-2_2021-06-17
		Lab ID	070	071	072	073	074
		Wet Weight (g)	0.2284	0.3525	0.4861	0.4854	0.3747
		Dry Weight (g)	0.0524	0.0799	0.1148	0.1124	0.0850
		Moisture (%)	77.1	77.3	76.4	76.8	77.3
			(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	2.6	1.5	2.0	1.9	0.996
11B	0.094	0.313	4.3	1.8	2.9	4.3	2.1
23Na	1.0	3.3	3,275	3,389	4,317	3,501	2,877
24Mg	0.034	0.113	1,963	1,467	1,738	2,085	1,607
27Al	0.525	1.8	5,499	1,967	3,797	4,313	1,577
31P	32	107	12,221	10,239	11,200	11,884	11,169
39K	8.1	27	13,706	12,469	13,293	13,704	11,725
44Ca	161	537	5,199	2,969	3,545	4,372	3,140
49Ti	0.561	1.9	382	134	248	390	130
51V	0.074	0.247	9.0	3.3	7.6	7.6	2.8
52Cr	1.7	5.7	75	19	70	37	26
55Mn	0.014	0.047	139	100	101	129	116
57Fe	2.3	7.7	2,998	1,074	2,140	1,640	1,234
59Co	0.007	0.023	13	13	12	12	13
60Ni	0.032	0.107	123	38	102	72	55
63Cu	0.013	0.043	18	17	19	23	20
66Zn	0.601	2.0	423	461	493	466	464
75As	0.471	1.6	1.4	1.3	1.1	1.2	1.1
77Se	0.374	1.2	5.7	6.0	5.7	6.7	6.3
88Sr	0.001	0.003	8.6	4.5	6.1	7.8	4.8
95Mo	0.001	0.003	0.613	0.538	0.478	0.896	0.717
107Ag	0.001	0.003	0.146	0.134	0.152	0.126	0.098
111Cd	0.082	0.277	7.4	7.4	6.7	7.9	8.3
118Sn	0.033	0.110	1.0	1.2	0.771	0.601	0.512
121Sb	0.005	0.017	0.099	0.050	0.256	0.102	0.052
137Ba	0.001	0.003	82	35	61	67	38
202Hg	0.034	0.113	0.063	0.042	0.049	<0.034	0.046
205Tl	0.001	0.003	0.080	0.055	0.065	0.109	0.075
208Pb	0.001	0.003	0.930	0.415	0.957	0.753	0.335
238U	0.001	0.003	0.136	0.066	0.167	0.154	0.075

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

		Client ID	RG_FOBSC_INV-3_2021-06-17	RG_FOBSC_INV-4_2021-06-17	RG_FOBSC_INV-5_2021-06-17	RG_FODHE_INV-1_2021-06-14	RG_FODHE_INV-2_2021-06-14
		Lab ID	075	076	077	078	079
		Wet Weight (g)	0.2896	0.5457	0.5702	1.9744	0.6694
		Dry Weight (g)	0.0565	0.1205	0.1652	0.4874	0.1520
		Moisture (%)	80.5	77.9	71.0	75.3	77.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	1.6	1.3	1.2	0.664	0.320
11B	0.094	0.313	3.5	2.5	2.4	0.501	0.490
23Na	1.0	3.3	2,913	2,867	3,992	2,771	2,318
24Mg	0.034	0.113	1,801	1,673	1,947	1,773	1,954
27Al	0.525	1.8	3,198	2,542	2,517	403	445
31P	32	107	11,764	9,914	10,319	13,510	13,422
39K	8.1	27	11,911	10,333	11,433	8,869	8,090
44Ca	161	537	4,669	3,438	3,723	4,690	5,552
49Ti	0.561	1.9	238	195	206	26	25
51V	0.074	0.247	7.1	3.6	4.0	0.663	0.801
52Cr	1.7	5.7	37	12	14	4.1	6.5
55Mn	0.014	0.047	119	121	149	62	42
57Fe	2.3	7.7	2,306	1,148	1,282	266	364
59Co	0.007	0.023	17	24	28	0.769	1.2
60Ni	0.032	0.107	115	32	36	6.9	10
63Cu	0.013	0.043	25	27	28	16	15
66Zn	0.601	2.0	516	685	769	218	201
75As	0.471	1.6	1.4	0.935	0.855	1.1	1.0
77Se	0.374	1.2	6.5	5.6	6.8	4.4	3.3
88Sr	0.001	0.003	8.7	5.8	5.8	6.0	7.6
95Mo	0.001	0.003	0.652	0.554	0.489	0.375	0.310
107Ag	0.001	0.003	0.126	0.116	0.175	0.138	0.146
111Cd	0.082	0.277	9.5	9.3	13	1.2	2.0
118Sn	0.033	0.110	0.879	0.278	0.386	0.234	0.285
121Sb	0.005	0.017	0.068	0.063	0.073	0.016	0.016
137Ba	0.001	0.003	72	42	50	35	36
202Hg	0.034	0.113	<0.034	0.046	0.084	<0.034	<0.034
205Tl	0.001	0.003	0.098	0.098	0.137	0.025	0.027
208Pb	0.001	0.003	0.675	0.485	0.519	0.170	0.162
238U	0.001	0.003	0.110	0.099	0.153	0.029	0.026

Notes:

ppm = parts per million

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% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FODHE_INV-3_2021-06-14	RG_FODNGD_INV-1_2021-06-16	RG_FODNGD_INV-2_2021-06-16	RG_FODNGD_INV-3_2021-06-16	RG_FODPO_INV-1_2021-06-17
		Lab ID	080	081	082	083	084
		Wet Weight (g)	1.2776	1.2228	0.9496	1.2991	0.7532
		Dry Weight (g)	0.2596	0.2472	0.2320	0.2483	0.1368
		Moisture (%)	79.7	79.8	75.6	80.9	81.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.671	0.991	1.1	0.856	1.4
11B	0.094	0.313	0.980	0.779	0.294	0.566	2.0
23Na	1.0	3.3	2,728	3,740	3,190	2,961	2,496
24Mg	0.034	0.113	1,390	2,314	1,254	1,353	2,001
27Al	0.525	1.8	973	793	311	618	1,758
31P	32	107	11,653	13,583	11,473	9,154	11,573
39K	8.1	27	9,914	10,990	9,144	8,686	12,056
44Ca	161	537	2,317	5,531	4,008	2,715	4,631
49Ti	0.561	1.9	75	54	19	31	136
51V	0.074	0.247	1.4	1.4	0.624	0.983	3.1
52Cr	1.7	5.7	4.6	5.2	6.9	5.4	17
55Mn	0.014	0.047	79	81	27	40	184
57Fe	2.3	7.7	421	501	293	445	1,121
59Co	0.007	0.023	1.4	6.8	1.2	9.1	5.4
60Ni	0.032	0.107	8.3	16	12	22	34
63Cu	0.013	0.043	17	25	24	19	17
66Zn	0.601	2.0	225	515	162	503	311
75As	0.471	1.6	1.1	0.887	<0.471	0.764	0.869
77Se	0.374	1.2	5.0	6.5	3.7	6.2	6.0
88Sr	0.001	0.003	4.1	7.3	4.9	3.1	5.3
95Mo	0.001	0.003	0.407	0.391	0.234	0.284	0.535
107Ag	0.001	0.003	0.134	0.146	0.151	0.102	0.133
111Cd	0.082	0.277	2.8	6.4	1.0	6.1	4.6
118Sn	0.033	0.110	0.477	0.528	0.221	0.304	0.518
121Sb	0.005	0.017	0.031	0.031	0.022	0.028	0.055
137Ba	0.001	0.003	56	38	20	18	65
202Hg	0.034	0.113	0.034	0.046	<0.034	<0.034	<0.034
205Tl	0.001	0.003	0.041	0.088	0.014	0.047	0.039
208Pb	0.001	0.003	0.234	0.247	0.080	0.133	0.416
238U	0.001	0.003	0.043	0.173	0.014	0.091	0.085

Notes:

ppm = parts per million

DL = detection limit

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% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FODPO_INV-2_2021-06-17	RG_FODPO_INV-3_2021-06-17	RG_FODPO_INV-4_2021-06-17	RG_FODPO_INV-5_2021-06-17	RG_FOUCL_INV-1_2021-06-14
		Lab ID	085	086	087	088	089
		Wet Weight (g)	1.1893	0.9714	0.9641	0.8708	0.3451
		Dry Weight (g)	0.2801	0.2156	0.2124	0.2077	0.0819
		Moisture (%)	76.4	77.8	78.0	76.1	76.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	3.2	2.8	1.4	1.8	2.5
11B	0.094	0.313	6.9	5.6	2.5	3.8	3.4
23Na	1.0	3.3	3,058	1,967	2,523	2,750	2,376
24Mg	0.034	0.113	2,340	2,161	1,978	2,235	1,723
27Al	0.525	1.8	5,745	4,854	2,299	3,448	4,297
31P	32	107	11,176	10,085	9,771	10,191	10,192
39K	8.1	27	13,830	12,465	11,596	11,442	9,467
44Ca	161	537	6,413	5,963	3,435	4,392	5,848
49Ti	0.561	1.9	473	438	169	332	303
51V	0.074	0.247	8.9	7.9	3.8	5.7	7.7
52Cr	1.7	5.7	32	51	21	23	32
55Mn	0.014	0.047	414	366	182	304	124
57Fe	2.3	7.7	2,561	2,293	1,107	1,629	3,195
59Co	0.007	0.023	9.5	5.5	4.5	8.4	5.2
60Ni	0.032	0.107	62	78	37	44	53
63Cu	0.013	0.043	22	19	17	20	17
66Zn	0.601	2.0	421	275	247	444	258
75As	0.471	1.6	1.6	1.3	0.756	1.2	1.7
77Se	0.374	1.2	7.5	6.4	6.2	6.8	6.1
88Sr	0.001	0.003	11	8.5	5.1	6.6	8.1
95Mo	0.001	0.003	0.853	0.678	0.561	0.987	0.887
107Ag	0.001	0.003	0.160	0.142	0.116	0.138	0.120
111Cd	0.082	0.277	4.5	3.3	2.6	6.1	4.8
118Sn	0.033	0.110	0.670	0.618	0.380	0.362	0.960
121Sb	0.005	0.017	0.146	0.132	0.055	0.094	0.160
137Ba	0.001	0.003	156	132	60	77	81
202Hg	0.034	0.113	0.046	0.035	<0.034	<0.034	0.046
205Tl	0.001	0.003	0.101	0.093	0.038	0.067	0.071
208Pb	0.001	0.003	1.2	1.2	0.408	0.691	1.0
238U	0.001	0.003	0.252	0.194	0.088	0.151	0.149

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

		Client ID	RG_FOUCL_INV-2_2021-06-14	RG_FOUCL_INV-3_2021-06-14	RG_FOUEW_INV-1_2021-06-18	RG_FOUEW_INV-2_2021-06-18	RG_FOUEW_INV-3_2021-06-18
		Lab ID	090	091	092	093	094
		Wet Weight (g)	0.5141	0.3283	0.9459	0.9192	0.7182
		Dry Weight (g)	0.1541	0.0927	0.2853	0.2130	0.2058
		Moisture (%)	70.0	71.8	69.8	76.8	71.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.694	1.4	3.3	1.5	3.5
11B	0.094	0.313	1.3	3.0	8.0	2.9	11
23Na	1.0	3.3	2,556	3,858	3,485	4,217	2,803
24Mg	0.034	0.113	1,625	1,917	2,394	2,208	2,325
27Al	0.525	1.8	1,640	3,430	8,601	2,608	14,430
31P	32	107	11,317	12,754	12,646	12,887	11,318
39K	8.1	27	8,965	12,482	17,674	12,884	13,400
44Ca	161	537	4,243	3,728	4,522	3,579	5,292
49Ti	0.561	1.9	119	211	725	159	1,210
51V	0.074	0.247	3.3	6.6	13	3.6	25
52Cr	1.7	5.7	28	99	60	25	125
55Mn	0.014	0.047	47	105	231	125	202
57Fe	2.3	7.7	988	2,344	3,642	1,508	7,098
59Co	0.007	0.023	2.7	11	10	8.5	11
60Ni	0.032	0.107	41	148	95	53	197
63Cu	0.013	0.043	16	22	26	19	22
66Zn	0.601	2.0	203	330	409	383	334
75As	0.471	1.6	0.571	1.3	1.8	1.6	2.6
77Se	0.374	1.2	5.4	8.7	7.0	7.3	6.5
88Sr	0.001	0.003	6.8	7.0	11	5.4	15
95Mo	0.001	0.003	0.418	0.583	0.967	0.683	1.1
107Ag	0.001	0.003	0.120	0.142	0.146	0.102	0.130
111Cd	0.082	0.277	1.9	5.3	7.0	7.6	6.6
118Sn	0.033	0.110	0.490	0.822	0.812	0.371	0.778
121Sb	0.005	0.017	0.044	0.083	0.130	0.060	0.305
137Ba	0.001	0.003	47	67	163	60	191
202Hg	0.034	0.113	0.062	0.037	0.044	<0.034	0.037
205Tl	0.001	0.003	0.030	0.099	0.181	0.106	0.233
208Pb	0.001	0.003	0.316	0.656	1.6	0.591	2.7
238U	0.001	0.003	0.046	0.135	0.294	0.175	0.510

Notes:
ppm = parts per million
DL = detection limit
LOQ = limit of quantitation
< = less than detection limit
g = grams
% = percent

Parameter	DL (ppm)	LOQ (ppm)	RG_FOUEW_INV-4_2021-06-18	RG_FOUEW_INV-5_2021-06-18	RG_FOUKI_INV-1_2021-06-17	RG_FOUKI_INV-2_2021-06-17	RG_FOUKI_INV-3_2021-06-17
		Lab ID	095	096	097	098	099
		Wet Weight (g)	0.5578	0.6882	1.6323	2.3280	1.9195
		Dry Weight (g)	0.1594	0.1883	0.3776	0.5742	0.4331
		Moisture (%)	71.4	72.6	76.9	75.3	77.4
			(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	1.6	1.5	1.3	1.6	1.1
11B	0.094	0.313	3.9	1.9	0.981	1.0	0.730
23Na	1.0	3.3	3,291	4,703	3,434	4,013	3,715
24Mg	0.034	0.113	1,890	1,767	1,451	1,646	1,406
27Al	0.525	1.8	3,877	1,994	934	933	611
31P	32	107	12,098	12,268	11,204	12,686	10,100
39K	8.1	27	13,406	14,068	12,523	12,247	9,770
44Ca	161	537	3,998	2,986	2,060	2,783	2,250
49Ti	0.561	1.9	292	135	64	43	45
51V	0.074	0.247	6.1	3.4	1.5	1.4	0.992
52Cr	1.7	5.7	49	28	5.9	6.8	6.2
55Mn	0.014	0.047	137	62	84	104	101
57Fe	2.3	7.7	2,410	1,439	663	571	485
59Co	0.007	0.023	10	5.2	6.5	8.8	9.3
60Ni	0.032	0.107	90	46	18	20	21
63Cu	0.013	0.043	24	25	17	23	21
66Zn	0.601	2.0	401	316	374	347	473
75As	0.471	1.6	1.7	1.0	0.904	0.742	0.648
77Se	0.374	1.2	7.3	7.3	5.6	5.7	5.4
88Sr	0.001	0.003	7.4	4.3	3.0	3.5	2.9
95Mo	0.001	0.003	0.900	0.683	0.350	0.333	0.275
107Ag	0.001	0.003	0.126	0.142	0.102	0.120	0.095
111Cd	0.082	0.277	8.6	4.6	5.4	3.8	7.1
118Sn	0.033	0.110	0.771	0.950	0.433	0.347	0.213
121Sb	0.005	0.017	0.098	0.060	0.030	0.050	0.025
137Ba	0.001	0.003	75	43	34	35	22
202Hg	0.034	0.113	0.037	<0.034	<0.034	0.044	0.048
205Tl	0.001	0.003	0.094	0.070	0.055	0.073	0.070
208Pb	0.001	0.003	0.814	0.483	0.284	0.285	0.183
238U	0.001	0.003	0.157	0.084	0.052	0.042	0.045

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FOUKI_INV-4_2021-06-17	RG_FOUKI_INV-5_2021-06-17	RG_FOUNGD_INV-1_2021-06-15	RG_FOUNGD_INV-2_2021-06-15	RG_FOUNGD_INV-3_2021-06-15
		Lab ID	100	101	102	103	104
		Wet Weight (g)	1.6880	2.7160	0.1864	0.8069	0.7913
		Dry Weight (g)	0.4075	0.5971	0.0440	0.2386	0.2167
		Moisture (%)	75.9	78.0	76.4	70.4	72.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	1.0	1.3	2.0	0.580	0.891
11B	0.094	0.313	1.1	0.953	3.9	0.438	0.464
23Na	1.0	3.3	3,703	4,876	3,626	2,116	3,604
24Mg	0.034	0.113	1,986	2,043	1,130	1,421	1,263
27Al	0.525	1.8	941	1,099	4,235	376	237
31P	32	107	13,118	15,092	11,917	7,550	9,743
39K	8.1	27	11,509	12,266	11,790	6,498	9,797
44Ca	161	537	4,639	4,366	2,816	3,263	2,073
49Ti	0.561	1.9	57	59	265	22	16
51V	0.074	0.247	1.5	1.6	10	0.760	0.538
52Cr	1.7	5.7	4.1	5.6	38	2.9	3.6
55Mn	0.014	0.047	97	117	76	37	25
57Fe	2.3	7.7	543	660	1,718	265	214
59Co	0.007	0.023	12	9.9	3.6	5.6	3.3
60Ni	0.032	0.107	17	18	69	9.7	10
63Cu	0.013	0.043	18	22	16	17	19
66Zn	0.601	2.0	511	464	220	277	261
75As	0.471	1.6	0.641	0.530	0.666	0.547	0.530
77Se	0.374	1.2	4.6	6.3	7.1	5.2	5.4
88Sr	0.001	0.003	5.7	5.4	7.8	4.9	2.7
95Mo	0.001	0.003	0.363	0.345	0.898	0.242	0.207
107Ag	0.001	0.003	0.158	0.155	0.061	0.065	0.071
111Cd	0.082	0.277	6.0	5.3	2.3	3.2	2.9
118Sn	0.033	0.110	0.453	0.363	0.402	0.189	0.154
121Sb	0.005	0.017	0.039	0.047	0.110	0.017	0.017
137Ba	0.001	0.003	33	50	104	17	18
202Hg	0.034	0.113	<0.034	<0.034	0.049	<0.034	<0.034
205Tl	0.001	0.003	0.092	0.091	0.125	0.060	0.045
208Pb	0.001	0.003	0.237	0.306	0.864	0.139	0.097
238U	0.001	0.003	0.070	0.053	0.214	0.075	0.050

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FOUSH_INV-1_2021-06-15	RG_FOUSH_INV-2_2021-06-15	RG_FOUSH_INV-3_2021-06-15	RG_FRCP1SW_INV-1_2021-06-17	RG_FRCP1SW_INVLUM-1_2021-06-17
		Lab ID	105	106	107	108	109
		Wet Weight (g)	1.6348	1.1971	2.2846	0.9316	0.5417
		Dry Weight (g)	0.3543	0.2970	0.5216	0.1799	0.1541
		Moisture (%)	78.3	75.2	77.2	80.7	71.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	1.3	1.0	1.1	1.9	9.9
11B	0.094	0.313	1.4	1.5	1.0	1.9	26
23Na	1.0	3.3	3,811	3,301	3,827	3,286	4,174
24Mg	0.034	0.113	1,537	1,822	1,817	1,760	3,154
27Al	0.525	1.8	1,551	1,669	922	2,025	32,772
31P	32	107	11,784	11,572	11,967	11,086	9,708
39K	8.1	27	11,244	11,412	10,649	10,506	14,636
44Ca	161	537	3,922	6,246	3,381	3,133	10,405
49Ti	0.561	1.9	111	108	59	153	2,381
51V	0.074	0.247	2.8	2.7	1.7	3.2	51
52Cr	1.7	5.7	10	8.8	6.2	10	494
55Mn	0.014	0.047	67	80	75	76	322
57Fe	2.3	7.7	1,021	1,208	651	1,006	16,904
59Co	0.007	0.023	10	5.3	5.8	9.9	26
60Ni	0.032	0.107	24	23	18	25	801
63Cu	0.013	0.043	24	21	24	18	12
66Zn	0.601	2.0	411	301	288	534	523
75As	0.471	1.6	0.914	0.700	0.632	0.940	8.5
77Se	0.374	1.2	5.4	4.5	6.0	6.8	253
88Sr	0.001	0.003	5.5	7.4	4.5	5.2	34
95Mo	0.001	0.003	0.380	0.380	0.363	0.570	1.8
107Ag	0.001	0.003	0.141	0.181	0.147	0.092	2.2
111Cd	0.082	0.277	5.7	3.1	3.8	8.2	22
118Sn	0.033	0.110	0.564	0.402	0.229	0.635	1.1
121Sb	0.005	0.017	0.055	0.066	0.044	0.050	0.796
137Ba	0.001	0.003	42	52	33	42	412
202Hg	0.034	0.113	0.045	<0.034	<0.034	0.041	0.871
205Tl	0.001	0.003	0.077	0.064	0.072	0.097	0.603
208Pb	0.001	0.003	0.419	0.361	0.315	0.389	5.3
238U	0.001	0.003	0.067	0.081	0.061	0.085	1.5

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_FRCP1SW_INV-2_2021-06-17	RG_FRCP1SW_INVLUM-2_2021-06-17	RG_FRCP1SW_INV-3_2021-06-17	RG_FRCP1SW_INV-4_2021-06-17	RG_FRCP1SW_INV-5_2021-06-17
		Lab ID	110	111	112	113	114
		Wet Weight (g)	0.5134	0.9744	0.4488	0.8181	0.8936
		Dry Weight (g)	0.0934	0.3238	0.0944	0.1450	0.1598
		Moisture (%)	81.8	66.8	79.0	82.3	82.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	2.4	11	3.5	1.5	1.4
11B	0.094	0.313	6.2	39	8.7	2.3	1.3
23Na	1.0	3.3	2,961	2,216	2,361	3,372	3,136
24Mg	0.034	0.113	2,025	2,774	2,235	1,759	1,436
27Al	0.525	1.8	7,219	43,242	10,694	2,480	1,509
31P	32	107	12,469	5,101	10,544	11,831	10,559
39K	8.1	27	12,046	14,113	13,081	11,281	9,675
44Ca	161	537	4,697	9,578	6,068	3,163	2,670
49Ti	0.561	1.9	471	3,634	646	173	79
51V	0.074	0.247	14	80	17	4.0	2.1
52Cr	1.7	5.7	89	76	172	25	16
55Mn	0.014	0.047	130	263	196	117	55
57Fe	2.3	7.7	3,493	13,376	5,648	1,273	861
59Co	0.007	0.023	9.4	8.7	10	13	5.4
60Ni	0.032	0.107	158	173	262	45	32
63Cu	0.013	0.043	21	11	21	21	16
66Zn	0.601	2.0	404	329	410	670	376
75As	0.471	1.6	1.3	6.5	2.3	1.2	0.661
77Se	0.374	1.2	5.8	103	9.9	7.5	6.7
88Sr	0.001	0.003	11	36	14	5.0	3.6
95Mo	0.001	0.003	0.955	1.7	2.1	0.513	0.477
107Ag	0.001	0.003	0.122	0.639	0.131	0.140	0.113
111Cd	0.082	0.277	5.7	11	11	11	5.4
118Sn	0.033	0.110	1.0	1.2	1.5	0.929	0.616
121Sb	0.005	0.017	0.168	1.0	0.278	0.058	0.039
137Ba	0.001	0.003	118	445	155	45	27
202Hg	0.034	0.113	0.038	0.397	<0.034	0.034	<0.034
205Tl	0.001	0.003	0.155	0.786	0.271	0.103	0.064
208Pb	0.001	0.003	1.1	6.7	2.0	0.452	0.269
238U	0.001	0.003	0.199	1.2	0.267	0.093	0.054

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

		Client ID	RG_FRUPO_INV-1_2021-06-18	RG_FRUPO_INV-2_2021-06-18	RG_FRUPO_INV-3_2021-06-18	RG_FRUPO_INV-4_2021-06-18	RG_FRUPO_INV-5_2021-06-18
		Lab ID	115	116	117	118	119
		Wet Weight (g)	0.3929	0.8896	0.5002	0.4611	0.3817
		Dry Weight (g)	0.0911	0.1670	0.1049	0.0972	0.0883
		Moisture (%)	76.8	81.2	79.0	78.9	76.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	2.0	1.3	1.9	2.0	1.2
11B	0.094	0.313	4.0	2.0	5.6	5.1	3.3
23Na	1.0	3.3	3,328	3,045	2,556	3,775	2,836
24Mg	0.034	0.113	1,911	1,714	2,132	1,952	2,215
27Al	0.525	1.8	4,714	2,055	4,745	4,529	2,625
31P	32	107	10,852	10,644	11,580	11,084	10,857
39K	8.1	27	12,124	10,946	11,193	12,489	11,154
44Ca	161	537	4,021	3,851	5,656	4,242	4,303
49Ti	0.561	1.9	378	121	388	361	219
51V	0.074	0.247	7.6	3.2	9.0	7.3	4.6
52Cr	1.7	5.7	67	18	61	35	26
55Mn	0.014	0.047	115	125	262	198	99
57Fe	2.3	7.7	2,468	931	2,764	1,825	1,828
59Co	0.007	0.023	16	7.3	11	13	14
60Ni	0.032	0.107	126	38	106	69	65
63Cu	0.013	0.043	19	17	20	22	23
66Zn	0.601	2.0	550	361	360	457	504
75As	0.471	1.6	1.6	0.678	1.5	1.2	1.4
77Se	0.374	1.2	8.1	6.7	6.3	7.1	6.6
88Sr	0.001	0.003	7.5	4.5	10	6.5	6.1
95Mo	0.001	0.003	0.743	0.460	0.941	0.613	0.746
107Ag	0.001	0.003	0.108	0.104	0.113	0.151	0.104
111Cd	0.082	0.277	12	5.7	9.1	9.2	9.9
118Sn	0.033	0.110	0.856	0.792	1.2	0.657	0.529
121Sb	0.005	0.017	0.116	0.058	0.120	0.114	0.114
137Ba	0.001	0.003	74	43	153	91	61
202Hg	0.034	0.113	0.046	<0.034	<0.034	0.034	0.043
205Tl	0.001	0.003	0.134	0.074	0.086	0.091	0.067
208Pb	0.001	0.003	0.827	0.392	0.956	0.911	0.704
238U	0.001	0.003	0.149	0.088	0.214	0.229	0.203

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_HENUP_INV-1_2021-06-16	RG_HENUP_INV-2_2021-06-16	RG_HENUP_INV-3_2021-06-16	RG_MP1_INV-1_2021-06-14	RG_MP1_INV-2_2021-06-14
		Lab ID	120	121	122	123	124
		Wet Weight (g)	2.2900	1.5929	0.9322	0.4975	0.5035
		Dry Weight (g)	0.3569	0.2787	0.1493	0.1288	0.1379
		Moisture (%)	84.4	82.5	84.0	74.1	72.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.278	0.399	0.377	0.972	0.880
11B	0.094	0.313	0.223	0.390	0.335	1.6	1.2
23Na	1.0	3.3	3,869	3,571	3,067	3,219	4,190
24Mg	0.034	0.113	1,837	2,000	1,437	1,717	2,274
27Al	0.525	1.8	229	392	348	1,683	1,287
31P	32	107	13,260	13,295	9,843	9,926	13,211
39K	8.1	27	9,762	9,271	7,936	9,842	12,101
44Ca	161	537	5,657	6,239	4,446	2,616	2,632
49Ti	0.561	1.9	12	20	13	111	97
51V	0.074	0.247	0.478	0.557	0.540	3.4	2.9
52Cr	1.7	5.7	6.6	4.2	7.1	14	19
55Mn	0.014	0.047	14	21	11	85	77
57Fe	2.3	7.7	216	241	240	988	899
59Co	0.007	0.023	0.474	0.355	0.479	17	17
60Ni	0.032	0.107	11	6.7	11	38	43
63Cu	0.013	0.043	11	12	10	22	23
66Zn	0.601	2.0	248	348	249	543	614
75As	0.471	1.6	0.632	0.772	<0.471	1.1	1.2
77Se	0.374	1.2	5.1	5.2	4.8	6.2	9.7
88Sr	0.001	0.003	11	9.8	7.6	4.6	4.3
95Mo	0.001	0.003	0.249	0.275	0.213	0.426	0.426
107Ag	0.001	0.003	0.080	0.080	0.071	0.116	0.123
111Cd	0.082	0.277	0.804	1.3	0.775	9.7	10
118Sn	0.033	0.110	0.577	0.481	0.557	0.697	0.685
121Sb	0.005	0.017	0.012	0.012	0.012	0.060	0.054
137Ba	0.001	0.003	10	16	8.4	40	37
202Hg	0.034	0.113	<0.034	0.034	<0.034	0.051	0.068
205Tl	0.001	0.003	0.019	0.024	0.018	0.082	0.099
208Pb	0.001	0.003	0.087	0.097	0.084	0.415	0.352
238U	0.001	0.003	0.027	0.035	0.023	0.137	0.128

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

		Client ID	RG_MP1_INV-3_2021-06-14	RG_SCOUTDS_INV-1_2021-06-16	RG_SCOUTDS_INV-2_2021-06-16	RG_SCOUTDS_INV-3_2021-06-16	RG_SCOUTDS_INV-4_2021-06-16
		Lab ID	125	126	127	128	129
		Wet Weight (g)	0.5664	0.5796	0.3807	0.2745	0.1257
		Dry Weight (g)	0.1482	0.1786	0.0871	0.0734	0.0299
		Moisture (%)	73.8	69.2	77.1	73.3	76.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	1.6	0.934	2.1	0.852	2.0
11B	0.094	0.313	1.5	0.617	4.6	1.4	4.4
23Na	1.0	3.3	4,153	3,145	3,806	2,948	2,921
24Mg	0.034	0.113	2,303	1,406	2,057	1,890	1,886
27Al	0.525	1.8	1,384	526	5,150	1,304	4,345
31P	32	107	15,294	11,196	12,009	11,430	10,539
39K	8.1	27	14,724	11,887	13,308	9,928	10,913
44Ca	161	537	3,805	1,627	4,969	2,390	5,700
49Ti	0.561	1.9	99	36	374	122	416
51V	0.074	0.247	2.5	0.728	7.2	2.7	8.0
52Cr	1.7	5.7	10	4.7	46	17	114
55Mn	0.014	0.047	99	65	145	85	137
57Fe	2.3	7.7	721	374	2,005	1,267	3,513
59Co	0.007	0.023	12	5.3	16	17	13
60Ni	0.032	0.107	32	12	82	39	211
63Cu	0.013	0.043	20	16	21	18	18
66Zn	0.601	2.0	482	375	627	699	418
75As	0.471	1.6	1.1	0.509	1.5	0.829	0.973
77Se	0.374	1.2	13	6.8	5.8	5.2	6.7
88Sr	0.001	0.003	6.5	3.2	8.8	3.7	8.6
95Mo	0.001	0.003	0.619	0.398	0.516	0.546	0.664
107Ag	0.001	0.003	0.116	0.107	0.140	0.097	0.097
111Cd	0.082	0.277	6.7	3.9	9.6	8.7	5.2
118Sn	0.033	0.110	0.714	0.207	1.1	0.398	1.1
121Sb	0.005	0.017	0.072	0.039	0.110	0.047	0.165
137Ba	0.001	0.003	97	22	81	41	83
202Hg	0.034	0.113	0.047	<0.034	0.040	0.037	0.037
205Tl	0.001	0.003	0.076	0.045	0.138	0.086	0.076
208Pb	0.001	0.003	0.412	0.166	0.736	0.256	0.735
238U	0.001	0.003	0.107	0.033	0.210	0.080	0.196

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SCOUTDS_INV-5_2021-06-16	RG_UFR1_INV-1_2021-06-15	RG_UFR1_INV-2_2021-06-15	RG_UFR1_INV-3_2021-06-15	RG_UFR1_INV-4_2021-06-15
		Lab ID	130	131	132	133	134
		Wet Weight (g)	0.2803	1.2966	1.2200	1.1612	1.4657
		Dry Weight (g)	0.0851	0.2868	0.2964	0.2140	0.3060
		Moisture (%)	69.6	77.9	75.7	81.6	79.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	5.4	0.490	0.272	0.474	0.233
11B	0.094	0.313	17	1.5	1.0	1.7	0.868
23Na	1.0	3.3	3,165	3,253	3,046	3,426	2,516
24Mg	0.034	0.113	2,241	2,233	1,992	1,522	1,869
27Al	0.525	1.8	16,853	1,384	785	1,587	630
31P	32	107	9,539	12,987	13,229	10,913	12,436
39K	8.1	27	13,854	10,721	11,465	10,358	9,754
44Ca	161	537	5,161	5,575	4,764	2,662	5,155
49Ti	0.561	1.9	1,662	80	44	109	39
51V	0.074	0.247	29	2.1	1.3	2.6	0.971
52Cr	1.7	5.7	147	9.2	7.8	14	7.1
55Mn	0.014	0.047	184	51	56	49	43
57Fe	2.3	7.7	7,751	645	453	790	351
59Co	0.007	0.023	18	1.4	1.2	1.7	0.632
60Ni	0.032	0.107	238	14	13	23	12
63Cu	0.013	0.043	25	17	15	16	13
66Zn	0.601	2.0	490	229	196	209	166
75As	0.471	1.6	3.0	1.7	1.4	1.5	1.1
77Se	0.374	1.2	6.5	3.9	2.9	4.9	3.1
88Sr	0.001	0.003	19	9.6	7.4	5.0	6.7
95Mo	0.001	0.003	2.3	0.398	0.398	0.406	0.398
107Ag	0.001	0.003	0.124	0.155	0.103	0.136	0.132
111Cd	0.082	0.277	8.9	2.8	1.6	2.6	1.2
118Sn	0.033	0.110	1.5	0.474	0.952	0.701	0.355
121Sb	0.005	0.017	0.457	0.050	0.033	0.041	0.033
137Ba	0.001	0.003	236	66	58	50	55
202Hg	0.034	0.113	0.062	0.034	<0.034	0.040	0.037
205Tl	0.001	0.003	0.237	0.027	0.023	0.032	0.020
208Pb	0.001	0.003	3.3	0.263	0.238	0.329	0.174
238U	0.001	0.003	0.749	0.048	0.038	0.064	0.030

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_UFR1_INV-5_2021-06-15
		Lab ID	135
		Wet Weight (g)	1.1600
		Dry Weight (g)	0.2652
		Moisture (%)	77.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)
7Li	0.007	0.023	0.277
11B	0.094	0.313	0.822
23Na	1.0	3.3	3,375
24Mg	0.034	0.113	2,042
27Al	0.525	1.8	682
31P	32	107	13,683
39K	8.1	27	10,875
44Ca	161	537	4,568
49Ti	0.561	1.9	50
51V	0.074	0.247	1.2
52Cr	1.7	5.7	5.7
55Mn	0.014	0.047	31
57Fe	2.3	7.7	343
59Co	0.007	0.023	0.904
60Ni	0.032	0.107	8.9
63Cu	0.013	0.043	14
66Zn	0.601	2.0	238
75As	0.471	1.6	1.3
77Se	0.374	1.2	3.4
88Sr	0.001	0.003	7.2
95Mo	0.001	0.003	0.398
107Ag	0.001	0.003	0.112
111Cd	0.082	0.277	1.6
118Sn	0.033	0.110	0.385
121Sb	0.005	0.017	0.028
137Ba	0.001	0.003	46
202Hg	0.034	0.113	<0.034
205Tl	0.001	0.003	0.025
208Pb	0.001	0.003	0.161
238U	0.001	0.003	0.039

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_FO22_INV-1_2021-06-18			RG_FOBSC_INV-1_2021-06-17			RG_FOUCL_INV-3_2021-06-14		
Lab ID		055			073			091		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	3.6	3.5	2.8	1.9	1.8	5.4	1.4	1.6	13
11B	0.094	7.6	6.7	13	4.3	4.2	2.4	3.0	3.4	13
23Na	1.0	3,140	3,529	12	3,501	3,492	0.3	3,858	3,853	0.1
24Mg	0.034	2,770	2,823	1.9	2,085	1,924	8.0	1,917	2,059	7.1
27Al	0.525	7,291	7,564	3.7	4,313	4,746	9.6	3,430	4,112	18
31P	32	12,936	13,873	7.0	11,884	11,997	0.9	12,754	13,277	4.0
39K	8.1	15,645	16,560	5.7	13,704	13,953	1.8	12,482	13,192	5.5
44Ca	161	6,128	6,355	3.6	4,372	4,474	2.3	3,728	4,463	18
49Ti	0.561	519	588	13	390	438	12	211	270	25
51V	0.074	9.4	11	16	7.6	7.9	3.9	6.6	6.6	0.0
52Cr	1.7	39	54	32	37	40	7.8	99	75	28
55Mn	0.014	221	290	27	129	119	8.1	105	125	17
57Fe	2.3	3,254	3,318	1.9	1,640	1,923	16	2,344	2,478	5.6
59Co	0.007	5.5	5.4	1.8	12	12	0.0	11	12	8.7
60Ni	0.032	65	78	18	72	73	1.4	148	122	19
63Cu	0.013	24	24	0.0	23	22	4.4	22	24	8.7
66Zn	0.601	370	357	3.6	466	472	1.3	330	348	5.3
75As	0.471	1.5	1.5	-	1.2	1.4	-	1.3	1.2	-
77Se	0.374	9.6	10	4.1	6.7	6.2	7.8	8.7	8.4	3.5
88Sr	0.001	9.1	10	9.4	7.8	8.3	6.2	7.0	8.3	17
95Mo	0.001	0.993	1.1	10	0.896	0.994	10	0.583	0.667	13
107Ag	0.001	0.166	0.179	7.5	0.126	0.134	6.2	0.142	0.142	0.0
111Cd	0.082	4.1	4.0	2.5	7.9	7.2	9.3	5.3	6.0	12
118Sn	0.033	0.967	0.939	2.9	0.601	0.613	2.0	0.822	0.853	3.7
121Sb	0.005	0.145	0.185	24	0.102	0.089	14	0.083	0.078	6.2
137Ba	0.001	142	195	32	67	80	18	67	77	14
202Hg	0.034	0.051	0.041	-	<0.034	0.050	-	0.037	0.037	-
205Tl	0.001	0.088	0.116	28	0.109	0.109	0.0	0.099	0.122	21
208Pb	0.001	1.4	1.8	25	0.753	0.811	7.4	0.656	0.705	7.2
238U	0.001	0.204	0.243	17	0.154	0.143	7.4	0.135	0.191	34

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_FOUKI_INV-4_2021-06-17			RG_FRCP1SW_INVLUM-1_2021-06-17			RG_FRCP1SW_INV-4_2021-06-17		
Lab ID		100			109			113		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	1.0	0.869	14	9.9	9.9	0.0	1.5	1.5	0.0
11B	0.094	1.1	1.2	8.7	26	26	0.0	2.3	2.5	8.3
23Na	1.0	3,703	3,462	6.7	4,174	3,928	6.1	3,372	3,560	5.4
24Mg	0.034	1,986	1,702	15	3,154	3,272	3.7	1,759	1,812	3.0
27Al	0.525	941	938	0.3	32,772	32,013	2.3	2,480	2,889	15
31P	32	13,118	11,556	13	9,708	9,617	0.9	11,831	12,194	3.0
39K	8.1	11,509	9,946	15	14,636	14,218	2.9	11,281	12,488	10
44Ca	161	4,639	3,982	15	10,405	9,637	7.7	3,163	3,193	0.9
49Ti	0.561	57	67	16	2,381	2,469	3.6	173	176	1.7
51V	0.074	1.5	1.5	0.0	51	58	13	4.0	4.3	7.2
52Cr	1.7	4.1	4.6	-	494	486	1.6	25	25	0.0
55Mn	0.014	97	98	1.0	322	290	11	117	130	11
57Fe	2.3	543	585	7.4	16,904	17,643	4.3	1,273	1,409	10
59Co	0.007	12	11	8.7	26	27	3.8	13	12	8.0
60Ni	0.032	17	18	5.7	801	791	1.3	45	47	4.3
63Cu	0.013	18	18	0.0	12	12	0.0	21	21	0.0
66Zn	0.601	511	482	5.8	523	518	1.0	670	652	2.7
75As	0.471	0.641	0.752	-	8.5	8.2	3.6	1.2	1.1	-
77Se	0.374	4.6	4.8	4.3	253	247	2.4	7.5	8.0	6.5
88Sr	0.001	5.7	4.7	19	34	36	5.7	5.0	5.2	3.9
95Mo	0.001	0.363	0.328	10	1.8	1.8	0.0	0.513	0.637	22
107Ag	0.001	0.158	0.122	26	2.2	2.4	8.7	0.140	0.124	12
111Cd	0.082	6.0	5.3	12	22	20	9.5	11	9.5	15
118Sn	0.033	0.453	0.532	16	1.1	1.2	8.7	0.929	1.0	7.4
121Sb	0.005	0.039	0.044	-	0.796	0.757	5.0	0.058	0.065	11
137Ba	0.001	33	33	0.0	412	478	15	45	46	2.2
202Hg	0.034	<0.034	<0.034	-	0.871	0.837	4.0	0.034	0.034	-
205Tl	0.001	0.092	0.082	12	0.603	0.592	1.8	0.103	0.126	20
208Pb	0.001	0.237	0.246	3.7	5.3	4.9	7.8	0.452	0.527	15
238U	0.001	0.070	0.063	11	1.5	1.6	6.5	0.093	0.097	4.2

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_HENUP_INV-2_2021-06-16			RG_MP1_INV-3_2021-06-14			RG_UFR1_INV-1_2021-06-15		
Lab ID		121			125			131		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	0.399	0.568	35	1.6	1.4	13	0.490	0.338	37
11B	0.094	0.390	0.474	-	1.5	1.6	6.5	1.5	1.3	14
23Na	1.0	3,571	3,320	7.3	4,153	3,562	15	3,253	2,974	9.0
24Mg	0.034	2,000	1,721	15	2,303	2,045	12	2,233	2,419	8.0
27Al	0.525	392	535	31	1,384	1,423	2.8	1,384	995	33
31P	32	13,295	11,376	16	15,294	12,862	17	12,987	14,694	12
39K	8.1	9,271	8,351	10	14,724	12,655	15	10,721	10,240	4.6
44Ca	161	6,239	5,392	15	3,805	4,282	12	5,575	6,674	18
49Ti	0.561	20	24	18	99	99	0.0	80	74	7.8
51V	0.074	0.557	0.689	-	2.5	2.4	4.1	2.1	1.6	27
52Cr	1.7	4.2	4.2	-	10	14	-	9.2	7.3	-
55Mn	0.014	21	22	4.7	99	114	14	51	51	0.0
57Fe	2.3	241	264	9.1	721	844	16	645	515	22
59Co	0.007	0.355	0.387	8.6	12	12	0.0	1.4	1.5	6.9
60Ni	0.032	6.7	7.2	7.2	32	36	12	14	13	7.4
63Cu	0.013	12	11	8.7	20	19	5.1	17	16	6.1
66Zn	0.601	348	314	10	482	537	11	229	248	8.0
75As	0.471	0.772	0.728	-	1.1	0.943	-	1.7	1.6	-
77Se	0.374	5.2	4.5	14	13	11	17	3.9	3.6	-
88Sr	0.001	9.8	9.5	3.1	6.5	7.5	14	9.6	9.8	2.1
95Mo	0.001	0.275	0.320	15	0.619	0.627	1.3	0.398	0.383	3.8
107Ag	0.001	0.080	0.083	3.7	0.116	0.101	14	0.155	0.138	12
111Cd	0.082	1.3	1.3	0.0	6.7	7.4	9.9	2.8	2.1	29
118Sn	0.033	0.481	0.617	25	0.714	0.724	1.4	0.474	0.550	15
121Sb	0.005	0.012	0.012	-	0.072	0.072	0.0	0.050	0.044	-
137Ba	0.001	16	14	13	97	118	20	66	59	11
202Hg	0.034	0.034	<0.034	-	0.047	0.056	-	0.034	<0.034	-
205Tl	0.001	0.024	0.026	8.0	0.076	0.072	5.4	0.027	0.032	17
208Pb	0.001	0.097	0.113	15	0.412	0.375	9.4	0.263	0.253	3.9
238U	0.001	0.035	0.040	13	0.107	0.128	18	0.048	0.052	8.0

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	01			02		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	113	6.2	1.3	110	6.2
11B	0.094	4.5	5.3	117	1.6	4.9	108	1.4
23Na	1.0	14,000	16,637	119	5.5	15,396	110	2.5
24Mg	0.034	910	1,069	118	6.5	1,028	113	3.0
27Al	0.525	197.2	231	117	4.8	209	106	2.4
31P	32	8,000	9,416	118	7.1	8,462	106	3.7
39K	8.1	15,500	18,410	119	7.5	17,050	110	2.7
44Ca	161	2,360	2,620	111	8.8	2,572	109	2.5
49Ti	0.561	12.24	15	123	6.9	12	101	2.8
51V	0.074	1.57	1.9	123	11	1.7	110	8.0
52Cr	1.7	1.87	1.6	85	17	2.1	114	19
55Mn	0.014	3.17	3.7	117	6.4	3.6	113	4.6
57Fe	2.3	343	409	119	5.9	382	111	3.3
59Co	0.007	0.25	0.314	126	5.9	0.286	115	3.2
60Ni	0.032	1.34	1.7	124	8.9	1.5	112	2.8
63Cu	0.013	15.7	19	119	6.6	18	115	3.9
66Zn	0.601	51.6	62	120	4.5	56	109	3.3
75As	0.471	6.87	7.7	113	5.7	7.2	105	1.0
77Se	0.374	3.45	3.8	110	6.5	3.5	101	4.9
88Sr	0.001	10.1	12	115	6.3	11	112	3.2
95Mo	0.001	0.29	0.333	115	5.5	0.332	114	3.8
107Ag	0.001	0.0252	0.031	122	12	0.031	123	11
111Cd	0.082	0.299	0.344	115	13	0.373	125	5.4
118Sn	0.033	0.061	0.076	125	12	0.068	112	11
121Sb	0.005	0.011	0.014	127	16	0.012	110	20
137Ba	0.001	8.6	9.6	112	3.2	9.2	107	1.2
202Hg	0.034	0.412	0.438	106	11	0.427	104	6.4
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.475	118	17	0.425	105	12
238U	0.001	0.05	0.056	113	11	0.052	104	8.1

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	03			04		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.2	103	11	1.3	108	6.0
11B	0.094	4.5	5.0	110	2.1	4.6	102	2.1
23Na	1.0	14,000	15,338	110	2.6	14,302	102	3.0
24Mg	0.034	910	997	110	3.5	938	103	3.4
27Al	0.525	197.2	226	114	3.1	184	94	3.2
31P	32	8,000	8,626	108	2.4	8,110	101	2.2
39K	8.1	15,500	16,679	108	2.7	16,520	107	2.6
44Ca	161	2,360	2,591	110	3.4	2,419	102	2.1
49Ti	0.561	12.24	15	119	12	12	95	7.6
51V	0.074	1.57	1.7	110	7.3	1.5	97	11
52Cr	1.7	1.87	1.9	99	14	2.1	111	11
55Mn	0.014	3.17	3.4	107	1.4	3.3	103	3.2
57Fe	2.3	343	378	110	3.0	350	102	3.1
59Co	0.007	0.25	0.273	109	5.5	0.260	104	4.2
60Ni	0.032	1.34	1.5	109	3.5	1.4	104	4.4
63Cu	0.013	15.7	18	113	3.2	16	104	3.0
66Zn	0.601	51.6	56	109	3.3	53	104	1.6
75As	0.471	6.87	7.2	105	2.6	6.9	100	1.4
77Se	0.374	3.45	3.7	106	1.5	3.6	103	4.9
88Sr	0.001	10.1	11	106	1.2	10	102	2.5
95Mo	0.001	0.29	0.316	109	5.9	0.298	103	4.7
107Ag	0.001	0.0252	0.025	100	14	0.028	113	8.6
111Cd	0.082	0.299	0.308	103	9.8	0.331	111	12
118Sn	0.033	0.061	0.060	99	15	0.063	103	17
121Sb	0.005	0.011	0.010	95	0.0	0.012	105	11
137Ba	0.001	8.6	9.3	108	2.8	8.4	98	1.1
202Hg	0.034	0.412	0.449	109	5.3	0.415	101	4.9
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.432	107	18	0.422	104	15
238U	0.001	0.05	0.055	110	9.0	0.049	97	7.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	05			06		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	109	6.7	1.2	100	4.7
11B	0.094	4.5	5.0	110	1.1	4.8	108	2.0
23Na	1.0	14,000	15,677	112	2.4	14,235	102	3.6
24Mg	0.034	910	1,002	110	2.8	909	100	2.9
27Al	0.525	197.2	219	111	6.3	199	101	8.4
31P	32	8,000	8,212	103	1.5	8,041	100	2.2
39K	8.1	15,500	16,490	106	1.6	15,917	103	4.3
44Ca	161	2,360	2,499	106	1.9	2,361	100	1.9
49Ti	0.561	12.24	15	121	12	12	100	6.3
51V	0.074	1.57	1.6	99	15	1.6	101	5.5
52Cr	1.7	1.87	1.7	92	19	1.9	103	14
55Mn	0.014	3.17	3.5	111	3.0	3.2	102	1.8
57Fe	2.3	343	377	110	3.6	346	101	2.5
59Co	0.007	0.25	0.288	115	6.1	0.264	106	2.9
60Ni	0.032	1.34	1.5	112	4.2	1.4	104	4.6
63Cu	0.013	15.7	17	109	4.9	16	103	5.4
66Zn	0.601	51.6	58	112	3.8	52	100	2.2
75As	0.471	6.87	7.2	104	2.3	6.8	99	1.5
77Se	0.374	3.45	3.6	104	5.2	3.4	99	4.3
88Sr	0.001	10.1	12	115	4.5	10	103	2.9
95Mo	0.001	0.29	0.310	107	2.9	0.300	104	5.1
107Ag	0.001	0.0252	0.026	103	12	0.027	107	8.6
111Cd	0.082	0.299	0.345	116	6.0	0.311	104	5.7
118Sn	0.033	0.061	0.058	95	20	0.068	112	6.7
121Sb	0.005	0.011	0.010	91	0.0	0.012	110	20
137Ba	0.001	8.6	9.2	107	3.9	9.0	105	1.9
202Hg	0.034	0.412	0.448	109	6.3	0.454	110	2.5
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.373	92	15	0.446	110	7.8
238U	0.001	0.05	0.048	95	5.9	0.056	112	11

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

		Sample Group ID	07			08		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	109	7.0	1.1	94	6.8
11B	0.094	4.5	4.8	107	2.3	4.6	101	2.6
23Na	1.0	14,000	14,872	106	4.5	13,909	99	2.8
24Mg	0.034	910	971	107	3.1	907	100	4.5
27Al	0.525	197.2	210	107	6.6	195	99	5.0
31P	32	8,000	7,934	99	3.3	8,192	102	4.2
39K	8.1	15,500	16,270	105	4.8	15,663	101	3.0
44Ca	161	2,360	2,420	102	3.4	2,377	101	2.6
49Ti	0.561	12.24	12	99	2.8	13	109	10
51V	0.074	1.57	1.6	104	6.0	1.7	110	7.2
52Cr	1.7	1.87	1.9	100	7.2	2.2	117	7.0
55Mn	0.014	3.17	3.3	103	4.6	3.2	102	4.9
57Fe	2.3	343	352	103	2.9	352	103	3.8
59Co	0.007	0.25	0.253	101	4.7	0.265	106	4.8
60Ni	0.032	1.34	1.4	105	3.5	1.4	104	1.5
63Cu	0.013	15.7	16	102	2.0	17	108	2.4
66Zn	0.601	51.6	52	102	1.9	54	104	1.2
75As	0.471	6.87	6.9	101	1.6	6.9	101	1.6
77Se	0.374	3.45	3.6	105	3.8	3.4	98	5.5
88Sr	0.001	10.1	10	100	2.1	10	101	4.3
95Mo	0.001	0.29	0.297	102	5.0	0.291	100	3.3
107Ag	0.001	0.0252	0.027	107	0.0	0.026	105	16
111Cd	0.082	0.299	0.306	102	7.2	0.374	125	10
118Sn	0.033	0.061	0.069	113	13	0.064	105	18
121Sb	0.005	0.011	0.013	118	0.0	0.011	102	13
137Ba	0.001	8.6	8.7	101	2.3	8.9	103	1.4
202Hg	0.034	0.412	0.385	94	1.9	0.462	112	4.0
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.391	97	14	0.478	118	6.4
238U	0.001	0.05	0.049	99	5.3	0.054	109	4.9

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

Sample Group ID: 09

Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	111	2.9
11B	0.094	4.5	5.2	115	1.6
23Na	1.0	14,000	15,249	109	5.4
24Mg	0.034	910	1,019	112	4.3
27Al	0.525	197.2	207	105	6.2
31P	32	8,000	8,793	110	4.0
39K	8.1	15,500	16,902	109	4.7
44Ca	161	2,360	2,621	111	1.4
49Ti	0.561	12.24	13	107	5.7
51V	0.074	1.57	1.8	116	3.0
52Cr	1.7	1.87	2.0	109	1.7
55Mn	0.014	3.17	3.6	113	4.0
57Fe	2.3	343	384	112	4.7
59Co	0.007	0.25	0.287	115	5.5
60Ni	0.032	1.34	1.6	116	2.1
63Cu	0.013	15.7	17	111	4.0
66Zn	0.601	51.6	59	114	2.3
75As	0.471	6.87	7.6	110	3.3
77Se	0.374	3.45	3.8	110	2.1
88Sr	0.001	10.1	11	108	4.6
95Mo	0.001	0.29	0.319	110	4.1
107Ag	0.001	0.0252	0.029	117	12
111Cd	0.082	0.299	0.353	118	11
118Sn	0.033	0.061	0.058	95	14
121Sb	0.005	0.011	0.013	115	19
137Ba	0.001	8.6	10	118	7.3
202Hg	0.034	0.412	0.463	112	6.1
205Tl	0.001	0.0013	-	-	-
208Pb	0.001	0.404	0.434	108	3.3
238U	0.001	0.05	0.054	108	8.9

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_FO22_INV-1_2021-06-18	055	12 Jul 2021
	RG_FO22_INV-2_2021-06-18	056	
	RG_FO22_INV-3_2021-06-18	057	
	RG_FO22_INV-4_2021-06-18	058	
	RG_FO22_INV-5_2021-06-18	059	
	RG_FO26_INV-1_2021-06-14	060	
	RG_FO26_INV-2_2021-06-14	061	
	RG_FO26_INV-3_2021-06-14	062	
	RG_FOBCP_INV-1_2021-06-17	063	
02	RG_FOBCP_INV-2_2021-06-17	064	12 Jul 2021
	RG_FOBCP_INV-3_2021-06-17	065	
	RG_FOBCP_INV-4_2021-06-17	066	
	RG_FOBCP_INV-5_2021-06-17	067	
	RG_FOBKS_INV-1_2021-06-16	068	
	RG_FOBKS_INV-2_2021-06-16	069	
	RG_FOBKS_INV-3_2021-06-16	070	
	RG_FOBKS_INV-4_2021-06-16	071	
	RG_FOBKS_INV-5_2021-06-16	072	
03	RG_FOBSC_INV-1_2021-06-17	073	12 Jul 2021
	RG_FOBSC_INV-2_2021-06-17	074	
	RG_FOBSC_INV-3_2021-06-17	075	
	RG_FOBSC_INV-4_2021-06-17	076	
	RG_FOBSC_INV-5_2021-06-17	077	
	RG_FODHE_INV-1_2021-06-14	078	
	RG_FODHE_INV-2_2021-06-14	079	
	RG_FODHE_INV-3_2021-06-14	080	
	RG_FODNGD_INV-1_2021-06-16	081	
04	RG_FODNGD_INV-2_2021-06-16	082	12 Jul 2021
	RG_FODNGD_INV-3_2021-06-16	083	
	RG_FODPO_INV-1_2021-06-17	084	
	RG_FODPO_INV-2_2021-06-17	085	
	RG_FODPO_INV-3_2021-06-17	086	
	RG_FODPO_INV-4_2021-06-17	087	
	RG_FODPO_INV-5_2021-06-17	088	
	RG_FOUCL_INV-1_2021-06-14	089	
	RG_FOUCL_INV-2_2021-06-14	090	
05	RG_FOUCL_INV-3_2021-06-14	091	12 Jul 2021
	RG_FOUEW_INV-1_2021-06-18	092	
	RG_FOUEW_INV-2_2021-06-18	093	
	RG_FOUEW_INV-3_2021-06-18	094	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
05	RG_FOUEW_INV-4_2021-06-18	095	12 Jul 2021
	RG_FOUEW_INV-5_2021-06-18	096	
	RG_FOUKI_INV-1_2021-06-17	097	
	RG_FOUKI_INV-2_2021-06-17	098	
	RG_FOUKI_INV-3_2021-06-17	099	
06	RG_FOUKI_INV-4_2021-06-17	100	12 Jul 2021
	RG_FOUKI_INV-5_2021-06-17	101	
	RG_FOUNGD_INV-1_2021-06-15	102	
	RG_FOUNGD_INV-2_2021-06-15	103	
	RG_FOUNGD_INV-3_2021-06-15	104	
	RG_FOUSH_INV-1_2021-06-15	105	
	RG_FOUSH_INV-2_2021-06-15	106	
	RG_FOUSH_INV-3_2021-06-15	107	
	RG_FRCP1SW_INV-1_2021-06-17	108	
07	RG_FRCP1SW_INVLUM-1_2021-06-17	109	12 Jul 2021
	RG_FRCP1SW_INV-2_2021-06-17	110	
	RG_FRCP1SW_INVLUM-2_2021-06-17	111	
	RG_FRCP1SW_INV-3_2021-06-17	112	
	RG_FRCP1SW_INV-4_2021-06-17	113	
	RG_FRCP1SW_INV-5_2021-06-17	114	
	RG_FRUPO_INV-1_2021-06-18	115	
	RG_FRUPO_INV-2_2021-06-18	116	
08	RG_FRUPO_INV-3_2021-06-18	117	12 Jul 2021
	RG_FRUPO_INV-4_2021-06-18	118	
	RG_FRUPO_INV-5_2021-06-18	119	
	RG_HENUP_INV-1_2021-06-16	120	
	RG_HENUP_INV-2_2021-06-16	121	
	RG_HENUP_INV-3_2021-06-16	122	
	RG_MP1_INV-1_2021-06-14	123	
	RG_MP1_INV-2_2021-06-14	124	
09	RG_MP1_INV-3_2021-06-14	125	13 Jul 2021
	RG_SCOUTDS_INV-1_2021-06-16	126	
	RG_SCOUTDS_INV-2_2021-06-16	127	
	RG_SCOUTDS_INV-3_2021-06-16	128	
	RG_SCOUTDS_INV-4_2021-06-16	129	
	RG_SCOUTDS_INV-5_2021-06-16	130	
	RG_UFR1_INV-1_2021-06-15	131	
	RG_UFR1_INV-2_2021-06-15	132	
	RG_UFR1_INV-3_2021-06-15	133	
	RG_UFR1_INV-4_2021-06-15	134	

Sample Group ID	Client ID	Lab ID	Date of Analysis
09	RG_UFR1_INV-5_2021-06-15	135	13 Jul 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Trich Sample ID:	Sample Identification:		Sample Type: Species	Sample type
055	1	RG_FO22_INV-1_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
056	2	RG_FO22_INV-2_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
057	3	RG_FO22_INV-3_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
058	4	RG_FO22_INV-4_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
059	5	RG_FO22_INV-5_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
060	6	RG_FO26_INV-1_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
061	7	RG_FO26_INV-2_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
062	8	RG_FO26_INV-3_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
063	9	RG_FOBCP_INV-1_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
064	10	RG_FOBCP_INV-2_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
065	11	RG_FOBCP_INV-3_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
066	12	RG_FOBCP_INV-4_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
067	13	RG_FOBCP_INV-5_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
068	14	RG_FOBKS_INV-1_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
069	15	RG_FOBKS_INV-2_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
070	16	RG_FOBKS_INV-3_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
071	17	RG_FOBKS_INV-4_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
072	18	RG_FOBKS_INV-5_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
073	19	RG_FOBSC_INV-1_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
074	20	RG_FOBSC_INV-2_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Maddy Stokes	Sample(s) Received By: Genene LaBine
Signature: MS	Signature: Genene LB
Date Sent: 28-JUN-2021	Date Received: 05 JUL 2021 (PROJECT #: 2021-235)
Sample(s) Returned to Client By:	Shipping Conditions: 29 JUN 2021 in lab
	Shipping Container:
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Trich Sample ID:	Sample Identification:		Sample Type: Species	Sample type
075	21	RG_FOBSC_INV-3_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
076	22	RG_FOBSC_INV-4_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
077	23	RG_FOBSC_INV-5_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
078	24	RG_FODHE_INV-1_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
079	25	RG_FODHE_INV-2_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
080	26	RG_FODHE_INV-3_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
081	27	RG_FODNGD_INV-1_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
082	28	RG_FODNGD_INV-2_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
083	29	RG_FODNGD_INV-3_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
084	30	RG_FODPO_INV-1_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
085	31	RG_FODPO_INV-2_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
086	32	RG_FODPO_INV-3_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
087	33	RG_FODPO_INV-4_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
088	34	RG_FODPO_INV-5_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
089	35	RG_FOUCL_INV-1_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
GL 05 JUL 2021 ~~08~~ 090	36	RG_FOUCL_INV-2_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
091	37	RG_FOUCL_INV-3_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
092	38	RG_FOUEW_INV-1_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
093	39	RG_FOUEW_INV-2_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
094	40	RG_FOUEW_INV-3_2021-06-18	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Maddy Stokes	Sample(s) Received By:	Gerlene LaBine
Signature:	MS	Signature:	Gerlene LB
Date Sent:	28-JUN-21	Date Received:	05 JUL 2021 (Project #: 2021-235)
Sample(s) Returned to Client By:		Shipping Conditions:	29 Jun 2021 in lab
		Shipping Container:	
Signature:		Date Sent:	

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample type
095	41 RG_FOUEW_INV-4_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
096	42 RG_FOUEW_INV-5_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
097	43 RG_FOUKI_INV-1_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
098	44 RG_FOUKI_INV-2_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
099	45 RG_FOUKI_INV-3_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
100	46 RG_FOUKI_INV-4_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
101	47 RG_FOUKI_INV-5_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
102	48 RG_FOUNGD_INV-1_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
103	49 RG_FOUNGD_INV-2_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
104	50 RG_FOUNGD_INV-3_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
105	51 RG_FOUSH_INV-1_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
106	52 RG_FOUSH_INV-2_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
107	53 RG_FOUSH_INV-3_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
108	54 RG_FRCP1SW_INV-1_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
109	55 RG_FRCP1SW_INVLUM-1_2021-06-17 ✓	Composite	Lumbriculidae tissue sample
110	56 RG_FRCP1SW_INV-2_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
111	57 RG_FRCP1SW_INVLUM-2_2021-06-17 ✓	Composite	Lumbriculidae tissue sample
112	58 RG_FRCP1SW_INV-3_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
113	59 RG_FRCP1SW_INV-4_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
114	60 RG_FRCP1SW_INV-5_2021-06-17 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Maddy Stokes	Sample(s) Received By: Gerlene LaBine
Signature: MS	Signature:
Date Sent: 28-JUN-2021	Date Received: 05 JUL 2021 (Project # 2021-235)
Sample(s) Returned to Client By:	Shipping Conditions: 29 Jun 2021 in lab
	Shipping Container:
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Species	Sample type
115	61 RG_FRUPO_INV-1_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
116	62 RG_FRUPO_INV-2_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
117	63 RG_FRUPO_INV-3_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
118	64 RG_FRUPO_INV-4_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
119	65 RG_FRUPO_INV-5_2021-06-18 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
120	66 RG_HENUP_INV-1_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
121	67 RG_HENUP_INV-2_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
122	68 RG_HENUP_INV-3_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
123	69 RG_MP1_INV-1_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
124	70 RG_MP1_INV-2_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
125	71 RG_MP1_INV-3_2021-06-14 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
126	72 RG_SCOUTDS_INV-1_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
127	73 RG_SCOUTDS_INV-2_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
128	74 RG_SCOUTDS_INV-3_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
129	75 RG_SCOUTDS_INV-4_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
130	76 RG_SCOUTDS_INV-5_2021-06-16 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
131	77 RG_UFR1_INV-1_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
132	78 RG_UFR1_INV-2_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
133	79 RG_UFR1_INV-3_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples
134	80 RG_UFR1_INV-4_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By:	Maddy Stokes	Sample(s) Received By:	Gerrene LaBine
Signature:	MS	Signature:	[signature]
Date Sent:	28-JUN-2021	Date Received:	05 Jul 2021 (Project # 2021-235).
Sample(s) Returned to Client By:		Shipping Conditions:	29 Jun 2021 in lab
		Shipping Container:	
Signature:		Date Sent:	

COM-011.01

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: FRO LAEMP (21-11) (PO 748530)			
Company Name:	Teck Coal Limited	Company Name:	Minnow Environmental
Contact Name:	Cait Good	Contact Name:	Peter Schnurr
Address:	421 Pine Avenue	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250-425-8202	Phone:	250-595-1627
Email:	cait.good@teck.com	Email:	pschnurr@minnow.ca

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample type
135	81 RG_UFR1_INV-5_2021-06-15 ✓	Composite	Composite-taxa benthic invertebrate tissue samples

Sample(s) Released By: Maddy Stokes	Sample(s) Received By: Geneine LaBrie
Signature: MS	Signature: [signature]
Date Sent: 28-JUN-2021	Date Received: 05JUL2021 (Project # 2021-235).
Sample(s) Returned to Client By:	Shipping Conditions: 29 Jun 2021 in lab
	Shipping Container:
Signature:	Date Sent:

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
1	none	RG_FO22_HESS-1_2021-09-12		N		Nemata	50	0.0005	
14	none	RG_FO22_HESS-1_2021-09-12		Y	54502	Planariidae	50	0.0534	
1	none	RG_FO22_HESS-1_2021-09-12		Y	68854	Naididae	50	0.0002	
6	Adult	RG_FO22_HESS-1_2021-09-12		Y	83033	Lebertiidae	50	0.0034	
1	none	RG_FO22_HESS-1_2021-09-12		Y	84195	Ostracoda	50	0.0003	
150		RG_FO22_HESS-1_2021-09-12		Y	114093	Elmidae	50	0.1386	
8	Nymph	RG_FO22_HESS-1_2021-09-12		Y	100755	Baetidae	50	0.0453	
9	Nymph	RG_FO22_HESS-1_2021-09-12		Y	101232	Ephemerellidae	50	0.0349	
25	Nymph	RG_FO22_HESS-1_2021-09-12		Y	100504	Heptageniidae	50	0.0078	
3	Nymph	RG_FO22_HESS-1_2021-09-12		Y	102643	Capniidae	50	0.0078	
3	Nymph	RG_FO22_HESS-1_2021-09-12		Y	103202	Chloroperlidae	50	0.0078	
120	Nymph	RG_FO22_HESS-1_2021-09-12		Y	102517	Nemouridae	50	0.2519	
64	Nymph	RG_FO22_HESS-1_2021-09-12		Y	102994	Perlodidae	50	0.0620	
7		RG_FO22_HESS-1_2021-09-12		Y	598182	Apataniidae	50	0.0055	
3		RG_FO22_HESS-1_2021-09-12		Y	115933	Limnephilidae	50	0.0008	
1		RG_FO22_HESS-1_2021-09-12		Y	115398	Hydropsychidae	50	0.0010	
17		RG_FO22_HESS-1_2021-09-12		Y	115096	Rhyacophilidae	50	0.0680	
19		RG_FO22_HESS-1_2021-09-12		Y	127917	Chironomidae	50	0.0128	
6		RG_FO22_HESS-1_2021-09-12		Y	135830	Empididae	50	0.0067	
16	larvae	RG_FO22_HESS-1_2021-09-12		Y	125351	Psychodidae	50	0.0040	
1	larvae	RG_FO22_HESS-1_2021-09-12		Y	118840	Tipulidae	100	0.2784	large/rare sort
49	none	RG_FO22_HESS-1_2021-09-12		Y	81388	Pisidiidae	50	0.0330	syn. Sphaeriidae
5	none	RG_FO22_HESS-2_2021-09-12		N		Nemata	50	0.0091	
8	none	RG_FO22_HESS-2_2021-09-12		Y	54502	Planariidae	50	0.0082	
1	none	RG_FO22_HESS-2_2021-09-12		Y	68854	Naididae	50	0.0007	
1	Adult	RG_FO22_HESS-2_2021-09-12		Y	83033	Lebertiidae	50	0.0005	
1	none	RG_FO22_HESS-2_2021-09-12		Y	84195	Ostracoda	50	0.0005	
133		RG_FO22_HESS-2_2021-09-12		Y	114093	Elmidae	50	0.1350	
7	Nymph	RG_FO22_HESS-2_2021-09-12		Y	100755	Baetidae	50	0.0485	
5	Nymph	RG_FO22_HESS-2_2021-09-12		Y	101232	Ephemerellidae	50	0.0134	
4	Nymph	RG_FO22_HESS-2_2021-09-12		Y	100504	Heptageniidae	50	0.0014	
1	Nymph	RG_FO22_HESS-2_2021-09-12		Y	102643	Capniidae	50	0.0053	
2	Nymph	RG_FO22_HESS-2_2021-09-12		Y	103202	Chloroperlidae	50	0.0036	
440	Nymph	RG_FO22_HESS-2_2021-09-12		Y	102517	Nemouridae	50	0.0566	
21	Nymph	RG_FO22_HESS-2_2021-09-12		Y	102994	Perlodidae	50	0.0219	
1		RG_FO22_HESS-2_2021-09-12		Y	598182	Apataniidae	50	0.0009	
25		RG_FO22_HESS-2_2021-09-12		Y	117120	Glossosomatidae	50	0.0340	
1		RG_FO22_HESS-2_2021-09-12		Y	115398	Hydropsychidae	50	0.0015	
1		RG_FO22_HESS-2_2021-09-12		Y	115629	Hydroptilidae	50	0.0010	
2		RG_FO22_HESS-2_2021-09-12		Y	115933	Limnephilidae	50	0.0008	
15		RG_FO22_HESS-2_2021-09-12		Y	115096	Rhyacophilidae	50	0.4144	
1		RG_FO22_HESS-2_2021-09-12		Y	568757	Uenoidae	50	0.0006	
12		RG_FO22_HESS-2_2021-09-12		Y	127917	Chironomidae	50	0.0093	
7		RG_FO22_HESS-2_2021-09-12		Y	135830	Empididae	50	0.0120	
1	larvae	RG_FO22_HESS-2_2021-09-12		Y	130914	Pelecorhyncidae	50	0.0245	
11	larvae	RG_FO22_HESS-2_2021-09-12		Y	125351	Psychodidae	50	0.0092	
1	larvae	RG_FO22_HESS-2_2021-09-12		Y	118840	Tipulidae	100	0.6379	large/rare sort
1	larvae	RG_FO22_HESS-2_2021-09-12		Y	118840	Tipulidae	50	0.0003	
2	none	RG_FO22_HESS-2_2021-09-12		Y	81388	Pisidiidae	50	0.0025	syn. Sphaeriidae
3	none	RG_FO22_HESS-3_2021-09-12		N		Nemata	100	0.0002	
3	none	RG_FO22_HESS-3_2021-09-12		Y	54502	Planariidae	100	0.0051	
3	Adult	RG_FO22_HESS-3_2021-09-12		Y	83033	Lebertiidae	100	0.0005	
1	none	RG_FO22_HESS-3_2021-09-12		Y	84195	Ostracoda	100	0.0002	
95		RG_FO22_HESS-3_2021-09-12		Y	114093	Elmidae	100	0.0833	
14	Nymph	RG_FO22_HESS-3_2021-09-12		Y	100755	Baetidae	100	0.0732	
2	Nymph	RG_FO22_HESS-3_2021-09-12		Y	101232	Ephemerellidae	100	0.0037	
3	Nymph	RG_FO22_HESS-3_2021-09-12		Y	100504	Heptageniidae	100	0.0013	
33	Nymph	RG_FO22_HESS-3_2021-09-12		Y	102517	Nemouridae	100	0.0163	
29	Nymph	RG_FO22_HESS-3_2021-09-12		Y	102994	Perlodidae	100	0.0204	
10		RG_FO22_HESS-3_2021-09-12		Y	598182	Apataniidae	100	0.0123	
1		RG_FO22_HESS-3_2021-09-12		Y	117120	Glossosomatidae	100	0.0031	
3		RG_FO22_HESS-3_2021-09-12		Y	115933	Limnephilidae	100	0.0008	
3		RG_FO22_HESS-3_2021-09-12		Y	115096	Rhyacophilidae	100	0.0029	
1		RG_FO22_HESS-3_2021-09-12		Y	118831	Diptera	100	0.0009	indeterminate
3		RG_FO22_HESS-3_2021-09-12		Y	127917	Chironomidae	100	0.0022	
5	larvae	RG_FO22_HESS-3_2021-09-12		Y	125351	Psychodidae	100	0.0011	
5	larvae	RG_FO22_HESS-3_2021-09-12		Y	118840	Tipulidae	100	0.0034	
17	none	RG_FO22_HESS-3_2021-09-12		Y	81388	Pisidiidae	100	0.0127	syn. Sphaeriidae
3	none	RG_FO22_HESS-4_2021-09-12		N		Nemata	25	0.0032	
5	none	RG_FO22_HESS-4_2021-09-12		Y	54502	Planariidae	25	0.0134	
3	none	RG_FO22_HESS-4_2021-09-12		Y	68854	Naididae	25	0.0002	
4	Adult	RG_FO22_HESS-4_2021-09-12		Y	83033	Lebertiidae	25	0.0034	
7	none	RG_FO22_HESS-4_2021-09-12		Y	84195	Ostracoda	25	0.0011	
51		RG_FO22_HESS-4_2021-09-12		Y	114093	Elmidae	25	0.0530	
4	Nymph	RG_FO22_HESS-4_2021-09-12		Y	100755	Baetidae	25	0.0264	
2	Nymph	RG_FO22_HESS-4_2021-09-12		Y	101232	Ephemerellidae	25	0.0057	
1	Nymph	RG_FO22_HESS-4_2021-09-12		Y	102643	Capniidae	25	0.0041	
17	Nymph	RG_FO22_HESS-4_2021-09-12		Y	102517	Nemouridae	25	0.0358	
21	Nymph	RG_FO22_HESS-4_2021-09-12		Y	102994	Perlodidae	25	0.0202	
6		RG_FO22_HESS-4_2021-09-12		Y	598182	Apataniidae	25	0.0059	
13		RG_FO22_HESS-4_2021-09-12		Y	115933	Limnephilidae	25	0.0021	
4		RG_FO22_HESS-4_2021-09-12		Y	115096	Rhyacophilidae	25	0.0061	
1		RG_FO22_HESS-4_2021-09-12		Y	127917	Chironomidae	25	0.0003	
1		RG_FO22_HESS-4_2021-09-12		Y	135830	Empididae	25	0.0029	
2	larvae	RG_FO22_HESS-4_2021-09-12		Y	125351	Psychodidae	25	0.0004	
4	larvae	RG_FO22_HESS-4_2021-09-12		Y	118840	Tipulidae	100	1.6982	large/rare sort
1	larvae	RG_FO22_HESS-4_2021-09-12		Y	118840	Tipulidae	25	0.0022	
121	none	RG_FO22_HESS-4_2021-09-12		Y	81388	Pisidiidae	25	0.1201	syn. Sphaeriidae
4	none	RG_FO22_HESS-5_2021-09-12		N		Nemata	100	0.0024	
11	none	RG_FO22_HESS-5_2021-09-12		Y	54502	Planariidae	100	0.0183	
2	none	RG_FO22_HESS-5_2021-09-12		Y	68510	Enchytraeidae	100	0.0003	
1	none	RG_FO22_HESS-5_2021-09-12		Y	69165	Lumbricidae	100	0.1183	
4	none	RG_FO22_HESS-5_2021-09-12		Y	68854	Naididae	100	0.0002	
38	Adult	RG_FO22_HESS-5_2021-09-12		Y	83033	Lebertiidae	100	0.0078	
588		RG_FO22_HESS-5_2021-09-12		Y	114093	Elmidae	100	0.6383	
37	Nymph	RG_FO22_HESS-5_2021-09-12		Y	100755	Baetidae	100	0.3177	
15	Nymph	RG_FO22_HESS-5_2021-09-12		Y	101232	Ephemerellidae	100	0.0326	
22	Nymph	RG_FO22_HESS-5_2021-09-12		Y	100504	Heptageniidae	100	0.0077	
1	Nymph	RG_FO22_HESS-5_2021-09-12		Y	102643	Capniidae	100	0.0001	
1	Nymph	RG_FO22_HESS-5_2021-09-12		Y	103202	Chloroperlidae	100	0.0002	
85	Nymph	RG_FO22_HESS-5_2021-09-12		Y	102517	Nemouridae	100	0.1869	
83	Nymph	RG_FO22_HESS-5_2021-09-12		Y	102994	Perlodidae	100	0.0944	
3	Nymph	RG_FO22_HESS-5_2021-09-12		Y	102788	Taeniopterygidae	100	0.0005	
12		RG_FO22_HESS-5_2021-09-12		Y	598182	Apataniidae	100	0.0189	
7		RG_FO22_HESS-5_2021-09-12		Y	117120	Glossosomatidae	100	0.0012	
25		RG_FO22_HESS-5_2021-09-12		Y	115933	Limnephilidae	100	0.0058	
23		RG_FO22_HESS-5_2021-09-12		Y	115096	Rhyacophilidae	100	0.3733	
2		RG_FO22_HESS-5_2021-09-12		Y	127076	Ceratopogonidae	100	0.0015	
96		RG_FO22_HESS-5_2021-09-12		Y	127917	Chironomidae	100	0.0733	
16		RG_FO22_HESS-5_2021-09-12		Y	135830	Empididae	100	0.0238	
1	larvae	RG_FO22_HESS-5_2021-09-12		Y	130914	Pelecorhyncidae	100	0.0152	
21	larvae	RG_FO22_HESS-5_2021-09-12		Y	125351	Psychodidae	100	0.0046	
1	larvae	RG_FO22_HESS-5_2021-09-12		Y	126640	Simuliidae	100	0.0042	
11	larvae	RG_FO22_HESS-5_2021-09-12		Y	118840	Tipulidae	100	0.8269	
10	none	RG_FO22_HESS-5_2021-09-12		Y	81388	Pisidiidae	100	0.0089	syn. Sphaeriidae
3	none	RG_FO22_HESS-6_2021-09-12		N		Nemata	100	0.0010	
3	none	RG_FO22_HESS-6_2021-09-12		Y	54502	Planariidae	100	0.0069	
3	none	RG_FO22_HESS-6_2021-09-12		Y	68510	Enchytraeidae	100	0.0009	
1	Adult	RG_FO22_HESS-6_2021-09-12		Y	83033	Lebertiidae	100	0.0012	
172		RG_FO22_HESS-6_2021-09-12		Y	114093	Elmidae	100	0.1583	
6	Nymph	RG_FO22_HESS-6_2021-09-12		Y	100755	Baetidae	100	0.0379	
9	Nymph	RG_FO22_HESS-6_2021-09-12		Y	101232	Ephemerellidae	100	0.0102	
24	Nymph	RG_FO22_HESS-6_2021-09-12		Y	100504	Heptageniidae	100	0.0083	
13	Nymph	RG_FO22_HESS-6_2021-09-12		Y	102643	Capniidae	100	0.0026	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
5	Nymph	RG_FO22_HESS-6_2021-09-12		Y	103202	Chloroperlidae	100	0.0025	
29	Nymph	RG_FO22_HESS-6_2021-09-12		Y	102517	Nemouridae	100	0.0184	
38	Nymph	RG_FO22_HESS-6_2021-09-12		Y	102994	Perlodidae	100	0.0250	
20	Nymph	RG_FO22_HESS-6_2021-09-12		Y	102788	Taeniopterygidae	100	0.0061	
2		RG_FO22_HESS-6_2021-09-12		Y	115933	Limnephilidae	100	0.0016	
40		RG_FO22_HESS-6_2021-09-12		Y	115096	Rhyacophilidae	100	0.2367	
1		RG_FO22_HESS-6_2021-09-12		Y	127076	Ceratopogonidae	100	0.0012	
21		RG_FO22_HESS-6_2021-09-12		Y	127917	Chironomidae	100	0.0103	
1		RG_FO22_HESS-6_2021-09-12		Y	135830	Empididae	100	0.0027	
1	larvae	RG_FO22_HESS-6_2021-09-12		Y	125351	Psychodidae	100	0.0008	
2	larvae	RG_FO22_HESS-6_2021-09-12		Y	118840	Tipulidae	100	0.0028	
4	none	RG_FO22_HESS-7_2021-09-12		N		Nemata	50	0.0041	
3	none	RG_FO22_HESS-7_2021-09-12		Y	54502	Planariidae	50	0.0037	
5	none	RG_FO22_HESS-7_2021-09-12		Y	68510	Enchytraeidae	50	0.0007	
1	none	RG_FO22_HESS-7_2021-09-12		Y	84195	Ostracoda	50	0.0004	
120		RG_FO22_HESS-7_2021-09-12		Y	114093	Elmidae	50	0.0965	
1	Nymph	RG_FO22_HESS-7_2021-09-12		Y	100755	Baetidae	50	0.0068	
7	Nymph	RG_FO22_HESS-7_2021-09-12		Y	101232	Ephemerellidae	50	0.0187	
4	Nymph	RG_FO22_HESS-7_2021-09-12		Y	100504	Heptageniidae	50	0.0010	
1	Nymph	RG_FO22_HESS-7_2021-09-12		Y	103202	Chloroperlidae	50	0.0014	
13	Nymph	RG_FO22_HESS-7_2021-09-12		Y	102517	Nemouridae	50	0.0100	
52	Nymph	RG_FO22_HESS-7_2021-09-12		Y	102994	Perlodidae	50	0.0613	
4	Nymph	RG_FO22_HESS-7_2021-09-12		Y	102788	Taeniopterygidae	50	0.0014	
3		RG_FO22_HESS-7_2021-09-12		Y	115933	Limnephilidae	50	0.0007	
12		RG_FO22_HESS-7_2021-09-12		Y	115096	Rhyacophilidae	50	0.0197	
1		RG_FO22_HESS-7_2021-09-12		Y	127076	Ceratopogonidae	50	0.0008	
21		RG_FO22_HESS-7_2021-09-12		Y	127917	Chironomidae	50	0.0082	
10		RG_FO22_HESS-7_2021-09-12		Y	135830	Empididae	50	0.0099	
3	larvae	RG_FO22_HESS-7_2021-09-12		Y	118840	Tipulidae	50	0.0021	
1	none	RG_FO22_HESS-7_2021-09-12		Y	81388	Pisidiidae	50	0.0004	syn. Sphaeriidae
11	none	RG_FO22_HESS-8_2021-09-12		N		Nemata	100	0.0104	
19	none	RG_FO22_HESS-8_2021-09-12		Y	54502	Planariidae	100	0.0398	
6	none	RG_FO22_HESS-8_2021-09-12		Y	68510	Enchytraeidae	100	0.0013	
4	none	RG_FO22_HESS-8_2021-09-12		Y	68854	Naididae	100	0.0020	
1	none	RG_FO22_HESS-8_2021-09-12		Y	84195	Ostracoda	100	0.0004	
248		RG_FO22_HESS-8_2021-09-12		Y	114093	Elmidae	100	0.3619	
45	Nymph	RG_FO22_HESS-8_2021-09-12		Y	100755	Baetidae	100	0.3181	
9	Nymph	RG_FO22_HESS-8_2021-09-12		Y	101232	Ephemerellidae	100	0.0142	
8	Nymph	RG_FO22_HESS-8_2021-09-12		Y	100504	Heptageniidae	100	0.0049	
1	Nymph	RG_FO22_HESS-8_2021-09-12		Y	103202	Chloroperlidae	100	0.0004	
28	Nymph	RG_FO22_HESS-8_2021-09-12		Y	102517	Nemouridae	100	0.0360	
103	Nymph	RG_FO22_HESS-8_2021-09-12		Y	102994	Perlodidae	100	0.0947	
3	Nymph	RG_FO22_HESS-8_2021-09-12		Y	102788	Taeniopterygidae	100	0.0009	
4		RG_FO22_HESS-8_2021-09-12		Y	598182	Apataniidae	100	0.0049	
20		RG_FO22_HESS-8_2021-09-12		Y	117120	Glossosomatidae	100	0.0515	
17		RG_FO22_HESS-8_2021-09-12		Y	115933	Limnephilidae	100	0.0055	
14		RG_FO22_HESS-8_2021-09-12		Y	115096	Rhyacophilidae	100	0.2612	
2		RG_FO22_HESS-8_2021-09-12		Y	568757	Uenoidae	100	0.0018	
1		RG_FO22_HESS-8_2021-09-12		Y	127076	Ceratopogonidae	100	0.0011	
40		RG_FO22_HESS-8_2021-09-12		Y	127917	Chironomidae	100	0.0217	
16		RG_FO22_HESS-8_2021-09-12		Y	135830	Empididae	100	0.0203	
7	larvae	RG_FO22_HESS-8_2021-09-12		Y	118840	Tipulidae	100	0.0105	
4	none	RG_FO22_HESS-8_2021-09-12		Y	81388	Pisidiidae	100	0.0042	syn. Sphaeriidae
4	none	RG_FO22_HESS-9_2021-09-12		N		Nemata	25	0.0015	
4	none	RG_FO22_HESS-9_2021-09-12		Y	54502	Planariidae	25	0.0106	
1	none	RG_FO22_HESS-9_2021-09-12		Y	69165	Lumbricidae	25	0.0109	
1	none	RG_FO22_HESS-9_2021-09-12		Y	69165	Lumbricidae	100	0.1505	large/rare sort
9	Adult	RG_FO22_HESS-9_2021-09-12		Y	83033	Lebertiidae	25	0.0033	
2	none	RG_FO22_HESS-9_2021-09-12		Y	84195	Ostracoda	25	0.0004	
186		RG_FO22_HESS-9_2021-09-12		Y	114093	Elmidae	25	0.3013	
10	Nymph	RG_FO22_HESS-9_2021-09-12		Y	100755	Baetidae	25	0.0548	
4	Nymph	RG_FO22_HESS-9_2021-09-12		Y	101232	Ephemerellidae	25	0.0091	
4	Nymph	RG_FO22_HESS-9_2021-09-12		Y	100504	Heptageniidae	25	0.0009	
2	Nymph	RG_FO22_HESS-9_2021-09-12		Y	103202	Chloroperlidae	25	0.0010	
18	Nymph	RG_FO22_HESS-9_2021-09-12		Y	102517	Nemouridae	25	0.0416	
16	Nymph	RG_FO22_HESS-9_2021-09-12		Y	102994	Perlodidae	25	0.0228	
9		RG_FO22_HESS-9_2021-09-12		Y	598182	Apataniidae	25	0.0055	
1		RG_FO22_HESS-9_2021-09-12		Y	117120	Glossosomatidae	25	0.0001	
7		RG_FO22_HESS-9_2021-09-12		Y	115933	Limnephilidae	25	0.0014	
3		RG_FO22_HESS-9_2021-09-12		Y	115096	Rhyacophilidae	25	0.0306	
3		RG_FO22_HESS-9_2021-09-12		Y	568757	Uenoidae	25	0.0002	
13		RG_FO22_HESS-9_2021-09-12		Y	127917	Chironomidae	25	0.0053	
5		RG_FO22_HESS-9_2021-09-12		Y	135830	Empididae	25	0.0048	
3	larvae	RG_FO22_HESS-9_2021-09-12		Y	125351	Psychodidae	25	0.0009	
3	larvae	RG_FO22_HESS-9_2021-09-12		Y	118840	Tipulidae	25	0.0328	
1	larvae	RG_FO22_HESS-9_2021-09-12		Y	118840	Tipulidae	100	0.4516	large/rare sort
1	none	RG_FO22_HESS-9_2021-09-12		Y	81388	Pisidiidae	25	0.0014	syn. Sphaeriidae
6	none	RG_FO22_HESS-10_2021-09-12		N		Nemata	50	0.0014	
1	none	RG_FO22_HESS-10_2021-09-12		Y	68510	Enchytraeidae	50	0.0006	
1	none	RG_FO22_HESS-10_2021-09-12		Y	68854	Naididae	50	0.0003	
8	Adult	RG_FO22_HESS-10_2021-09-12		Y	83033	Lebertiidae	50	0.0052	
1	none	RG_FO22_HESS-10_2021-09-12		Y	84195	Ostracoda	50	0.0010	
225		RG_FO22_HESS-10_2021-09-12		Y	114093	Elmidae	50	0.2833	
24	Nymph	RG_FO22_HESS-10_2021-09-12		Y	100755	Baetidae	50	0.1407	
6	Nymph	RG_FO22_HESS-10_2021-09-12		Y	101232	Ephemerellidae	50	0.0157	
6	Nymph	RG_FO22_HESS-10_2021-09-12		Y	100504	Heptageniidae	50	0.0028	
1	Nymph	RG_FO22_HESS-10_2021-09-12		Y	102643	Capniidae	50	0.0020	
2	Nymph	RG_FO22_HESS-10_2021-09-12		Y	103202	Chloroperlidae	50	0.0014	
67	Nymph	RG_FO22_HESS-10_2021-09-12		Y	102517	Nemouridae	50	0.0848	
78	Nymph	RG_FO22_HESS-10_2021-09-12		Y	102994	Perlodidae	50	0.0907	
17		RG_FO22_HESS-10_2021-09-12		Y	598182	Apataniidae	50	0.0108	
2		RG_FO22_HESS-10_2021-09-12		Y	117120	Glossosomatidae	50	0.0008	
6		RG_FO22_HESS-10_2021-09-12		Y	115933	Limnephilidae	50	0.0012	
9		RG_FO22_HESS-10_2021-09-12		Y	115096	Rhyacophilidae	50	0.0612	
3		RG_FO22_HESS-10_2021-09-12		Y	127076	Ceratopogonidae	50	0.0010	
5		RG_FO22_HESS-10_2021-09-12		Y	127917	Chironomidae	50	0.0016	
16		RG_FO22_HESS-10_2021-09-12		Y	135830	Empididae	50	0.0183	
11	larvae	RG_FO22_HESS-10_2021-09-12		Y	125351	Psychodidae	50	0.0033	
8	larvae	RG_FO22_HESS-10_2021-09-12		Y	118840	Tipulidae	50	0.0128	
1	none	RG_FO22_HESS-10_2021-09-12		Y	81388	Pisidiidae	50	0.0005	syn. Sphaeriidae
1	none	RG_FO26_HESS-1_2021-09-16		N		Nemata	25	0.0030	
7	none	RG_FO26_HESS-1_2021-09-16		Y	54502	Planariidae	25	0.0141	
1	Adult	RG_FO26_HESS-1_2021-09-16		Y	83033	Lebertiidae	25	0.0004	
3	none	RG_FO26_HESS-1_2021-09-16		Y	84195	Ostracoda	25	0.0009	
3	Nymph	RG_FO26_HESS-1_2021-09-16		Y	568544	Ameletidae	25	0.0027	
10	Nymph	RG_FO26_HESS-1_2021-09-16		Y	100755	Baetidae	25	0.0040	
50	Nymph	RG_FO26_HESS-1_2021-09-16		Y	101232	Ephemerellidae	25	0.0570	
331	Nymph	RG_FO26_HESS-1_2021-09-16		Y	100504	Heptageniidae	25	0.2367	
3	Nymph	RG_FO26_HESS-1_2021-09-16		Y	102643	Capniidae	25	0.0017	
32	Nymph	RG_FO26_HESS-1_2021-09-16		Y	103202	Chloroperlidae	25	0.0586	
3	Nymph	RG_FO26_HESS-1_2021-09-16		Y	102840	Leuctridae	25	0.0006	
24	Nymph	RG_FO26_HESS-1_2021-09-16		Y	102517	Nemouridae	25	0.0242	
1	Nymph	RG_FO26_HESS-1_2021-09-16		Y	102994	Perlodidae	25	0.0389	
6	Nymph	RG_FO26_HESS-1_2021-09-16		Y	102788	Taeniopterygidae	25	0.0022	
1		RG_FO26_HESS-1_2021-09-16		Y	598182	Apataniidae	25	0.0009	
2		RG_FO26_HESS-1_2021-09-16		Y	115398	Hydropsychidae	25	0.0797	
10		RG_FO26_HESS-1_2021-09-16		Y	115096	Rhyacophilidae	25	0.0149	
33		RG_FO26_HESS-1_2021-09-16		Y	568757	Uenoidae	25	0.0039	
4		RG_FO26_HESS-1_2021-09-16		Y	127076	Ceratopogonidae	25	0.0015	
19		RG_FO26_HESS-1_2021-09-16		Y	127917	Chironomidae	25	0.0047	
1		RG_FO26_HESS-1_2021-09-16		Y	135830	Empididae	25	0.0041	
203	larvae	RG_FO26_HESS-1_2021-09-16		Y	125351	Psychodidae	25	0.0823	
5	larvae	RG_FO26_HESS-1_2021-09-16		Y	118840	Tipulidae	25	0.0134	
2	none	RG_FO26_HESS-2_2021-09-16		N		Nemata	25	0.0011	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
10	none	RG_FO26_HESS-2_2021-09-16		Y	54502	Planariidae	25	0.0142	
1	none	RG_FO26_HESS-2_2021-09-16		Y	68510	Enchytraeidae	25	0.0016	
2	Adult	RG_FO26_HESS-2_2021-09-16		Y	895710	Sperchonidae	25	0.0001	
2	none	RG_FO26_HESS-2_2021-09-16		Y	84195	Ostracoda	25	0.0003	
20	Nymph	RG_FO26_HESS-2_2021-09-16		Y	100755	Baetidae	25	0.0075	
74	Nymph	RG_FO26_HESS-2_2021-09-16		Y	101232	Ephemerellidae	25	0.0866	
324	Nymph	RG_FO26_HESS-2_2021-09-16		Y	100504	Heptageniidae	25	0.2717	
2	Nymph	RG_FO26_HESS-2_2021-09-16		Y	102643	Capniidae	25	0.0019	
19	Nymph	RG_FO26_HESS-2_2021-09-16		Y	103202	Chloroperlidae	25	0.0208	
11	Nymph	RG_FO26_HESS-2_2021-09-16		Y	102840	Leuctridae	25	0.0041	
29	Nymph	RG_FO26_HESS-2_2021-09-16		Y	102517	Nemouridae	25	0.0582	
13	Nymph	RG_FO26_HESS-2_2021-09-16		Y	102994	Perlodidae	25	0.0262	
10	Nymph	RG_FO26_HESS-2_2021-09-16		Y	102788	Taeniopterygidae	25	0.0031	
4		RG_FO26_HESS-2_2021-09-16		Y	598182	Apataniidae	25	0.0079	
1		RG_FO26_HESS-2_2021-09-16		Y	115398	Hydropsychidae	100	0.2140	large/rare sort
2		RG_FO26_HESS-2_2021-09-16		Y	115398	Hydropsychidae	25	0.0021	
2		RG_FO26_HESS-2_2021-09-16		Y	115933	Limnephilidae	25	0.0005	
15		RG_FO26_HESS-2_2021-09-16		Y	115096	Rhyacophilidae	25	0.0605	
14		RG_FO26_HESS-2_2021-09-16		Y	568757	Uenoidae	25	0.0011	
4		RG_FO26_HESS-2_2021-09-16		Y	127076	Ceratopogonidae	25	0.0010	
2		RG_FO26_HESS-2_2021-09-16		Y	127917	Chironomidae	25	0.0013	
3		RG_FO26_HESS-2_2021-09-16		Y	135830	Empididae	25	0.0026	
209	larvae	RG_FO26_HESS-2_2021-09-16		Y	125351	Psychodidae	25	0.1119	
1	larvae	RG_FO26_HESS-2_2021-09-16		Y	118840	Tipulidae	100	0.3957	large/rare sort
2	larvae	RG_FO26_HESS-2_2021-09-16		Y	118840	Tipulidae	25	0.0022	
2	none	RG_FO26_HESS-3_2021-09-16		N		Nemata	25	0.0021	
9	none	RG_FO26_HESS-3_2021-09-16		Y	54502	Planariidae	25	0.0233	
1	Adult	RG_FO26_HESS-3_2021-09-16		Y	83033	Lebertiidae	25	0.0001	
1	Adult	RG_FO26_HESS-3_2021-09-16		Y	895710	Sperchonidae	25	0.0001	
3	none	RG_FO26_HESS-3_2021-09-16		Y	84195	Ostracoda	25	0.0007	
3	Nymph	RG_FO26_HESS-3_2021-09-16		Y	568544	Ameletidae	25	0.0111	
27	Nymph	RG_FO26_HESS-3_2021-09-16		Y	100755	Baetidae	25	0.0120	
106	Nymph	RG_FO26_HESS-3_2021-09-16		Y	101232	Ephemerellidae	25	0.0840	
407	Nymph	RG_FO26_HESS-3_2021-09-16		Y	100504	Heptageniidae	25	0.2511	
7	Nymph	RG_FO26_HESS-3_2021-09-16		Y	102643	Capniidae	25	0.0029	
19	Nymph	RG_FO26_HESS-3_2021-09-16		Y	103202	Chloroperlidae	25	0.0167	
3	Nymph	RG_FO26_HESS-3_2021-09-16		Y	102840	Leuctridae	25	0.0031	
49	Nymph	RG_FO26_HESS-3_2021-09-16		Y	102517	Nemouridae	25	0.0783	
24	Nymph	RG_FO26_HESS-3_2021-09-16		Y	102994	Perlodidae	25	0.0363	
22	Nymph	RG_FO26_HESS-3_2021-09-16		Y	102788	Taeniopterygidae	25	0.0040	
3	larvae/immature	RG_FO26_HESS-3_2021-09-16		Y	115095	Trichoptera	25	0.0002	Apataniidae/Uenoidae
6		RG_FO26_HESS-3_2021-09-16		Y	115398	Hydropsychidae	25	0.0795	
17		RG_FO26_HESS-3_2021-09-16		Y	115096	Rhyacophilidae	25	0.0978	
57		RG_FO26_HESS-3_2021-09-16		Y	568757	Uenoidae	25	0.0096	
1		RG_FO26_HESS-3_2021-09-16		Y	127076	Ceratopogonidae	25	0.0001	
32		RG_FO26_HESS-3_2021-09-16		Y	127917	Chironomidae	25	0.0079	
4		RG_FO26_HESS-3_2021-09-16		Y	135830	Empididae	25	0.0066	
147	larvae	RG_FO26_HESS-3_2021-09-16		Y	125351	Psychodidae	25	0.0752	
4	larvae	RG_FO26_HESS-3_2021-09-16		Y	118840	Tipulidae	25	0.0055	
2	none	RG_FO26_HESS-4_2021-09-16		N		Nemata	25	0.0001	
12	none	RG_FO26_HESS-4_2021-09-16		Y	54502	Planariidae	25	0.0422	
1	Adult	RG_FO26_HESS-4_2021-09-16		Y	83033	Lebertiidae	25	0.0002	
1	Adult	RG_FO26_HESS-4_2021-09-16		Y	895710	Sperchonidae	25	0.0002	
1	none	RG_FO26_HESS-4_2021-09-16		Y	84195	Ostracoda	25	0.0001	
17	Nymph	RG_FO26_HESS-4_2021-09-16		Y	100755	Baetidae	25	0.0132	
59	Nymph	RG_FO26_HESS-4_2021-09-16		Y	101232	Ephemerellidae	25	0.0401	
256	Nymph	RG_FO26_HESS-4_2021-09-16		Y	100504	Heptageniidae	25	0.1690	
9	Nymph	RG_FO26_HESS-4_2021-09-16		Y	103202	Chloroperlidae	25	0.0126	
4	Nymph	RG_FO26_HESS-4_2021-09-16		Y	102840	Leuctridae	25	0.0029	
25	Nymph	RG_FO26_HESS-4_2021-09-16		Y	102517	Nemouridae	25	0.0502	
6	Nymph	RG_FO26_HESS-4_2021-09-16		Y	102994	Perlodidae	25	0.0245	
12	Nymph	RG_FO26_HESS-4_2021-09-16		Y	102788	Taeniopterygidae	25	0.0028	
1		RG_FO26_HESS-4_2021-09-16		Y	117120	Glossosomatidae	25	0.0002	
4		RG_FO26_HESS-4_2021-09-16		Y	115398	Hydropsychidae	25	0.1721	
1		RG_FO26_HESS-4_2021-09-16		Y	115933	Limnephilidae	25	0.0002	
9		RG_FO26_HESS-4_2021-09-16		Y	115096	Rhyacophilidae	25	0.0510	
15		RG_FO26_HESS-4_2021-09-16		Y	568757	Uenoidae	25	0.0015	
2		RG_FO26_HESS-4_2021-09-16		Y	127076	Ceratopogonidae	25	0.0003	
21		RG_FO26_HESS-4_2021-09-16		Y	127917	Chironomidae	25	0.0133	
2		RG_FO26_HESS-4_2021-09-16		Y	135830	Empididae	25	0.0062	
135	larvae	RG_FO26_HESS-4_2021-09-16		Y	125351	Psychodidae	25	0.0625	
4	larvae	RG_FO26_HESS-4_2021-09-16		Y	118840	Tipulidae	25	0.0037	
10	none	RG_FO26_HESS-5_2021-09-16		Y	54502	Planariidae	25	0.0180	
3	Adult	RG_FO26_HESS-5_2021-09-16		Y	83033	Lebertiidae	25	0.0008	
2	Adult	RG_FO26_HESS-5_2021-09-16		Y	895710	Sperchonidae	25	0.0002	
1	none	RG_FO26_HESS-5_2021-09-16		Y	84195	Ostracoda	25	0.0001	
39	Nymph	RG_FO26_HESS-5_2021-09-16		Y	100755	Baetidae	25	0.0126	
100	Nymph	RG_FO26_HESS-5_2021-09-16		Y	101232	Ephemerellidae	25	0.0616	
123	Nymph	RG_FO26_HESS-5_2021-09-16		Y	100504	Heptageniidae	25	0.0670	
1	Nymph	RG_FO26_HESS-5_2021-09-16		Y	102643	Capniidae	25	0.0001	
1	Nymph	RG_FO26_HESS-5_2021-09-16		Y	103202	Chloroperlidae	25	0.0001	
8	Nymph	RG_FO26_HESS-5_2021-09-16		Y	102840	Leuctridae	25	0.0016	
37	Nymph	RG_FO26_HESS-5_2021-09-16		Y	102517	Nemouridae	25	0.0605	
11	Nymph	RG_FO26_HESS-5_2021-09-16		Y	102994	Perlodidae	25	0.0039	
2	Nymph	RG_FO26_HESS-5_2021-09-16		Y	102788	Taeniopterygidae	25	0.0005	
7	larvae/immature	RG_FO26_HESS-5_2021-09-16		Y	115095	Trichoptera	25	0.0010	Apataniidae/Uenoidae
4		RG_FO26_HESS-5_2021-09-16		Y	115933	Limnephilidae	25	0.0009	
4		RG_FO26_HESS-5_2021-09-16		Y	115096	Rhyacophilidae	25	0.0206	
45		RG_FO26_HESS-5_2021-09-16		Y	568757	Uenoidae	25	0.0046	
4		RG_FO26_HESS-5_2021-09-16		Y	127076	Ceratopogonidae	25	0.0001	
27		RG_FO26_HESS-5_2021-09-16		Y	127917	Chironomidae	25	0.0112	
18		RG_FO26_HESS-5_2021-09-16		Y	135830	Empididae	25	0.0203	
80	larvae	RG_FO26_HESS-5_2021-09-16		Y	125351	Psychodidae	25	0.0404	
1	larvae	RG_FO26_HESS-5_2021-09-16		Y	118840	Tipulidae	25	0.0001	
1	none	RG_FO26_HESS-6_2021-09-16		N		Nemata	25	0.0004	
2	Adult	RG_FO26_HESS-6_2021-09-16		Y	83033	Lebertiidae	25	0.0002	
4	Adult	RG_FO26_HESS-6_2021-09-16		Y	895710	Sperchonidae	25	0.0008	
3	none	RG_FO26_HESS-6_2021-09-16		Y	84195	Ostracoda	25	0.0002	
2	Nymph	RG_FO26_HESS-6_2021-09-16		Y	568544	Ameletidae	25	0.0190	
83	Nymph	RG_FO26_HESS-6_2021-09-16		Y	100755	Baetidae	25	0.0258	
114	Nymph	RG_FO26_HESS-6_2021-09-16		Y	101232	Ephemerellidae	25	0.0667	
240	Nymph	RG_FO26_HESS-6_2021-09-16		Y	100504	Heptageniidae	25	0.1034	
3	Nymph	RG_FO26_HESS-6_2021-09-16		Y	103202	Chloroperlidae	25	0.0034	
5	Nymph	RG_FO26_HESS-6_2021-09-16		Y	102840	Leuctridae	25	0.0006	
61	Nymph	RG_FO26_HESS-6_2021-09-16		Y	102517	Nemouridae	25	0.0592	
25	Nymph	RG_FO26_HESS-6_2021-09-16		Y	102994	Perlodidae	25	0.0080	
18	Nymph	RG_FO26_HESS-6_2021-09-16		Y	102788	Taeniopterygidae	25	0.0029	
4	larvae/immature	RG_FO26_HESS-6_2021-09-16		Y	115095	Trichoptera	25	0.0001	Apataniidae/Uenoidae
1		RG_FO26_HESS-6_2021-09-16		Y	598182	Apataniidae	25	0.0002	
1		RG_FO26_HESS-6_2021-09-16		Y	115398	Hydropsychidae	25	0.0009	
10		RG_FO26_HESS-6_2021-09-16		Y	115933	Limnephilidae	25	0.0008	
8		RG_FO26_HESS-6_2021-09-16		Y	115096	Rhyacophilidae	25	0.0810	
65		RG_FO26_HESS-6_2021-09-16		Y	568757	Uenoidae	25	0.0061	
2		RG_FO26_HESS-6_2021-09-16		Y	127076	Ceratopogonidae	25	0.0007	
34		RG_FO26_HESS-6_2021-09-16		Y	127917	Chironomidae	25	0.0414	
21		RG_FO26_HESS-6_2021-09-16		Y	135830	Empididae	25	0.0228	
92	larvae	RG_FO26_HESS-6_2021-09-16		Y	125351	Psychodidae	25	0.0258	
2	larvae	RG_FO26_HESS-6_2021-09-16		Y	118840	Tipulidae	25	0.0008	
5	none	RG_FO26_HESS-7_2021-09-16		N		Nemata	25	0.0027	
4	Adult	RG_FO26_HESS-7_2021-09-16		Y	83033	Lebertiidae	25	0.0021	
3	Adult	RG_FO26_HESS-7_2021-09-16		Y	895710	Sperchonidae	25	0.0006	
3	none	RG_FO26_HESS-7_2021-09-16		Y	84195	Ostracoda	25	0.0006	
8	Nymph	RG_FO26_HESS-7_2021-09-16		Y	568544	Ameletidae	25	0.0055	
17	Nymph	RG_FO26_HESS-7_2021-09-16		Y	100755	Baetidae	25	0.0048	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
91	Nymph	RG_FO26_HESS-7_2021-09-16		Y	101232	Ephemerellidae	25	0.0430	
285	Nymph	RG_FO26_HESS-7_2021-09-16		Y	100504	Heptageniidae	25	0.1079	
10	Nymph	RG_FO26_HESS-7_2021-09-16		Y	103202	Chloroperlidae	25	0.0232	
17	Nymph	RG_FO26_HESS-7_2021-09-16		Y	102517	Nemouridae	25	0.0198	
19	Nymph	RG_FO26_HESS-7_2021-09-16		Y	102994	Perlodidae	25	0.0525	
6	Nymph	RG_FO26_HESS-7_2021-09-16		Y	102788	Taeniopterygidae	25	0.0011	
3	larvae/immature	RG_FO26_HESS-7_2021-09-16		Y	115095	Trichoptera	25	0.0002	Apataniidae/Uenoidae
1		RG_FO26_HESS-7_2021-09-16		Y	116905	Brachycentridae	25	0.0001	
1		RG_FO26_HESS-7_2021-09-16		Y	115398	Hydropsychidae	100	0.1404	large/rare sort
4		RG_FO26_HESS-7_2021-09-16		Y	115398	Hydropsychidae	25	0.0043	
1		RG_FO26_HESS-7_2021-09-16		Y	115933	Limnephilidae	25	0.0005	
6		RG_FO26_HESS-7_2021-09-16		Y	115096	Rhyacophilidae	25	0.0458	
22		RG_FO26_HESS-7_2021-09-16		Y	568757	Uenoidae	25	0.0028	
6		RG_FO26_HESS-7_2021-09-16		Y	127076	Ceratopogonidae	25	0.0012	
10		RG_FO26_HESS-7_2021-09-16		Y	127917	Chironomidae	25	0.0062	
7		RG_FO26_HESS-7_2021-09-16		Y	135830	Empididae	25	0.0051	
60	larvae	RG_FO26_HESS-7_2021-09-16		Y	125351	Psychodidae	25	0.0131	
3	larvae	RG_FO26_HESS-7_2021-09-16		Y	118840	Tipulidae	25	0.0008	
4	none	RG_FO26_HESS-8_2021-09-16		N		Nemata	50	0.0013	
5	none	RG_FO26_HESS-8_2021-09-16		Y	54502	Planariidae	50	0.0212	
4	Adult	RG_FO26_HESS-8_2021-09-16		Y	83033	Lebertiidae	50	0.0015	
1	none	RG_FO26_HESS-8_2021-09-16		Y	84195	Ostracoda	50	0.0004	
21	Nymph	RG_FO26_HESS-8_2021-09-16		Y	100755	Baetidae	50	0.0118	
218	Nymph	RG_FO26_HESS-8_2021-09-16		Y	101232	Ephemerellidae	50	0.1209	
586	Nymph	RG_FO26_HESS-8_2021-09-16		Y	100504	Heptageniidae	50	0.3116	
3	Nymph	RG_FO26_HESS-8_2021-09-16		Y	102643	Capniidae	50	0.0017	
28	Nymph	RG_FO26_HESS-8_2021-09-16		Y	103202	Chloroperlidae	50	0.0328	
35	Nymph	RG_FO26_HESS-8_2021-09-16		Y	102517	Nemouridae	50	0.0740	
1	Nymph	RG_FO26_HESS-8_2021-09-16		Y	102488	Peltoperlidae	50	0.0011	
81	Nymph	RG_FO26_HESS-8_2021-09-16		Y	102994	Perlodidae	50	0.2936	
69	Nymph	RG_FO26_HESS-8_2021-09-16		Y	102788	Taeniopterygidae	50	0.0183	
1		RG_FO26_HESS-8_2021-09-16		Y	598182	Apataniidae	50	0.0030	
2		RG_FO26_HESS-8_2021-09-16		Y	117120	Glossosomatidae	50	0.0037	
3		RG_FO26_HESS-8_2021-09-16		Y	115398	Hydropsychidae	50	0.0417	
1		RG_FO26_HESS-8_2021-09-16		Y	115933	Limnephilidae	50	0.0004	
13		RG_FO26_HESS-8_2021-09-16		Y	115096	Rhyacophilidae	50	0.0569	
22		RG_FO26_HESS-8_2021-09-16		Y	568757	Uenoidae	50	0.0092	
4		RG_FO26_HESS-8_2021-09-16		Y	127076	Ceratopogonidae	50	0.0018	
40		RG_FO26_HESS-8_2021-09-16		Y	127917	Chironomidae	50	0.0229	
11		RG_FO26_HESS-8_2021-09-16		Y	135830	Empididae	50	0.0145	
171	larvae	RG_FO26_HESS-8_2021-09-16		Y	125351	Psychodidae	50	0.0476	
7	larvae	RG_FO26_HESS-8_2021-09-16		Y	118840	Tipulidae	50	0.0024	
1	none	RG_FO26_HESS-9_2021-09-16		N		Nemata	25	0.0001	
5	none	RG_FO26_HESS-9_2021-09-16		Y	54502	Planariidae	25	0.0161	
1	Adult	RG_FO26_HESS-9_2021-09-16		Y	83033	Lebertiidae	25	0.0001	
4	Adult	RG_FO26_HESS-9_2021-09-16		Y	895710	Sperchonidae	25	0.0017	
1	none	RG_FO26_HESS-9_2021-09-16		Y	84195	Ostracoda	25	0.0002	
24	Nymph	RG_FO26_HESS-9_2021-09-16		Y	100755	Baetidae	25	0.0115	
81	Nymph	RG_FO26_HESS-9_2021-09-16		Y	101232	Ephemerellidae	25	0.0646	
163	Nymph	RG_FO26_HESS-9_2021-09-16		Y	100504	Heptageniidae	25	0.0749	
1	Nymph	RG_FO26_HESS-9_2021-09-16		Y	102840	Leuctridae	25	0.0001	
35	Nymph	RG_FO26_HESS-9_2021-09-16		Y	102517	Nemouridae	25	0.0561	
18	Nymph	RG_FO26_HESS-9_2021-09-16		Y	102994	Perlodidae	25	0.0079	
25	Nymph	RG_FO26_HESS-9_2021-09-16		Y	102788	Taeniopterygidae	25	0.0053	
1	larvae/immature	RG_FO26_HESS-9_2021-09-16		Y	115095	Trichoptera	25	0.0001	Apataniidae/Uenoidae
1		RG_FO26_HESS-9_2021-09-16		Y	598182	Apataniidae	25	0.0011	
1		RG_FO26_HESS-9_2021-09-16		Y	117120	Glossosomatidae	25	0.0001	
2		RG_FO26_HESS-9_2021-09-16		Y	115398	Hydropsychidae	100	0.3947	large/rare sort
1		RG_FO26_HESS-9_2021-09-16		Y	115398	Hydropsychidae	25	0.0012	
2		RG_FO26_HESS-9_2021-09-16		Y	115933	Limnephilidae	25	0.0002	
8		RG_FO26_HESS-9_2021-09-16		Y	115096	Rhyacophilidae	25	0.0567	
49		RG_FO26_HESS-9_2021-09-16		Y	568757	Uenoidae	25	0.0065	
8		RG_FO26_HESS-9_2021-09-16		Y	127076	Ceratopogonidae	25	0.0019	
26		RG_FO26_HESS-9_2021-09-16		Y	127917	Chironomidae	25	0.0217	
15		RG_FO26_HESS-9_2021-09-16		Y	135830	Empididae	25	0.0167	
61	larvae	RG_FO26_HESS-9_2021-09-16		Y	125351	Psychodidae	25	0.0160	
4	larvae	RG_FO26_HESS-9_2021-09-16		Y	118840	Tipulidae	25	0.0015	
2	none	RG_FO26_HESS-10_2021-09-16		N		Nemata	25	0.0014	
1	none	RG_FO26_HESS-10_2021-09-16		Y	54502	Planariidae	25	0.0016	
5	Adult	RG_FO26_HESS-10_2021-09-16		Y	83033	Lebertiidae	25	0.0015	
7	Adult	RG_FO26_HESS-10_2021-09-16		Y	895710	Sperchonidae	25	0.0022	
44	Nymph	RG_FO26_HESS-10_2021-09-16		Y	100755	Baetidae	25	0.0109	
77	Nymph	RG_FO26_HESS-10_2021-09-16		Y	101232	Ephemerellidae	25	0.0855	
216	Nymph	RG_FO26_HESS-10_2021-09-16		Y	100504	Heptageniidae	25	0.0983	
6	Nymph	RG_FO26_HESS-10_2021-09-16		Y	103202	Chloroperlidae	25	0.0106	
2	Nymph	RG_FO26_HESS-10_2021-09-16		Y	102840	Leuctridae	25	0.0001	
33	Nymph	RG_FO26_HESS-10_2021-09-16		Y	102517	Nemouridae	25	0.0595	
22	Nymph	RG_FO26_HESS-10_2021-09-16		Y	102994	Perlodidae	25	0.0305	
39	Nymph	RG_FO26_HESS-10_2021-09-16		Y	102788	Taeniopterygidae	25	0.0064	
1		RG_FO26_HESS-10_2021-09-16		Y	115398	Hydropsychidae	25	0.0002	
2		RG_FO26_HESS-10_2021-09-16		Y	115933	Limnephilidae	25	0.0006	
10		RG_FO26_HESS-10_2021-09-16		Y	115096	Rhyacophilidae	25	0.0236	
10		RG_FO26_HESS-10_2021-09-16		Y	568757	Uenoidae	25	0.0016	
3		RG_FO26_HESS-10_2021-09-16		Y	127076	Ceratopogonidae	25	0.0001	
49		RG_FO26_HESS-10_2021-09-16		Y	127917	Chironomidae	25	0.0475	
12		RG_FO26_HESS-10_2021-09-16		Y	135830	Empididae	25	0.0106	
86	larvae	RG_FO26_HESS-10_2021-09-16		Y	125351	Psychodidae	25	0.0266	
2	larvae	RG_FO26_HESS-10_2021-09-16		Y	118840	Tipulidae	25	0.0011	
3	none	RG_FOBCP_HESS-1_2021-09-13		N		Nemata	50	0.0007	
6	none	RG_FOBCP_HESS-1_2021-09-13		Y	68510	Enchytraeidae	50	0.0015	
1	none	RG_FOBCP_HESS-1_2021-09-13		Y	69165	Lumbricidae	100	0.1596	
12	Adult	RG_FOBCP_HESS-1_2021-09-13		Y	83033	Lebertiidae	50	0.0038	
1	Adult	RG_FOBCP_HESS-1_2021-09-13		Y	895710	Sperchonidae	50	0.0004	
5	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	101232	Ephemerellidae	50	0.0196	
104	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	100504	Heptageniidae	50	0.0427	
4	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	102643	Capniidae	50	0.0038	
1	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	103202	Chloroperlidae	50	0.0005	
44	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	102517	Nemouridae	50	0.0167	
1	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	102914	Perlidae	50	0.0075	
32	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	102994	Perlodidae	50	0.0758	
14	Nymph	RG_FOBCP_HESS-1_2021-09-13		Y	102788	Taeniopterygidae	50	0.0056	
2		RG_FOBCP_HESS-1_2021-09-13		Y	116905	Brachycentridae	50	0.0004	
2		RG_FOBCP_HESS-1_2021-09-13		Y	115398	Hydropsychidae	50	0.0791	
2		RG_FOBCP_HESS-1_2021-09-13		Y	127076	Ceratopogonidae	50	0.0006	
20		RG_FOBCP_HESS-1_2021-09-13		Y	127917	Chironomidae	50	0.0170	
5		RG_FOBCP_HESS-1_2021-09-13		Y	135830	Empididae	50	0.0097	
186	larvae	RG_FOBCP_HESS-1_2021-09-13		Y	125351	Psychodidae	50	0.0873	
2	larvae	RG_FOBCP_HESS-1_2021-09-13		Y	118840	Tipulidae	50	0.0015	
3	none	RG_FOBCP_HESS-2_2021-09-13		N		Nemata	100	0.0028	
3	none	RG_FOBCP_HESS-2_2021-09-13		Y	54502	Planariidae	100	0.0058	
2	none	RG_FOBCP_HESS-2_2021-09-13		Y	68510	Enchytraeidae	100	0.0004	
29	Adult	RG_FOBCP_HESS-2_2021-09-13		Y	83033	Lebertiidae	100	0.0082	
1	Adult	RG_FOBCP_HESS-2_2021-09-13		Y	895710	Sperchonidae	100	0.0005	
2	none	RG_FOBCP_HESS-2_2021-09-13		Y	84195	Ostracoda	100	0.0004	
1	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	100755	Baetidae	100	0.0106	
11	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	101232	Ephemerellidae	100	0.0152	
162	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	100504	Heptageniidae	100	0.0626	
3	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	102643	Capniidae	100	0.0043	
8	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	103202	Chloroperlidae	100	0.0124	
67	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	102517	Nemouridae	100	0.0406	
1	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	102914	Perlidae	100	0.0364	
34	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	102994	Perlodidae	100	0.0811	
3	Nymph	RG_FOBCP_HESS-2_2021-09-13		Y	102788	Taeniopterygidae	100	0.0006	
20		RG_FOBCP_HESS-2_2021-09-13		Y	598182	Apataniidae	100	0.0336	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(.	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
4		RG_FOBCP_HESS-2_2021-09-13		Y	117120	Glossosomatidae	100	0.0005	
5		RG_FOBCP_HESS-2_2021-09-13		Y	115096	Rhyacophilidae	100	0.0105	
2		RG_FOBCP_HESS-2_2021-09-13		Y	127076	Ceratopogonidae	100	0.0010	
10		RG_FOBCP_HESS-2_2021-09-13		Y	127917	Chironomidae	100	0.0121	
2		RG_FOBCP_HESS-2_2021-09-13		Y	135830	Empididae	100	0.0026	
172	larvae	RG_FOBCP_HESS-2_2021-09-13		Y	125351	Psychodidae	100	0.0603	
2	larvae	RG_FOBCP_HESS-2_2021-09-13		Y	118840	Tipulidae	100	0.0050	
4	none	RG_FOBCP_HESS-3_2021-09-13		N		Nemata	100	0.0016	
3	none	RG_FOBCP_HESS-3_2021-09-13		Y	68510	Enchytraeidae	100	0.0011	
15	Adult	RG_FOBCP_HESS-3_2021-09-13		Y	83033	Lebertiidae	100	0.0120	
1	Adult	RG_FOBCP_HESS-3_2021-09-13		Y	895710	Sperchonidae	100	0.0006	
1		RG_FOBCP_HESS-3_2021-09-13		Y	114093	Elmidae	100	0.0001	
1	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	100755	Baetidae	100	0.0098	
5	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	101232	Ephemerellidae	100	0.0271	
80	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	100504	Heptageniidae	100	0.0479	
4	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	102643	Capniidae	100	0.0041	
1	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	103202	Chloroperlidae	100	0.0027	
25	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	102517	Nemouridae	100	0.0230	
24	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	102994	Perlodidae	100	0.0499	
7	Nymph	RG_FOBCP_HESS-3_2021-09-13		Y	102788	Taeniopterygidae	100	0.0045	
1		RG_FOBCP_HESS-3_2021-09-13		Y	598182	Apataniidae	100	0.0017	
1		RG_FOBCP_HESS-3_2021-09-13		Y	117120	Glossosomatidae	100	0.0003	
1		RG_FOBCP_HESS-3_2021-09-13		Y	115398	Hydropsychidae	100	0.0362	
1		RG_FOBCP_HESS-3_2021-09-13		Y	115933	Limnephilidae	100	0.0021	
2		RG_FOBCP_HESS-3_2021-09-13		Y	115096	Rhyacophilidae	100	0.0205	
1		RG_FOBCP_HESS-3_2021-09-13		Y	568757	Uenoidae	100	0.0003	
4		RG_FOBCP_HESS-3_2021-09-13		Y	127076	Ceratopogonidae	100	0.0026	
13		RG_FOBCP_HESS-3_2021-09-13		Y	127917	Chironomidae	100	0.0123	
5		RG_FOBCP_HESS-3_2021-09-13		Y	135830	Empididae	100	0.0056	
111	larvae	RG_FOBCP_HESS-3_2021-09-13		Y	125351	Psychodidae	100	0.0632	
1	larvae	RG_FOBCP_HESS-3_2021-09-13		Y	118840	Tipulidae	100	0.0009	
2	none	RG_FOBCP_HESS-4_2021-09-13		N		Nemata	100	0.0009	
12	Adult	RG_FOBCP_HESS-4_2021-09-13		Y	83033	Lebertiidae	100	0.0033	
1	none	RG_FOBCP_HESS-4_2021-09-13		Y	84195	Ostracoda	100	0.0003	
2	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	100755	Baetidae	100	0.0114	
8	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	101232	Ephemerellidae	100	0.0301	
119	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	100504	Heptageniidae	100	0.0466	
2	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	102643	Capniidae	100	0.0004	
2	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	103202	Chloroperlidae	100	0.0042	
119	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	102517	Nemouridae	100	0.0566	
2	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	102914	Perlidae	100	0.3794	
50	Nymph	RG_FOBCP_HESS-4_2021-09-13		Y	102994	Perlodidae	100	0.0796	
4		RG_FOBCP_HESS-4_2021-09-13		Y	116905	Brachycentridae	100	0.0005	
3		RG_FOBCP_HESS-4_2021-09-13		Y	117120	Glossosomatidae	100	0.0030	
9		RG_FOBCP_HESS-4_2021-09-13		Y	115398	Hydropsychidae	100	0.1212	
5		RG_FOBCP_HESS-4_2021-09-13		Y	115096	Rhyacophilidae	100	0.0363	
2		RG_FOBCP_HESS-4_2021-09-13		Y	127076	Ceratopogonidae	100	0.0009	
1		RG_FOBCP_HESS-4_2021-09-13		Y	127917	Chironomidae	100	0.0055	
3		RG_FOBCP_HESS-4_2021-09-13		Y	135830	Empididae	100	0.0034	
184	larvae	RG_FOBCP_HESS-4_2021-09-13		Y	125351	Psychodidae	100	0.1051	
1	none	RG_FOBCP_HESS-5_2021-09-13		N		Nemata	25	0.0002	
2	none	RG_FOBCP_HESS-5_2021-09-13		Y	54502	Planariidae	25	0.0113	
1	none	RG_FOBCP_HESS-5_2021-09-13		Y	68510	Enchytraeidae	25	0.0001	
3	Adult	RG_FOBCP_HESS-5_2021-09-13		Y	83033	Lebertiidae	25	0.0006	
1		RG_FOBCP_HESS-5_2021-09-13		Y	114093	Elmidae	25	0.0015	
7	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	101232	Ephemerellidae	25	0.0340	
62	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	100504	Heptageniidae	25	0.0252	
1	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	100504	Heptageniidae	100	0.0198	large/rare sort
3	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102643	Capniidae	25	0.0019	
1	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	103202	Chloroperlidae	25	0.0003	
28	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102517	Nemouridae	25	0.0152	
2	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102914	Perlidae	100	0.0118	large/rare sort
19	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102994	Perlodidae	25	0.0106	
3	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102994	Perlodidae	100	0.0513	large/rare sort
3	Nymph	RG_FOBCP_HESS-5_2021-09-13		Y	102788	Taeniopterygidae	25	0.0001	
1		RG_FOBCP_HESS-5_2021-09-13		Y	598182	Apataniidae	25	0.0020	
4		RG_FOBCP_HESS-5_2021-09-13		Y	117120	Glossosomatidae	25	0.0014	
2		RG_FOBCP_HESS-5_2021-09-13		Y	115096	Rhyacophilidae	100	0.0657	large/rare sort
2		RG_FOBCP_HESS-5_2021-09-13		Y	115096	Rhyacophilidae	25	0.0060	
2		RG_FOBCP_HESS-5_2021-09-13		Y	127076	Ceratopogonidae	25	0.0001	
3		RG_FOBCP_HESS-5_2021-09-13		Y	127917	Chironomidae	25	0.0037	
1		RG_FOBCP_HESS-5_2021-09-13		Y	135830	Empididae	25	0.0007	
103	larvae	RG_FOBCP_HESS-5_2021-09-13		Y	125351	Psychodidae	25	0.0699	
1	none	RG_FOBCP_HESS-6_2021-09-13		Y	54502	Planariidae	100	0.0003	
1	none	RG_FOBCP_HESS-6_2021-09-13		Y	68510	Enchytraeidae	100	0.0001	
1	none	RG_FOBCP_HESS-6_2021-09-13		Y	69165	Lumbricidae	100	0.0808	
17	Adult	RG_FOBCP_HESS-6_2021-09-13		Y	83033	Lebertiidae	100	0.0082	
3	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	100755	Baetidae	100	0.0113	
12	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	101232	Ephemerellidae	100	0.0464	
174	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	100504	Heptageniidae	100	0.1019	
4	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	102643	Capniidae	100	0.0034	
6	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	103202	Chloroperlidae	100	0.0028	
102	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	102517	Nemouridae	100	0.0463	
58	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	102994	Perlodidae	100	0.0572	
27	Nymph	RG_FOBCP_HESS-6_2021-09-13		Y	102788	Taeniopterygidae	100	0.0080	
1		RG_FOBCP_HESS-6_2021-09-13		Y	598182	Apataniidae	100	0.0016	
1		RG_FOBCP_HESS-6_2021-09-13		Y	116905	Brachycentridae	100	0.0004	
3		RG_FOBCP_HESS-6_2021-09-13		Y	117120	Glossosomatidae	100	0.0020	
5		RG_FOBCP_HESS-6_2021-09-13		Y	115398	Hydropsychidae	100	0.0169	
1		RG_FOBCP_HESS-6_2021-09-13		Y	116793	Lepidostomatidae	100	0.0002	
2		RG_FOBCP_HESS-6_2021-09-13		Y	115933	Limnephilidae	100	0.3816	
5		RG_FOBCP_HESS-6_2021-09-13		Y	115096	Rhyacophilidae	100	0.0082	
4		RG_FOBCP_HESS-6_2021-09-13		Y	127076	Ceratopogonidae	100	0.0013	
10		RG_FOBCP_HESS-6_2021-09-13		Y	127917	Chironomidae	100	0.0047	
1		RG_FOBCP_HESS-6_2021-09-13		Y	135830	Empididae	100	0.0035	
268	larvae	RG_FOBCP_HESS-6_2021-09-13		Y	125351	Psychodidae	100	0.1643	
1	larvae	RG_FOBCP_HESS-6_2021-09-13		Y	126640	Simuliidae	100	0.0035	
5	none	RG_FOBCP_HESS-7_2021-09-13		N		Nemata	100	0.0072	
1	none	RG_FOBCP_HESS-7_2021-09-13		Y	54502	Planariidae	100	0.0086	
8	none	RG_FOBCP_HESS-7_2021-09-13		Y	68510	Enchytraeidae	100	0.0024	
39	Adult	RG_FOBCP_HESS-7_2021-09-13		Y	83033	Lebertiidae	100	0.0123	
1	Adult	RG_FOBCP_HESS-7_2021-09-13		Y	895710	Sperchonidae	100	0.0002	
1		RG_FOBCP_HESS-7_2021-09-13		Y	114093	Elmidae	100	0.0009	
3	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	100755	Baetidae	100	0.0246	
33	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	101232	Ephemerellidae	100	0.0234	
229	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	100504	Heptageniidae	100	0.1468	
9	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	102643	Capniidae	100	0.0033	
12	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	103202	Chloroperlidae	100	0.0089	
2	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	102840	Leuctridae	100	0.0007	
115	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	102517	Nemouridae	100	0.0921	
80	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	102994	Perlodidae	100	0.1662	
24	Nymph	RG_FOBCP_HESS-7_2021-09-13		Y	102788	Taeniopterygidae	100	0.0084	
3		RG_FOBCP_HESS-7_2021-09-13		Y	598182	Apataniidae	100	0.0055	
3		RG_FOBCP_HESS-7_2021-09-13		Y	116905	Brachycentridae	100	0.0006	
9		RG_FOBCP_HESS-7_2021-09-13		Y	117120	Glossosomatidae	100	0.0019	
7		RG_FOBCP_HESS-7_2021-09-13		Y	115398	Hydropsychidae	100	0.0106	
1		RG_FOBCP_HESS-7_2021-09-13		Y	115933	Limnephilidae	100	0.0004	
16		RG_FOBCP_HESS-7_2021-09-13		Y	115096	Rhyacophilidae	100	0.0612	
1		RG_FOBCP_HESS-7_2021-09-13		Y	568757	Uenoidae	100	0.0005	
14		RG_FOBCP_HESS-7_2021-09-13		Y	127076	Ceratopogonidae	100	0.0055	
27		RG_FOBCP_HESS-7_2021-09-13		Y	127917	Chironomidae	100	0.0111	
1	larvae	RG_FOBCP_HESS-7_2021-09-13		Y	130914	Pelecorhyncidae	100	0.0015	
379	larvae	RG_FOBCP_HESS-7_2021-09-13		Y	125351	Psychodidae	100	0.2151	
2	larvae	RG_FOBCP_HESS-7_2021-09-13		Y	126640	Simuliidae	100	0.0125	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
3	larvae	RG_FOBCP_HESS-7_2021-09-13		Y	118840	Tipulidae	100	0.0023	
9	none	RG_FOBCP_HESS-8_2021-09-14		N		Nemata	50	0.0093	
4	none	RG_FOBCP_HESS-8_2021-09-14		Y	68510	Enchytraeidae	50	0.0021	
14	Adult	RG_FOBCP_HESS-8_2021-09-14		Y	83033	Lebertiidae	50	0.0083	
1	Adult	RG_FOBCP_HESS-8_2021-09-14		Y	895710	Sperchonidae	50	0.0004	
1	none	RG_FOBCP_HESS-8_2021-09-14		Y	84195	Ostracoda	50	0.0005	
1		RG_FOBCP_HESS-8_2021-09-14		Y	114093	Elmidae	50	0.0001	
1	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	100755	Baetidae	50	0.0049	
11	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	101232	Ephemerellidae	50	0.0176	
147	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	100504	Heptageniidae	50	0.1020	
1	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	102643	Capniidae	50	0.0017	
3	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	103202	Chloroperlidae	50	0.0054	
95	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	102517	Nemouridae	50	0.0614	
1	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	102914	Perlidae	50	0.0651	
34	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	102994	Perlodidae	50	0.1129	
8	Nymph	RG_FOBCP_HESS-8_2021-09-14		Y	102788	Taeniopterygidae	50	0.0035	
1		RG_FOBCP_HESS-8_2021-09-14		Y	598182	Apataniidae	50	0.0035	
1		RG_FOBCP_HESS-8_2021-09-14		Y	116905	Brachycentridae	50	0.0005	
9		RG_FOBCP_HESS-8_2021-09-14		Y	117120	Glossosomatidae	50	0.0176	
4		RG_FOBCP_HESS-8_2021-09-14		Y	115398	Hydropsychidae	50	0.0379	
9		RG_FOBCP_HESS-8_2021-09-14		Y	115096	Rhyacophilidae	50	0.0742	
2		RG_FOBCP_HESS-8_2021-09-14		Y	568757	Uenoidae	50	0.0011	
6		RG_FOBCP_HESS-8_2021-09-14		Y	127076	Ceratopogonidae	50	0.0030	
7		RG_FOBCP_HESS-8_2021-09-14		Y	127917	Chironomidae	50	0.0116	
3		RG_FOBCP_HESS-8_2021-09-14		Y	135830	Empididae	50	0.0041	
249	larvae	RG_FOBCP_HESS-8_2021-09-14		Y	125351	Psychodidae	50	0.1694	
6	none	RG_FOBCP_HESS-9_2021-09-14		N		Nemata	100	0.0075	
1	none	RG_FOBCP_HESS-9_2021-09-14		Y	54502	Planariidae	100	0.0022	
5	none	RG_FOBCP_HESS-9_2021-09-14		Y	68510	Enchytraeidae	100	0.0019	
4	Adult	RG_FOBCP_HESS-9_2021-09-14		Y	83033	Lebertiidae	100	0.0018	
1	none	RG_FOBCP_HESS-9_2021-09-14		Y	84195	Ostracoda	100	0.0002	
4	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	101232	Ephemerellidae	100	0.0109	
175	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	100504	Heptageniidae	100	0.1686	
1	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	102643	Capniidae	100	0.0033	
42	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	102517	Nemouridae	100	0.0260	
2	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	102914	Perlidae	100	0.0246	
14	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	102994	Perlodidae	100	0.0073	
10	Nymph	RG_FOBCP_HESS-9_2021-09-14		Y	102788	Taeniopterygidae	100	0.0029	
4		RG_FOBCP_HESS-9_2021-09-14		Y	115096	Rhyacophilidae	100	0.0633	
3		RG_FOBCP_HESS-9_2021-09-14		Y	127076	Ceratopogonidae	100	0.0013	
9		RG_FOBCP_HESS-9_2021-09-14		Y	127917	Chironomidae	100	0.0138	
2		RG_FOBCP_HESS-9_2021-09-14		Y	135830	Empididae	100	0.0009	
443	larvae	RG_FOBCP_HESS-9_2021-09-14		Y	125351	Psychodidae	100	0.4892	
2	larvae	RG_FOBCP_HESS-9_2021-09-14		Y	126640	Simuliidae	100	0.0118	
1	larvae	RG_FOBCP_HESS-9_2021-09-14		Y	118840	Tipulidae	100	0.0001	
7	none	RG_FOBCP_HESS-10_2021-09-14		Y	54502	Planariidae	100	0.0121	
9	none	RG_FOBCP_HESS-10_2021-09-14		Y	68510	Enchytraeidae	100	0.0025	
1	Adult	RG_FOBCP_HESS-10_2021-09-14		Y	83033	Lebertiidae	100	0.0004	
2	none	RG_FOBCP_HESS-10_2021-09-14		Y	84195	Ostracoda	100	0.0003	
5	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	101232	Ephemerellidae	100	0.0216	
80	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	100504	Heptageniidae	100	0.0954	
1	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	102643	Capniidae	100	0.0010	
2	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	103202	Chloroperlidae	100	0.0006	
63	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	102517	Nemouridae	100	0.0316	
1	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	102914	Perlidae	100	0.0094	
31	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	102994	Perlodidae	100	0.1204	
10	Nymph	RG_FOBCP_HESS-10_2021-09-14		Y	102788	Taeniopterygidae	100	0.0033	
4		RG_FOBCP_HESS-10_2021-09-14		Y	116905	Brachycentridae	100	0.0005	
2		RG_FOBCP_HESS-10_2021-09-14		Y	117120	Glossosomatidae	100	0.0141	
19		RG_FOBCP_HESS-10_2021-09-14		Y	115398	Hydropsychidae	100	0.2251	
4		RG_FOBCP_HESS-10_2021-09-14		Y	115096	Rhyacophilidae	100	0.0797	
6		RG_FOBCP_HESS-10_2021-09-14		Y	127076	Ceratopogonidae	100	0.0023	
4		RG_FOBCP_HESS-10_2021-09-14		Y	127917	Chironomidae	100	0.0023	
3		RG_FOBCP_HESS-10_2021-09-14		Y	135830	Empididae	100	0.0019	
499	larvae	RG_FOBCP_HESS-10_2021-09-14		Y	125351	Psychodidae	100	0.3765	
2	larvae	RG_FOBCP_HESS-10_2021-09-14		Y	126640	Simuliidae	100	0.0003	
1	larvae	RG_FOBCP_HESS-10_2021-09-14		Y	118840	Tipulidae	100	0.0071	
3	none	RG_FOBKS_HESS-1_2021-09-08		Y	68510	Enchytraeidae	100	0.0005	
2	Adult	RG_FOBKS_HESS-1_2021-09-08		Y	83033	Lebertiidae	100	0.0005	
1	none	RG_FOBKS_HESS-1_2021-09-08		Y	84195	Ostracoda	100	0.0004	
2		RG_FOBKS_HESS-1_2021-09-08		Y	114093	Elmidae	100	0.0002	
4	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	100755	Baetidae	100	0.0132	
3	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	101232	Ephemerellidae	100	0.0003	
137	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	100504	Heptageniidae	100	0.0940	
2	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	102517	Nemouridae	100	0.0007	
2	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	102914	Perlidae	100	0.0041	
2	Nymph	RG_FOBKS_HESS-1_2021-09-08		Y	102994	Perlodidae	100	0.0490	
1		RG_FOBKS_HESS-1_2021-09-08		Y	115398	Hydropsychidae	100	0.0036	
8		RG_FOBKS_HESS-1_2021-09-08		Y	115096	Rhyacophilidae	100	0.0415	
1		RG_FOBKS_HESS-1_2021-09-08		Y	118831	Diptera	100	0.0007	indeterminate
1		RG_FOBKS_HESS-1_2021-09-08		Y	127076	Ceratopogonidae	100	0.0005	
1		RG_FOBKS_HESS-1_2021-09-08		Y	127917	Chironomidae	100	0.0004	
1		RG_FOBKS_HESS-1_2021-09-08		Y	135830	Empididae	100	0.0011	
16	larvae	RG_FOBKS_HESS-1_2021-09-08		Y	125351	Psychodidae	100	0.0059	
2	none	RG_FOBKS_HESS-2_2021-09-10		Y	54502	Planariidae	100	0.0024	
3	none	RG_FOBKS_HESS-2_2021-09-10		Y	68510	Enchytraeidae	100	0.0008	
2	Adult	RG_FOBKS_HESS-2_2021-09-10		Y	83033	Lebertiidae	100	0.0006	
1	Adult	RG_FOBKS_HESS-2_2021-09-10		Y	895710	Sperchonidae	100	0.0002	
1	none	RG_FOBKS_HESS-2_2021-09-10		Y	84195	Ostracoda	100	0.0004	
1		RG_FOBKS_HESS-2_2021-09-10		Y	114093	Elmidae	100	0.0016	
2	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	100755	Baetidae	100	0.0122	
8	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	101232	Ephemerellidae	100	0.0046	
311	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	100504	Heptageniidae	100	0.1471	
1	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	102643	Capniidae	100	0.0008	
4	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	102517	Nemouridae	100	0.0042	
2	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	102914	Perlidae	100	0.0113	
9	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	102994	Perlodidae	100	0.1491	
5	Nymph	RG_FOBKS_HESS-2_2021-09-10		Y	102788	Taeniopterygidae	100	0.0014	
1		RG_FOBKS_HESS-2_2021-09-10		Y	598182	Apataniidae	100	0.0006	
5		RG_FOBKS_HESS-2_2021-09-10		Y	117120	Glossosomatidae	100	0.0013	
2		RG_FOBKS_HESS-2_2021-09-10		Y	115398	Hydropsychidae	100	0.0032	
9		RG_FOBKS_HESS-2_2021-09-10		Y	115096	Rhyacophilidae	100	0.0500	
3		RG_FOBKS_HESS-2_2021-09-10		Y	127917	Chironomidae	100	0.0035	
1		RG_FOBKS_HESS-2_2021-09-10		Y	135830	Empididae	100	0.0007	
70	larvae	RG_FOBKS_HESS-2_2021-09-10		Y	125351	Psychodidae	100	0.0269	
1	larvae	RG_FOBKS_HESS-2_2021-09-10		Y	118840	Tipulidae	100	0.0017	
5	none	RG_FOBKS_HESS-3_2021-09-10		N		Nemata	100	0.0015	
2	none	RG_FOBKS_HESS-3_2021-09-10		Y	54502	Planariidae	100	0.0091	
2	Adult	RG_FOBKS_HESS-3_2021-09-10		Y	83033	Lebertiidae	100	0.0002	
3	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	100755	Baetidae	100	0.0080	
5	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	101232	Ephemerellidae	100	0.0135	
197	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	100504	Heptageniidae	100	0.1242	
3	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	102517	Nemouridae	100	0.0018	
4	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	102914	Perlidae	100	0.1899	
8	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	102994	Perlodidae	100	0.1468	
1	Nymph	RG_FOBKS_HESS-3_2021-09-10		Y	102788	Taeniopterygidae	100	0.0001	
1		RG_FOBKS_HESS-3_2021-09-10		Y	117120	Glossosomatidae	100	0.0029	
1		RG_FOBKS_HESS-3_2021-09-10		Y	115398	Hydropsychidae	100	0.0024	
18		RG_FOBKS_HESS-3_2021-09-10		Y	115096	Rhyacophilidae	100	0.0852	
1		RG_FOBKS_HESS-3_2021-09-10		Y	127076	Ceratopogonidae	100	0.0004	
3		RG_FOBKS_HESS-3_2021-09-10		Y	127917	Chironomidae	100	0.0088	
1		RG_FOBKS_HESS-3_2021-09-10		Y	135830	Empididae	100	0.0001	
78	larvae	RG_FOBKS_HESS-3_2021-09-10		Y	125351	Psychodidae	100	0.0369	
4	none	RG_FOBKS_HESS-4_2021-09-10		N		Nemata	100	0.0026	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
3	none	RG_FOBKS_HESS-4_2021-09-10		Y	54502	Planariidae	100	0.0045	
1	none	RG_FOBKS_HESS-4_2021-09-10		Y	68510	Enchytraeidae	100	0.0002	
5	Adult	RG_FOBKS_HESS-4_2021-09-10		Y	83033	Lebertiidae	100	0.0013	
1	Adult	RG_FOBKS_HESS-4_2021-09-10		Y	895710	Sperchonidae	100	0.0003	
3	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	100755	Baetidae	100	0.0112	
10	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	101232	Ephemerellidae	100	0.0082	
162	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	100504	Heptageniidae	100	0.1106	
1	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	103202	Chloroperlidae	100	0.0001	
2	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	102517	Nemouridae	100	0.0041	
1	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	102914	Perlidae	100	0.0003	
3	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	102994	Perlodidae	100	0.0578	
2	Nymph	RG_FOBKS_HESS-4_2021-09-10		Y	102788	Taeniopterygidae	100	0.0002	
1		RG_FOBKS_HESS-4_2021-09-10		Y	598182	Apataniidae	100	0.0005	
1		RG_FOBKS_HESS-4_2021-09-10		Y	116905	Brachycentridae	100	0.0001	
2		RG_FOBKS_HESS-4_2021-09-10		Y	117120	Glossosomatidae	100	0.0003	
6		RG_FOBKS_HESS-4_2021-09-10		Y	115096	Rhyacophilidae	100	0.0275	
2		RG_FOBKS_HESS-4_2021-09-10		Y	127076	Ceratopogonidae	100	0.0003	
3		RG_FOBKS_HESS-4_2021-09-10		Y	127917	Chironomidae	100	0.0013	
1		RG_FOBKS_HESS-4_2021-09-10		Y	135830	Empididae	100	0.0006	
64	larvae	RG_FOBKS_HESS-4_2021-09-10		Y	125351	Psychodidae	100	0.0366	
2	larvae	RG_FOBKS_HESS-4_2021-09-10		Y	126640	Simuliidae	100	0.0048	
1	none	RG_FOBKS_HESS-5_2021-09-10		Y	68854	Naididae	100	0.0001	
6	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	100755	Baetidae	100	0.0225	
5	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	101232	Ephemerellidae	100	0.0027	
83	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	100504	Heptageniidae	100	0.0812	
1	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	103202	Chloroperlidae	100	0.0017	
4	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	102517	Nemouridae	100	0.0047	
10	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	102994	Perlodidae	100	0.2857	
2	Nymph	RG_FOBKS_HESS-5_2021-09-10		Y	102788	Taeniopterygidae	100	0.0004	
1		RG_FOBKS_HESS-5_2021-09-10		Y	598182	Apataniidae	100	0.0001	
1		RG_FOBKS_HESS-5_2021-09-10		Y	117120	Glossosomatidae	100	0.0002	
3		RG_FOBKS_HESS-5_2021-09-10		Y	115096	Rhyacophilidae	100	0.0186	
1		RG_FOBKS_HESS-5_2021-09-10		Y	127076	Ceratopogonidae	100	0.0002	
1		RG_FOBKS_HESS-5_2021-09-10		Y	127917	Chironomidae	100	0.0054	
13	larvae	RG_FOBKS_HESS-5_2021-09-10		Y	125351	Psychodidae	100	0.0046	
1	none	RG_FOBKS_HESS-6_2021-09-10		Y	68510	Enchytraeidae	100	0.0002	
5	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	100755	Baetidae	100	0.0178	
1	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	101232	Ephemerellidae	100	0.0013	
113	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	100504	Heptageniidae	100	0.0990	
2	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	103202	Chloroperlidae	100	0.0048	
3	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	102517	Nemouridae	100	0.0011	
6	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	102994	Perlodidae	100	0.1504	
2	Nymph	RG_FOBKS_HESS-6_2021-09-10		Y	102788	Taeniopterygidae	100	0.0004	
2		RG_FOBKS_HESS-6_2021-09-10		Y	116905	Brachycentridae	100	0.0002	
2		RG_FOBKS_HESS-6_2021-09-10		Y	115398	Hydropsychidae	100	0.2015	
5		RG_FOBKS_HESS-6_2021-09-10		Y	115096	Rhyacophilidae	100	0.0174	
1		RG_FOBKS_HESS-6_2021-09-10		Y	127076	Ceratopogonidae	100	0.0002	
1		RG_FOBKS_HESS-6_2021-09-10		Y	127917	Chironomidae	100	0.0039	
22	larvae	RG_FOBKS_HESS-6_2021-09-10		Y	125351	Psychodidae	100	0.0093	
2	none	RG_FOBKS_HESS-7_2021-09-10		N		Nemata	100	0.0019	
1	none	RG_FOBKS_HESS-7_2021-09-10		Y	54502	Planariidae	100	0.0005	
23	none	RG_FOBKS_HESS-7_2021-09-10		Y	68510	Enchytraeidae	100	0.0071	
3	Adult	RG_FOBKS_HESS-7_2021-09-10		Y	83033	Lebertiidae	100	0.0008	
2	none	RG_FOBKS_HESS-7_2021-09-10		Y	84195	Ostracoda	100	0.0006	
8	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	100755	Baetidae	100	0.0300	
9	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	101232	Ephemerellidae	100	0.0074	
217	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	100504	Heptageniidae	100	0.1103	
2	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	103202	Chloroperlidae	100	0.0024	
1	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	102517	Nemouridae	100	0.0001	
1	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	102914	Perlidae	100	0.0008	
7	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	102994	Perlodidae	100	0.1596	
9	Nymph	RG_FOBKS_HESS-7_2021-09-10		Y	102788	Taeniopterygidae	100	0.0018	
1		RG_FOBKS_HESS-7_2021-09-10		Y	116905	Brachycentridae	100	0.0001	
3		RG_FOBKS_HESS-7_2021-09-10		Y	117120	Glossosomatidae	100	0.0017	
3		RG_FOBKS_HESS-7_2021-09-10		Y	115398	Hydropsychidae	100	0.0069	
11		RG_FOBKS_HESS-7_2021-09-10		Y	115096	Rhyacophilidae	100	0.0277	
3		RG_FOBKS_HESS-7_2021-09-10		Y	127076	Ceratopogonidae	100	0.0005	
6		RG_FOBKS_HESS-7_2021-09-10		Y	127917	Chironomidae	100	0.0231	
133	larvae	RG_FOBKS_HESS-7_2021-09-10		Y	125351	Psychodidae	100	0.0494	
1	larvae	RG_FOBKS_HESS-7_2021-09-10		Y	118840	Tipulidae	100	0.0002	
3	none	RG_FOBKS_HESS-8_2021-09-10		N		Nemata	100	0.0023	
42	none	RG_FOBKS_HESS-8_2021-09-10		Y	68510	Enchytraeidae	100	0.0104	
1		RG_FOBKS_HESS-8_2021-09-10		Y	114093	Elmidae	100	0.0003	
1	Nymph	RG_FOBKS_HESS-8_2021-09-10		Y	100755	Baetidae	100	0.0015	
2	Nymph	RG_FOBKS_HESS-8_2021-09-10		Y	101232	Ephemerellidae	100	0.0019	
110	Nymph	RG_FOBKS_HESS-8_2021-09-10		Y	100504	Heptageniidae	100	0.0639	
3	Nymph	RG_FOBKS_HESS-8_2021-09-10		Y	102994	Perlodidae	100	0.0962	
1	Nymph	RG_FOBKS_HESS-8_2021-09-10		Y	102788	Taeniopterygidae	100	0.0002	
1		RG_FOBKS_HESS-8_2021-09-10		Y	115398	Hydropsychidae	100	0.0012	
9		RG_FOBKS_HESS-8_2021-09-10		Y	115096	Rhyacophilidae	100	0.0385	
1		RG_FOBKS_HESS-8_2021-09-10		Y	127076	Ceratopogonidae	100	0.0003	
8		RG_FOBKS_HESS-8_2021-09-10		Y	127917	Chironomidae	100	0.0219	
20	larvae	RG_FOBKS_HESS-8_2021-09-10		Y	125351	Psychodidae	100	0.0050	
2	none	RG_FOBKS_HESS-9_2021-09-10		N		Nemata	100	0.0016	
5	none	RG_FOBKS_HESS-9_2021-09-10		Y	54502	Planariidae	100	0.0140	
1	none	RG_FOBKS_HESS-9_2021-09-10		Y	68510	Enchytraeidae	100	0.0002	
1	none	RG_FOBKS_HESS-9_2021-09-10		Y	84195	Ostracoda	100	0.0004	
5	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	100755	Baetidae	100	0.0114	
2	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	101232	Ephemerellidae	100	0.0024	
103	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	100504	Heptageniidae	100	0.0830	
1	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	103202	Chloroperlidae	100	0.0011	
6	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	102517	Nemouridae	100	0.0098	
7	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	102994	Perlodidae	100	0.0032	
5	Nymph	RG_FOBKS_HESS-9_2021-09-10		Y	102788	Taeniopterygidae	100	0.0008	
1		RG_FOBKS_HESS-9_2021-09-10		Y	116905	Brachycentridae	100	0.0001	
6		RG_FOBKS_HESS-9_2021-09-10		Y	117120	Glossosomatidae	100	0.0020	
4		RG_FOBKS_HESS-9_2021-09-10		Y	115096	Rhyacophilidae	100	0.0058	
1		RG_FOBKS_HESS-9_2021-09-10		Y	127076	Ceratopogonidae	100	0.0002	
52	larvae	RG_FOBKS_HESS-9_2021-09-10		Y	125351	Psychodidae	100	0.0170	
1	larvae	RG_FOBKS_HESS-9_2021-09-10		Y	126640	Simuliidae	100	0.0003	
1	none	RG_FOBKS_HESS-10_2021-09-10		N		Nemata	100	0.0007	
4	none	RG_FOBKS_HESS-10_2021-09-10		Y	68510	Enchytraeidae	100	0.0009	
2	Adult	RG_FOBKS_HESS-10_2021-09-10		Y	83033	Lebertiidae	100	0.0005	
1	none	RG_FOBKS_HESS-10_2021-09-10		Y	84195	Ostracoda	100	0.0004	
2	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	100755	Baetidae	100	0.0003	
5	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	101232	Ephemerellidae	100	0.0060	
144	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	100504	Heptageniidae	100	0.1231	
3	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	103202	Chloroperlidae	100	0.0006	
2	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	102994	Perlodidae	100	0.0008	
4	Nymph	RG_FOBKS_HESS-10_2021-09-10		Y	102788	Taeniopterygidae	100	0.0015	
2		RG_FOBKS_HESS-10_2021-09-10		Y	117120	Glossosomatidae	100	0.0011	
2		RG_FOBKS_HESS-10_2021-09-10		Y	115398	Hydropsychidae	100	0.0068	
13		RG_FOBKS_HESS-10_2021-09-10		Y	115096	Rhyacophilidae	100	0.0357	
1		RG_FOBKS_HESS-10_2021-09-10		Y	568757	Uenoidae	100	0.0001	
4		RG_FOBKS_HESS-10_2021-09-10		Y	127076	Ceratopogonidae	100	0.0011	
1		RG_FOBKS_HESS-10_2021-09-10		Y	127917	Chironomidae	100	0.0035	
1		RG_FOBKS_HESS-10_2021-09-10		Y	135830	Empididae	100	0.0002	
142	larvae	RG_FOBKS_HESS-10_2021-09-10		Y	125351	Psychodidae	100	0.0509	
2	none	RG_FOBSC_HESS-1_2021-09-10		N		Nemata	100	0.0025	
2	none	RG_FOBSC_HESS-1_2021-09-10		Y	54502	Planariidae	100	0.0077	
18	none	RG_FOBSC_HESS-1_2021-09-10		Y	68510	Enchytraeidae	100	0.0043	
8	Adult	RG_FOBSC_HESS-1_2021-09-10		Y	83033	Lebertiidae	100	0.0015	
2	none	RG_FOBSC_HESS-1_2021-09-10		Y	84195	Ostracoda	100	0.0003	
2		RG_FOBSC_HESS-1_2021-09-10		Y	114093	Elmidae	100	0.0025	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
1	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	100755	Baetidae	100	0.0006	
12	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	101232	Ephemerellidae	100	0.0101	
142	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	100504	Heptageniidae	100	0.0612	
2	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	102643	Capniidae	100	0.0023	
18	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	102517	Nemouridae	100	0.0109	
8	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	102994	Perlodidae	100	0.0872	
4	Nymph	RG_FOBSC_HESS-1_2021-09-10		Y	102788	Taeniopterygidae	100	0.0007	
3		RG_FOBSC_HESS-1_2021-09-10		Y	598182	Apataniidae	100	0.0021	
1		RG_FOBSC_HESS-1_2021-09-10		Y	116905	Brachycentridae	100	0.0353	
2		RG_FOBSC_HESS-1_2021-09-10		Y	117120	Glossosomatidae	100	0.0003	
11		RG_FOBSC_HESS-1_2021-09-10		Y	115398	Hydropsychidae	100	0.1555	
5		RG_FOBSC_HESS-1_2021-09-10		Y	115096	Rhyacophilidae	100	0.0399	
5		RG_FOBSC_HESS-1_2021-09-10		Y	127076	Ceratopogonidae	100	0.0013	
8		RG_FOBSC_HESS-1_2021-09-10		Y	127917	Chironomidae	100	0.0033	
2		RG_FOBSC_HESS-1_2021-09-10		Y	135830	Empididae	100	0.0015	
235	larvae	RG_FOBSC_HESS-1_2021-09-10		Y	125351	Psychodidae	100	0.1220	
3	none	RG_FOBSC_HESS-2_2021-09-10		Y	54502	Planariidae	100	0.0183	
25	none	RG_FOBSC_HESS-2_2021-09-10		Y	68510	Enchytraeidae	100	0.0071	
2	none	RG_FOBSC_HESS-2_2021-09-10		Y	69165	Lumbricidae	100	0.2035	
4	Adult	RG_FOBSC_HESS-2_2021-09-10		Y	83033	Lebertiidae	100	0.0011	
4	none	RG_FOBSC_HESS-2_2021-09-10		Y	84195	Ostracoda	100	0.0013	
2	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	100755	Baetidae	100	0.0066	
7	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	101232	Ephemerellidae	100	0.0129	
260	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	100504	Heptageniidae	100	0.4327	
2	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	102643	Capniidae	100	0.0014	
25	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	102517	Nemouridae	100	0.0167	
2	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	102914	Perlidae	100	0.0112	
17	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	102994	Perlodidae	100	0.0999	
1	Nymph	RG_FOBSC_HESS-2_2021-09-10		Y	102788	Taeniopterygidae	100	0.0004	
5		RG_FOBSC_HESS-2_2021-09-10		Y	117120	Glossosomatidae	100	0.0026	
17		RG_FOBSC_HESS-2_2021-09-10		Y	115398	Hydropsychidae	100	0.5112	
24		RG_FOBSC_HESS-2_2021-09-10		Y	115096	Rhyacophilidae	100	0.0912	
12		RG_FOBSC_HESS-2_2021-09-10		Y	127917	Chironomidae	100	0.0286	
7		RG_FOBSC_HESS-2_2021-09-10		Y	135830	Empididae	100	0.0084	
548	larvae	RG_FOBSC_HESS-2_2021-09-10		Y	125351	Psychodidae	100	0.3802	
2	larvae	RG_FOBSC_HESS-2_2021-09-10		Y	126640	Simuliidae	100	0.0119	
1	none	RG_FOBSC_HESS-3_2021-09-13		N		Nemata	100	0.0009	
1	none	RG_FOBSC_HESS-3_2021-09-13		Y	54502	Planariidae	100	0.0039	
7	none	RG_FOBSC_HESS-3_2021-09-13		Y	68510	Enchytraeidae	100	0.0050	
3	Adult	RG_FOBSC_HESS-3_2021-09-13		Y	83033	Lebertiidae	100	0.0009	
2	none	RG_FOBSC_HESS-3_2021-09-13		Y	84195	Ostracoda	100	0.0015	
1	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	101232	Ephemerellidae	100	0.0024	
107	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	100504	Heptageniidae	100	0.0783	
1	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	103202	Chloroperlidae	100	0.0009	
6	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	102517	Nemouridae	100	0.0027	
1	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	102914	Perlidae	100	0.0140	
6	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	102994	Perlodidae	100	0.0644	
2	Nymph	RG_FOBSC_HESS-3_2021-09-13		Y	102788	Taeniopterygidae	100	0.0014	
2		RG_FOBSC_HESS-3_2021-09-13		Y	116905	Brachycentridae	100	0.0005	
1		RG_FOBSC_HESS-3_2021-09-13		Y	117120	Glossosomatidae	100	0.0004	
1		RG_FOBSC_HESS-3_2021-09-13		Y	115398	Hydropsychidae	100	0.0050	
12		RG_FOBSC_HESS-3_2021-09-13		Y	115096	Rhyacophilidae	100	0.1245	
3		RG_FOBSC_HESS-3_2021-09-13		Y	127076	Ceratopogonidae	100	0.0020	
4		RG_FOBSC_HESS-3_2021-09-13		Y	135830	Empididae	100	0.0040	
235	larvae	RG_FOBSC_HESS-3_2021-09-13		Y	125351	Psychodidae	100	0.1931	
3	none	RG_FOBSC_HESS-4_2021-09-13		N		Nemata	100	0.0013	
4	none	RG_FOBSC_HESS-4_2021-09-13		Y	54502	Planariidae	100	0.0147	
8	none	RG_FOBSC_HESS-4_2021-09-13		Y	68510	Enchytraeidae	100	0.0041	
7	Adult	RG_FOBSC_HESS-4_2021-09-13		Y	83033	Lebertiidae	100	0.0027	
2	Adult	RG_FOBSC_HESS-4_2021-09-13		Y	895710	Sperchonidae	100	0.0006	
7	none	RG_FOBSC_HESS-4_2021-09-13		Y	84195	Ostracoda	100	0.0024	
4	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	100755	Baetidae	100	0.0166	
9	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	101232	Ephemerellidae	100	0.0138	
133	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	100504	Heptageniidae	100	0.1735	
2	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	102643	Capniidae	100	0.0024	
34	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	102517	Nemouridae	100	0.0362	
1	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	102914	Perlidae	100	0.0040	
25	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	102994	Perlodidae	100	0.1130	
1	Nymph	RG_FOBSC_HESS-4_2021-09-13		Y	102788	Taeniopterygidae	100	0.0005	
6		RG_FOBSC_HESS-4_2021-09-13		Y	116905	Brachycentridae	100	0.0010	
4		RG_FOBSC_HESS-4_2021-09-13		Y	117120	Glossosomatidae	100	0.0006	
11		RG_FOBSC_HESS-4_2021-09-13		Y	115398	Hydropsychidae	100	0.0778	
2		RG_FOBSC_HESS-4_2021-09-13		Y	115096	Rhyacophilidae	100	0.0189	
8		RG_FOBSC_HESS-4_2021-09-13		Y	127076	Ceratopogonidae	100	0.0024	
7		RG_FOBSC_HESS-4_2021-09-13		Y	127917	Chironomidae	100	0.0139	
1		RG_FOBSC_HESS-4_2021-09-13		Y	135830	Empididae	100	0.0002	
180	larvae	RG_FOBSC_HESS-4_2021-09-13		Y	125351	Psychodidae	100	0.1630	
1	larvae	RG_FOBSC_HESS-4_2021-09-13		Y	118840	Tipulidae	100	0.2521	
1	none	RG_FOBSC_HESS-5_2021-09-13		N		Nemata	50	0.0001	
1	none	RG_FOBSC_HESS-5_2021-09-13		Y	68510	Enchytraeidae	50	0.0006	
2	Adult	RG_FOBSC_HESS-5_2021-09-13		Y	83033	Lebertiidae	50	0.0004	
1	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	100755	Baetidae	50	0.0017	
1	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	101232	Ephemerellidae	50	0.0040	
108	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	100504	Heptageniidae	50	0.1366	
4	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	103202	Chloroperlidae	50	0.0085	
2	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	102840	Leuctridae	50	0.0036	
25	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	102517	Nemouridae	50	0.0163	
1	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	102914	Perlidae	50	0.0073	
14	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	102994	Perlodidae	50	0.0553	
3	Nymph	RG_FOBSC_HESS-5_2021-09-13		Y	102788	Taeniopterygidae	50	0.0012	
5		RG_FOBSC_HESS-5_2021-09-13		Y	117120	Glossosomatidae	50	0.0014	
12		RG_FOBSC_HESS-5_2021-09-13		Y	115398	Hydropsychidae	50	0.2753	
19		RG_FOBSC_HESS-5_2021-09-13		Y	115096	Rhyacophilidae	50	0.0956	
9		RG_FOBSC_HESS-5_2021-09-13		Y	127076	Ceratopogonidae	50	0.0061	
3		RG_FOBSC_HESS-5_2021-09-13		Y	127917	Chironomidae	50	0.0017	
256	larvae	RG_FOBSC_HESS-5_2021-09-13		Y	125351	Psychodidae	50	0.2475	
1	larvae	RG_FOBSC_HESS-5_2021-09-13		Y	126640	Simuliidae	50	0.0064	
1	none	RG_FOBSC_HESS-6_2021-09-13		Y	54502	Planariidae	100	0.0009	
1	none	RG_FOBSC_HESS-6_2021-09-13		Y	68510	Enchytraeidae	100	0.0002	
3	Adult	RG_FOBSC_HESS-6_2021-09-13		Y	83033	Lebertiidae	100	0.0006	
2		RG_FOBSC_HESS-6_2021-09-13		Y	114093	Elmidae	100	0.0004	
16	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	101232	Ephemerellidae	100	0.0032	
102	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	100504	Heptageniidae	100	0.0723	
1	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	102643	Capniidae	100	0.0002	
1	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	103202	Chloroperlidae	100	0.0016	
4	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	102517	Nemouridae	100	0.0032	
12	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	102994	Perlodidae	100	0.1819	
3	Nymph	RG_FOBSC_HESS-6_2021-09-13		Y	102788	Taeniopterygidae	100	0.0005	
1		RG_FOBSC_HESS-6_2021-09-13		Y	116905	Brachycentridae	100	0.0001	
1		RG_FOBSC_HESS-6_2021-09-13		Y	117120	Glossosomatidae	100	0.0001	
4		RG_FOBSC_HESS-6_2021-09-13		Y	115096	Rhyacophilidae	100	0.0240	
12		RG_FOBSC_HESS-6_2021-09-13		Y	127076	Ceratopogonidae	100	0.0035	
2		RG_FOBSC_HESS-6_2021-09-13		Y	127917	Chironomidae	100	0.0077	
223	larvae	RG_FOBSC_HESS-6_2021-09-13		Y	125351	Psychodidae	100	0.1322	
2	larvae	RG_FOBSC_HESS-6_2021-09-13		Y	118840	Tipulidae	100	0.0694	
1	none	RG_FOBSC_HESS-7_2021-09-13		N		Nemata	100	0.0042	
2	none	RG_FOBSC_HESS-7_2021-09-13		Y	68510	Enchytraeidae	100	0.0063	
1	none	RG_FOBSC_HESS-7_2021-09-13		Y	99237	Collembola	100	0.0010	
3	Nymph	RG_FOBSC_HESS-7_2021-09-13		Y	101232	Ephemerellidae	100	0.0055	
43	Nymph	RG_FOBSC_HESS-7_2021-09-13		Y	100504	Heptageniidae	100	0.0302	
7	Nymph	RG_FOBSC_HESS-7_2021-09-13		Y	102517	Nemouridae	100	0.0146	
3	Nymph	RG_FOBSC_HESS-7_2021-09-13		Y	102994	Perlodidae	100	0.0468	
3	Nymph	RG_FOBSC_HESS-7_2021-09-13		Y	102788	Taeniopterygidae	100	0.0016	
6		RG_FOBSC_HESS-7_2021-09-13		Y	117120	Glossosomatidae	100	0.0047	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
1		RG_FOBSC_HESS-7_2021-09-13		Y	115398	Hydropsychidae	100	0.0133	
3		RG_FOBSC_HESS-7_2021-09-13		Y	115096	Rhyacophilidae	100	0.0308	
1		RG_FOBSC_HESS-7_2021-09-13		Y	127917	Chironomidae	100	0.0022	
78	larvae	RG_FOBSC_HESS-7_2021-09-13		Y	125351	Psychodidae	100	0.0494	
3	none	RG_FOBSC_HESS-8_2021-09-13		Y	54502	Planariidae	100	0.0085	
11	none	RG_FOBSC_HESS-8_2021-09-13		Y	68510	Enchytraeidae	100	0.0029	
8	Adult	RG_FOBSC_HESS-8_2021-09-13		Y	83033	Lebertiidae	100	0.0027	
2	Adult	RG_FOBSC_HESS-8_2021-09-13		Y	895710	Sperchonidae	100	0.0001	
1		RG_FOBSC_HESS-8_2021-09-13		Y	114093	Elmidae	100	0.0031	
6	Nymph	RG_FOBSC_HESS-8_2021-09-13		Y	101232	Ephemerellidae	100	0.0063	
20	Nymph	RG_FOBSC_HESS-8_2021-09-13		Y	100504	Heptageniidae	100	0.0513	
8	Nymph	RG_FOBSC_HESS-8_2021-09-13		Y	102517	Nemouridae	100	0.0090	
2	Nymph	RG_FOBSC_HESS-8_2021-09-13		Y	102994	Perlodidae	100	0.0010	
5		RG_FOBSC_HESS-8_2021-09-13		Y	598182	Apataniidae	100	0.0027	
8		RG_FOBSC_HESS-8_2021-09-13		Y	117120	Glossosomatidae	100	0.0023	
7		RG_FOBSC_HESS-8_2021-09-13		Y	115398	Hydropsychidae	100	0.0359	
2		RG_FOBSC_HESS-8_2021-09-13		Y	115096	Rhyacophilidae	100	0.0040	
1		RG_FOBSC_HESS-8_2021-09-13		Y	568757	Uenoidae	100	0.0001	
2		RG_FOBSC_HESS-8_2021-09-13		Y	127917	Chironomidae	100	0.0071	
9		RG_FOBSC_HESS-8_2021-09-13		Y	135830	Empididae	100	0.0082	
27	larvae	RG_FOBSC_HESS-8_2021-09-13		Y	125351	Psychodidae	100	0.0141	
1	larvae	RG_FOBSC_HESS-8_2021-09-13		Y	118840	Tipulidae	100	0.0001	
3	none	RG_FOBSC_HESS-9_2021-09-13		Y	54502	Planariidae	100	0.0300	
6	none	RG_FOBSC_HESS-9_2021-09-13		Y	68510	Enchytraeidae	100	0.0068	
3	Adult	RG_FOBSC_HESS-9_2021-09-13		Y	83033	Lebertiidae	100	0.0021	
2	none	RG_FOBSC_HESS-9_2021-09-13		Y	84195	Ostracoda	100	0.0014	
2	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	568544	Ameletidae	100	0.0402	
3	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	101232	Ephemerellidae	100	0.0222	
68	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	100504	Heptageniidae	100	0.1265	
1	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	102643	Capniidae	100	0.0132	
11	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	102517	Nemouridae	100	0.1986	
1	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	102914	Perlidae	100	0.4926	
12	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	102994	Perlodidae	100	0.1507	
1	Nymph	RG_FOBSC_HESS-9_2021-09-13		Y	102788	Taeniopterygidae	100	0.0007	
1		RG_FOBSC_HESS-9_2021-09-13		Y	115398	Hydropsychidae	100	0.0406	
3		RG_FOBSC_HESS-9_2021-09-13		Y	115096	Rhyacophilidae	100	0.0454	
1		RG_FOBSC_HESS-9_2021-09-13		Y	127076	Ceratopogonidae	100	0.0016	
5		RG_FOBSC_HESS-9_2021-09-13		Y	127917	Chironomidae	100	0.0281	
2		RG_FOBSC_HESS-9_2021-09-13		Y	135830	Empididae	100	0.0121	
113	larvae	RG_FOBSC_HESS-9_2021-09-13		Y	125351	Psychodidae	100	0.0972	
4	none	RG_FOBSC_HESS-10_2021-09-13		N		Nemata	100	0.0036	
9	none	RG_FOBSC_HESS-10_2021-09-13		Y	68510	Enchytraeidae	100	0.0015	
6	Adult	RG_FOBSC_HESS-10_2021-09-13		Y	83033	Lebertiidae	100	0.0017	
5	none	RG_FOBSC_HESS-10_2021-09-13		Y	84195	Ostracoda	100	0.0012	
2		RG_FOBSC_HESS-10_2021-09-13		Y	114093	Elmidae	100	0.0009	
1	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	100755	Baetidae	100	0.0008	
12	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	101232	Ephemerellidae	100	0.0007	
113	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	100504	Heptageniidae	100	0.0525	
1	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	103202	Chloroperlidae	100	0.0007	
7	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	102517	Nemouridae	100	0.0052	
1	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	102914	Perlidae	100	0.1320	
9	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	102994	Perlodidae	100	0.0725	
3	Nymph	RG_FOBSC_HESS-10_2021-09-13		Y	102788	Taeniopterygidae	100	0.0001	
1		RG_FOBSC_HESS-10_2021-09-13		Y	117120	Glossosomatidae	100	0.0001	
1		RG_FOBSC_HESS-10_2021-09-13		Y	115398	Hydropsychidae	100	0.0018	
8		RG_FOBSC_HESS-10_2021-09-13		Y	115096	Rhyacophilidae	100	0.0237	
8		RG_FOBSC_HESS-10_2021-09-13		Y	127076	Ceratopogonidae	100	0.0018	
6		RG_FOBSC_HESS-10_2021-09-13		Y	127917	Chironomidae	100	0.0035	
4		RG_FOBSC_HESS-10_2021-09-13		Y	135830	Empididae	100	0.0014	
240	larvae	RG_FOBSC_HESS-10_2021-09-13		Y	125351	Psychodidae	100	0.1419	
7	none	RG_FOUCL_HESS-1_2021-09-14		Y	54502	Planariidae	25	0.0194	
1	none	RG_FOUCL_HESS-1_2021-09-14		Y	68854	Naididae	25	0.0017	
1	Adult	RG_FOUCL_HESS-1_2021-09-14		Y	83033	Lebertiidae	25	0.0003	
15	none	RG_FOUCL_HESS-1_2021-09-14		Y	84195	Ostracoda	25	0.0042	
4	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	568544	Ameletidae	25	0.0014	
17	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	100755	Baetidae	25	0.0396	
48	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	101232	Ephemerellidae	25	0.0215	
353	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	100504	Heptageniidae	25	0.1076	
1	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	102643	Capniidae	25	0.0003	
4	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	103202	Chloroperlidae	25	0.0065	
5	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	102840	Leuctridae	25	0.0063	
10	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	102517	Nemouridae	25	0.0131	
3	Nymph	RG_FOUCL_HESS-1_2021-09-14		Y	102994	Perlodidae	25	0.0131	
1		RG_FOUCL_HESS-1_2021-09-14		Y	115398	Hydropsychidae	25	0.0011	
2		RG_FOUCL_HESS-1_2021-09-14		Y	115933	Limnephilidae	25	0.0051	
29		RG_FOUCL_HESS-1_2021-09-14		Y	115096	Rhyacophilidae	25	0.0364	
3		RG_FOUCL_HESS-1_2021-09-14		Y	127076	Ceratopogonidae	25	0.0020	
3		RG_FOUCL_HESS-1_2021-09-14		Y	127917	Chironomidae	25	0.0010	
1		RG_FOUCL_HESS-1_2021-09-14		Y	135830	Empididae	25	0.0017	
79	larvae	RG_FOUCL_HESS-1_2021-09-14		Y	125351	Psychodidae	25	0.0557	
1	larvae	RG_FOUCL_HESS-1_2021-09-14		Y	126640	Simuliidae	25	0.0015	
2	larvae	RG_FOUCL_HESS-1_2021-09-14		Y	118840	Tipulidae	25	0.0008	
2	none	RG_FOUCL_HESS-2_2021-09-14		N		Nemata	50	0.0010	
13	none	RG_FOUCL_HESS-2_2021-09-14		Y	54502	Planariidae	50	0.0171	
2	none	RG_FOUCL_HESS-2_2021-09-14		Y	68854	Naididae	50	0.0004	
2	Adult	RG_FOUCL_HESS-2_2021-09-14		Y	83033	Lebertiidae	50	0.0007	
9	none	RG_FOUCL_HESS-2_2021-09-14		Y	84195	Ostracoda	50	0.0027	
14	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	568544	Ameletidae	50	0.0051	
39	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	100755	Baetidae	50	0.1042	
61	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	101232	Ephemerellidae	50	0.0378	
489	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	100504	Heptageniidae	50	0.1267	
7	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	102643	Capniidae	50	0.0036	
10	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	103202	Chloroperlidae	50	0.0115	
9	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	102517	Nemouridae	50	0.0206	
11	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	102994	Perlodidae	50	0.0541	
3	Nymph	RG_FOUCL_HESS-2_2021-09-14		Y	102788	Taeniopterygidae	50	0.0008	
1		RG_FOUCL_HESS-2_2021-09-14		Y	115933	Limnephilidae	50	0.0002	
31		RG_FOUCL_HESS-2_2021-09-14		Y	115096	Rhyacophilidae	50	0.0449	
10		RG_FOUCL_HESS-2_2021-09-14		Y	127076	Ceratopogonidae	50	0.0035	
7		RG_FOUCL_HESS-2_2021-09-14		Y	127917	Chironomidae	50	0.0028	
6		RG_FOUCL_HESS-2_2021-09-14		Y	135830	Empididae	50	0.0057	
181	larvae	RG_FOUCL_HESS-2_2021-09-14		Y	125351	Psychodidae	50	0.0879	
2	larvae	RG_FOUCL_HESS-2_2021-09-14		Y	118840	Tipulidae	50	0.0005	
12	none	RG_FOUCL_HESS-3_2021-09-14		Y	54502	Planariidae	50	0.0305	
4	none	RG_FOUCL_HESS-3_2021-09-14		Y	68854	Naididae	50	0.0006	
1	Adult	RG_FOUCL_HESS-3_2021-09-14		Y	83033	Lebertiidae	50	0.0003	
6	none	RG_FOUCL_HESS-3_2021-09-14		Y	84195	Ostracoda	50	0.0020	
5	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	568544	Ameletidae	50	0.0055	
16	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	100755	Baetidae	50	0.0392	
120	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	101232	Ephemerellidae	50	0.0296	
430	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	100504	Heptageniidae	50	0.1936	
3	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	102643	Capniidae	50	0.0031	
6	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	103202	Chloroperlidae	50	0.0087	
1	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	102840	Leuctridae	50	0.0001	
7	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	102517	Nemouridae	50	0.0104	
5	Nymph	RG_FOUCL_HESS-3_2021-09-14		Y	102994	Perlodidae	50	0.0146	
1		RG_FOUCL_HESS-3_2021-09-14		Y	117120	Glossosomatidae	50	0.0142	
1		RG_FOUCL_HESS-3_2021-09-14		Y	115398	Hydropsychidae	50	0.0007	
37		RG_FOUCL_HESS-3_2021-09-14		Y	115096	Rhyacophilidae	50	0.0664	
2		RG_FOUCL_HESS-3_2021-09-14		Y	568757	Uenoidae	50	0.0002	
10		RG_FOUCL_HESS-3_2021-09-14		Y	127076	Ceratopogonidae	50	0.0037	
6		RG_FOUCL_HESS-3_2021-09-14		Y	127917	Chironomidae	50	0.0087	
5		RG_FOUCL_HESS-3_2021-09-14		Y	135830	Empididae	50	0.0047	
124	larvae	RG_FOUCL_HESS-3_2021-09-14		Y	125351	Psychodidae	50	0.0566	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
2	none	RG_FOUCL_HESS-4_2021-09-14		N		Nemata	50	0.0024	
27	none	RG_FOUCL_HESS-4_2021-09-14		Y	54502	Planariidae	50	0.0563	
2	Adult	RG_FOUCL_HESS-4_2021-09-14		Y	83033	Lebertiidae	50	0.0007	
8	none	RG_FOUCL_HESS-4_2021-09-14		Y	84195	Ostracoda	50	0.0034	
20	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	100755	Baetidae	50	0.0442	
321	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	101232	Ephemerellidae	50	0.0345	
503	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	100504	Heptageniidae	50	0.1891	
9	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	102643	Capniidae	50	0.0039	
46	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	103202	Chloroperlidae	50	0.0551	
1	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	102840	Leuctridae	50	0.0016	
2	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	102517	Nemouridae	50	0.0051	
6	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	102994	Perlodidae	50	0.0785	
8	Nymph	RG_FOUCL_HESS-4_2021-09-14		Y	102788	Taeniopterygidae	50	0.0029	
1	larvae/immature	RG_FOUCL_HESS-4_2021-09-14		Y	115095	Trichoptera	50	0.0001	Apataniidae/Uenoidae
2		RG_FOUCL_HESS-4_2021-09-14		Y	117120	Glossosomatidae	50	0.0323	
3		RG_FOUCL_HESS-4_2021-09-14		Y	115398	Hydropsychidae	50	0.0045	
17		RG_FOUCL_HESS-4_2021-09-14		Y	115096	Rhyacophilidae	50	0.0391	
9		RG_FOUCL_HESS-4_2021-09-14		Y	127076	Ceratopogonidae	50	0.0047	
12		RG_FOUCL_HESS-4_2021-09-14		Y	127917	Chironomidae	50	0.0112	
1		RG_FOUCL_HESS-4_2021-09-14		Y	135830	Empididae	50	0.0007	
49	larvae	RG_FOUCL_HESS-4_2021-09-14		Y	125351	Psychodidae	50	0.0167	
4	larvae	RG_FOUCL_HESS-4_2021-09-14		Y	118840	Tipulidae	50	0.0757	
11	none	RG_FOUCL_HESS-5_2021-09-14		Y	54502	Planariidae	50	0.0432	
1	none	RG_FOUCL_HESS-5_2021-09-14		Y	68854	Naididae	50	0.0001	
6	Adult	RG_FOUCL_HESS-5_2021-09-14		Y	83033	Lebertiidae	50	0.0016	
12	none	RG_FOUCL_HESS-5_2021-09-14		Y	84195	Ostracoda	50	0.0030	
19	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	568544	Ameletidae	50	0.0094	
23	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	100755	Baetidae	50	0.0619	
206	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	101232	Ephemerellidae	50	0.0309	
568	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	100504	Heptageniidae	50	0.2131	
6	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	102643	Capniidae	50	0.0015	
35	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	103202	Chloroperlidae	50	0.0346	
8	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	102517	Nemouridae	50	0.0149	
11	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	102994	Perlodidae	50	0.0565	
3	Nymph	RG_FOUCL_HESS-5_2021-09-14		Y	102788	Taeniopterygidae	50	0.0007	
1		RG_FOUCL_HESS-5_2021-09-14		Y	598182	Apataniidae	50	0.0025	
9		RG_FOUCL_HESS-5_2021-09-14		Y	115096	Rhyacophilidae	50	0.0354	
1		RG_FOUCL_HESS-5_2021-09-14		Y	568757	Uenoidae	50	0.0002	
12		RG_FOUCL_HESS-5_2021-09-14		Y	127076	Ceratopogonidae	50	0.0033	
10		RG_FOUCL_HESS-5_2021-09-14		Y	127917	Chironomidae	50	0.0060	
15		RG_FOUCL_HESS-5_2021-09-14		Y	135830	Empididae	50	0.0123	
88	larvae	RG_FOUCL_HESS-5_2021-09-14		Y	125351	Psychodidae	50	0.0271	
1	larvae	RG_FOUCL_HESS-5_2021-09-14		Y	118840	Tipulidae	100	0.4919	large/rare sort
2	larvae	RG_FOUCL_HESS-5_2021-09-14		Y	118840	Tipulidae	50	0.0037	
19	none	RG_FOUCL_HESS-6_2021-09-14		Y	54502	Planariidae	50	0.0519	
2	Adult	RG_FOUCL_HESS-6_2021-09-14		Y	83033	Lebertiidae	50	0.0009	
14	none	RG_FOUCL_HESS-6_2021-09-14		Y	84195	Ostracoda	50	0.0036	
4	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	568544	Ameletidae	50	0.0012	
1	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	100755	Baetidae	100	0.0575	large/rare sort
27	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	100755	Baetidae	50	0.0957	
139	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	101232	Ephemerellidae	50	0.0665	
360	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	100504	Heptageniidae	50	0.1816	
2	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	102643	Capniidae	50	0.0022	
13	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	103202	Chloroperlidae	50	0.0156	
13	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	102517	Nemouridae	50	0.0591	
1	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	102994	Perlodidae	100	0.0116	large/rare sort
9	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	102994	Perlodidae	50	0.0406	
9	Nymph	RG_FOUCL_HESS-6_2021-09-14		Y	102788	Taeniopterygidae	50	0.0013	
1	larvae/immature	RG_FOUCL_HESS-6_2021-09-14		Y	115095	Trichoptera	50	0.0001	Apataniidae/Uenoidae
3		RG_FOUCL_HESS-6_2021-09-14		Y	115398	Hydropsychidae	100	0.4905	large/rare sort
3		RG_FOUCL_HESS-6_2021-09-14		Y	115398	Hydropsychidae	50	0.0050	
1		RG_FOUCL_HESS-6_2021-09-14		Y	115096	Rhyacophilidae	100	0.0412	large/rare sort
18		RG_FOUCL_HESS-6_2021-09-14		Y	115096	Rhyacophilidae	50	0.0206	
1		RG_FOUCL_HESS-6_2021-09-14		Y	568757	Uenoidae	50	0.0002	
4		RG_FOUCL_HESS-6_2021-09-14		Y	127076	Ceratopogonidae	50	0.0015	
8		RG_FOUCL_HESS-6_2021-09-14		Y	127917	Chironomidae	50	0.0022	
3		RG_FOUCL_HESS-6_2021-09-14		Y	135830	Empididae	50	0.0024	
57	larvae	RG_FOUCL_HESS-6_2021-09-14		Y	125351	Psychodidae	50	0.0278	
2	none	RG_FOUCL_HESS-7_2021-09-14		N		Nemata	50	0.0006	
7	none	RG_FOUCL_HESS-7_2021-09-14		Y	54502	Planariidae	50	0.0084	
1	none	RG_FOUCL_HESS-7_2021-09-14		Y	68854	Naididae	50	0.0001	
1	Adult	RG_FOUCL_HESS-7_2021-09-14		Y	83033	Lebertiidae	50	0.0002	
6	Adult	RG_FOUCL_HESS-7_2021-09-14		Y	895710	Sperchonidae	50	0.0026	
1	none	RG_FOUCL_HESS-7_2021-09-14		Y	84195	Ostracoda	50	0.0003	
15	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	100755	Baetidae	50	0.0153	
1	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	101232	Ephemerellidae	100	0.0551	large/rare sort
144	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	101232	Ephemerellidae	50	0.0165	
342	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	100504	Heptageniidae	50	0.1670	
2	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	102643	Capniidae	50	0.0033	
26	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	103202	Chloroperlidae	50	0.0347	
4	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	102517	Nemouridae	50	0.0064	
18	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	102994	Perlodidae	50	0.0529	
12	Nymph	RG_FOUCL_HESS-7_2021-09-14		Y	102788	Taeniopterygidae	50	0.0033	
18		RG_FOUCL_HESS-7_2021-09-14		Y	115096	Rhyacophilidae	50	0.0325	
9		RG_FOUCL_HESS-7_2021-09-14		Y	127076	Ceratopogonidae	50	0.0025	
72		RG_FOUCL_HESS-7_2021-09-14		Y	127917	Chironomidae	50	0.0759	
10		RG_FOUCL_HESS-7_2021-09-14		Y	135830	Empididae	50	0.0076	
54	larvae	RG_FOUCL_HESS-7_2021-09-14		Y	125351	Psychodidae	50	0.0266	
11	none	RG_FOUCL_HESS-8_2021-09-14		N		Nemata	50	0.0301	
7	none	RG_FOUCL_HESS-8_2021-09-14		Y	54502	Planariidae	50	0.0378	
1	none	RG_FOUCL_HESS-8_2021-09-14		Y	69165	Lumbricidae	100	0.0428	large/rare sort
4	Adult	RG_FOUCL_HESS-8_2021-09-14		Y	83033	Lebertiidae	50	0.0008	
7	none	RG_FOUCL_HESS-8_2021-09-14		Y	84195	Ostracoda	50	0.0026	
33	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	568544	Ameletidae	50	0.0214	
17	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	100755	Baetidae	50	0.0473	
35	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	101232	Ephemerellidae	50	0.0296	
409	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	100504	Heptageniidae	50	0.1810	
13	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	103202	Chloroperlidae	50	0.0187	
14	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	102517	Nemouridae	50	0.0335	
9	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	102994	Perlodidae	50	0.0160	
2	Nymph	RG_FOUCL_HESS-8_2021-09-14		Y	102788	Taeniopterygidae	50	0.0008	
3		RG_FOUCL_HESS-8_2021-09-14		Y	598182	Apataniidae	50	0.0065	
2		RG_FOUCL_HESS-8_2021-09-14		Y	116905	Brachycentridae	50	0.0004	
2		RG_FOUCL_HESS-8_2021-09-14		Y	117120	Glossosomatidae	50	0.0004	
3		RG_FOUCL_HESS-8_2021-09-14		Y	115398	Hydropsychidae	50	0.0021	
1		RG_FOUCL_HESS-8_2021-09-14		Y	115629	Hydroptilidae	50	0.0004	
1		RG_FOUCL_HESS-8_2021-09-14		Y	115933	Limnephilidae	50	0.0026	
18		RG_FOUCL_HESS-8_2021-09-14		Y	115096	Rhyacophilidae	50	0.0098	
2		RG_FOUCL_HESS-8_2021-09-14		Y	568757	Uenoidae	50	0.0007	
2		RG_FOUCL_HESS-8_2021-09-14		Y	127076	Ceratopogonidae	50	0.0012	
6		RG_FOUCL_HESS-8_2021-09-14		Y	127917	Chironomidae	50	0.0022	
2		RG_FOUCL_HESS-8_2021-09-14		Y	135830	Empididae	50	0.0021	
156	larvae	RG_FOUCL_HESS-8_2021-09-14		Y	125351	Psychodidae	50	0.0809	
1	larvae	RG_FOUCL_HESS-8_2021-09-14		Y	118840	Tipulidae	100	0.2335	large/rare sort
1	larvae	RG_FOUCL_HESS-8_2021-09-14		Y	118840	Tipulidae	50	0.0134	
3	none	RG_FOUCL_HESS-9_2021-09-14		N		Nemata	50	0.0015	
1	none	RG_FOUCL_HESS-9_2021-09-14		Y	54502	Planariidae	50	0.0075	
1	none	RG_FOUCL_HESS-9_2021-09-14		Y	68510	Enchytraeidae	50	0.0001	
12	Adult	RG_FOUCL_HESS-9_2021-09-14		Y	83033	Lebertiidae	50	0.0026	
8	Adult	RG_FOUCL_HESS-9_2021-09-14		Y	895710	Sperchonidae	50	0.0025	
1	none	RG_FOUCL_HESS-9_2021-09-14		Y	84195	Ostracoda	50	0.0002	
82	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	100755	Baetidae	50	0.1285	
130	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	101232	Ephemerellidae	50	0.0250	
286	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	100504	Heptageniidae	50	0.1315	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
8	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	103202	Chloroperlidae	50	0.0069	
4	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	102517	Nemouridae	50	0.0186	
26	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	102994	Perlodidae	50	0.0534	
4	Nymph	RG_FOUCL_HESS-9_2021-09-14		Y	102788	Taeniopterygidae	50	0.0015	
1		RG_FOUCL_HESS-9_2021-09-14		Y	116905	Brachycentridae	50	0.0002	
1		RG_FOUCL_HESS-9_2021-09-14		Y	117120	Glossosomatidae	50	0.0191	
1		RG_FOUCL_HESS-9_2021-09-14		Y	115398	Hydropsychidae	50	0.0001	
30		RG_FOUCL_HESS-9_2021-09-14		Y	115096	Rhyacophilidae	50	0.0658	
1		RG_FOUCL_HESS-9_2021-09-14		Y	568757	Uenoidae	50	0.0001	
11		RG_FOUCL_HESS-9_2021-09-14		Y	127076	Ceratopogonidae	50	0.0044	
180		RG_FOUCL_HESS-9_2021-09-14		Y	127917	Chironomidae	50	0.1651	
3		RG_FOUCL_HESS-9_2021-09-14		Y	135830	Empididae	50	0.0040	
50	larvae	RG_FOUCL_HESS-9_2021-09-14		Y	125351	Psychodidae	50	0.0244	
1	larvae	RG_FOUCL_HESS-9_2021-09-14		Y	118840	Tipulidae	100	0.1494	large/rare sort
1	larvae	RG_FOUCL_HESS-9_2021-09-14		Y	118840	Tipulidae	50	0.0003	
1	none	RG_FOUCL_HESS-10_2021-09-14		N		Nemata	50	0.0008	
7	none	RG_FOUCL_HESS-10_2021-09-14		Y	54502	Planariidae	50	0.0217	
1	Adult	RG_FOUCL_HESS-10_2021-09-14		Y	83033	Lebertiidae	50	0.0004	
6	none	RG_FOUCL_HESS-10_2021-09-14		Y	84195	Ostracoda	50	0.0017	
23	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	568544	Ameletidae	50	0.0483	
17	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	100755	Baetidae	50	0.0312	
255	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	101232	Ephemerellidae	50	0.0383	
361	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	100504	Heptageniidae	50	0.0961	
5	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	102643	Capniidae	50	0.0024	
23	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	103202	Chloroperlidae	50	0.0115	
2	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	102840	Leuctridae	50	0.0016	
6	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	102517	Nemouridae	50	0.0092	
6	Nymph	RG_FOUCL_HESS-10_2021-09-14		Y	102994	Perlodidae	50	0.0131	
2		RG_FOUCL_HESS-10_2021-09-14		Y	598182	Apataniidae	50	0.0063	
1		RG_FOUCL_HESS-10_2021-09-14		Y	117120	Glossosomatidae	50	0.0001	
11		RG_FOUCL_HESS-10_2021-09-14		Y	115096	Rhyacophilidae	50	0.0122	
12		RG_FOUCL_HESS-10_2021-09-14		Y	127076	Ceratopogonidae	50	0.0025	
11		RG_FOUCL_HESS-10_2021-09-14		Y	127917	Chironomidae	50	0.0100	
1		RG_FOUCL_HESS-10_2021-09-14		Y	135830	Empididae	50	0.0005	
53	larvae	RG_FOUCL_HESS-10_2021-09-14		Y	125351	Psychodidae	50	0.0161	
1	larvae	RG_FOUCL_HESS-10_2021-09-14		Y	118840	Tipulidae	50	0.0212	
1	none	RG_FOUKI_HESS-1_2021-09-20		N		Nemata	100	0.0004	
7	none	RG_FOUKI_HESS-1_2021-09-20		Y	54502	Planariidae	100	0.0108	
1	none	RG_FOUKI_HESS-1_2021-09-20		Y	68854	Naididae	100	0.0002	
6	Adult	RG_FOUKI_HESS-1_2021-09-20		Y	83033	Lebertiidae	100	0.0011	
38	none	RG_FOUKI_HESS-1_2021-09-20		Y	84195	Ostracoda	100	0.0094	
1		RG_FOUKI_HESS-1_2021-09-20		Y	114093	Elmidae	100	0.0005	
2	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	568544	Ameletidae	100	0.0010	
17	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	100755	Baetidae	100	0.0882	
18	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	101232	Ephemerellidae	100	0.0064	
252	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	100504	Heptageniidae	100	0.1542	
2	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	102643	Capniidae	100	0.0042	
9	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	103202	Chloroperlidae	100	0.0300	
2	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	102840	Leuctridae	100	0.0037	
10	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	102517	Nemouridae	100	0.0178	
9	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	102994	Perlodidae	100	0.1461	
4	Nymph	RG_FOUKI_HESS-1_2021-09-20		Y	102788	Taeniopterygidae	100	0.0013	
2		RG_FOUKI_HESS-1_2021-09-20		Y	116905	Brachycentridae	100	0.0002	
8		RG_FOUKI_HESS-1_2021-09-20		Y	117120	Glossosomatidae	100	0.0126	
5		RG_FOUKI_HESS-1_2021-09-20		Y	115398	Hydropsychidae	100	0.0492	
3		RG_FOUKI_HESS-1_2021-09-20		Y	115096	Rhyacophilidae	100	0.0046	
2		RG_FOUKI_HESS-1_2021-09-20		Y	568757	Uenoidae	100	0.0002	
11		RG_FOUKI_HESS-1_2021-09-20		Y	127076	Ceratopogonidae	100	0.0033	
26		RG_FOUKI_HESS-1_2021-09-20		Y	127917	Chironomidae	100	0.0162	
3		RG_FOUKI_HESS-1_2021-09-20		Y	135830	Empididae	100	0.0051	
670	larvae	RG_FOUKI_HESS-1_2021-09-20		Y	125351	Psychodidae	100	0.4928	
2	larvae	RG_FOUKI_HESS-1_2021-09-20		Y	118840	Tipulidae	100	0.2105	
3	none	RG_FOUKI_HESS-2_2021-09-20		N		Nemata	100	0.0030	
13	none	RG_FOUKI_HESS-2_2021-09-20		Y	54502	Planariidae	100	0.0178	
10	Adult	RG_FOUKI_HESS-2_2021-09-20		Y	83033	Lebertiidae	100	0.0027	
70	none	RG_FOUKI_HESS-2_2021-09-20		Y	84195	Ostracoda	100	0.0176	
2		RG_FOUKI_HESS-2_2021-09-20		Y	114093	Elmidae	100	0.0045	
4	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	568544	Ameletidae	100	0.0085	
6	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	100755	Baetidae	100	0.0270	
15	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	101232	Ephemerellidae	100	0.0110	
396	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	100504	Heptageniidae	100	0.2890	
7	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	102643	Capniidae	100	0.0118	
13	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	103202	Chloroperlidae	100	0.0380	
3	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	102840	Leuctridae	100	0.0029	
11	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	102517	Nemouridae	100	0.0164	
15	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	102994	Perlodidae	100	0.0904	
7	Nymph	RG_FOUKI_HESS-2_2021-09-20		Y	102788	Taeniopterygidae	100	0.0017	
1		RG_FOUKI_HESS-2_2021-09-20		Y	598182	Apataniidae	100	0.0017	
2		RG_FOUKI_HESS-2_2021-09-20		Y	116905	Brachycentridae	100	0.0003	
5		RG_FOUKI_HESS-2_2021-09-20		Y	117120	Glossosomatidae	100	0.0012	
3		RG_FOUKI_HESS-2_2021-09-20		Y	115398	Hydropsychidae	100	0.0248	
1		RG_FOUKI_HESS-2_2021-09-20		Y	115933	Limnephilidae	100	0.0081	
4		RG_FOUKI_HESS-2_2021-09-20		Y	115096	Rhyacophilidae	100	0.0514	
18		RG_FOUKI_HESS-2_2021-09-20		Y	127076	Ceratopogonidae	100	0.0059	
25		RG_FOUKI_HESS-2_2021-09-20		Y	127917	Chironomidae	100	0.0171	
9		RG_FOUKI_HESS-2_2021-09-20		Y	135830	Empididae	100	0.0163	
691	larvae	RG_FOUKI_HESS-2_2021-09-20		Y	125351	Psychodidae	100	0.5224	
1	larvae	RG_FOUKI_HESS-2_2021-09-20		Y	126640	Simuliidae	100	0.0001	
6	larvae	RG_FOUKI_HESS-2_2021-09-20		Y	118840	Tipulidae	100	0.6270	
3	none	RG_FOUKI_HESS-3_2021-09-20		N		Nemata	100	0.0033	
4	none	RG_FOUKI_HESS-3_2021-09-20		Y	54502	Planariidae	100	0.0239	
3	none	RG_FOUKI_HESS-3_2021-09-20		Y	68510	Enchytraeidae	100	0.0005	
4	Adult	RG_FOUKI_HESS-3_2021-09-20		Y	83033	Lebertiidae	100	0.0008	
8	none	RG_FOUKI_HESS-3_2021-09-20		Y	84195	Ostracoda	100	0.0020	
2		RG_FOUKI_HESS-3_2021-09-20		Y	113265	Staphylinidae	100	0.0004	
1	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	568544	Ameletidae	100	0.0004	
10	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	100755	Baetidae	100	0.0452	
17	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	101232	Ephemerellidae	100	0.0196	
174	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	100504	Heptageniidae	100	0.1182	
3	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	102643	Capniidae	100	0.0056	
14	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	102517	Nemouridae	100	0.0124	
16	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	102994	Perlodidae	100	0.1312	
4	Nymph	RG_FOUKI_HESS-3_2021-09-20		Y	102788	Taeniopterygidae	100	0.0012	
1		RG_FOUKI_HESS-3_2021-09-20		Y	598182	Apataniidae	100	0.0025	
2		RG_FOUKI_HESS-3_2021-09-20		Y	116905	Brachycentridae	100	0.0005	
18		RG_FOUKI_HESS-3_2021-09-20		Y	117120	Glossosomatidae	100	0.0119	
11		RG_FOUKI_HESS-3_2021-09-20		Y	115398	Hydropsychidae	100	0.2391	
5		RG_FOUKI_HESS-3_2021-09-20		Y	115096	Rhyacophilidae	100	0.0547	
12		RG_FOUKI_HESS-3_2021-09-20		Y	127076	Ceratopogonidae	100	0.0044	
15		RG_FOUKI_HESS-3_2021-09-20		Y	127917	Chironomidae	100	0.0066	
2		RG_FOUKI_HESS-3_2021-09-20		Y	135830	Empididae	100	0.0030	
291	larvae	RG_FOUKI_HESS-3_2021-09-20		Y	125351	Psychodidae	100	0.1729	
6	none	RG_FOUKI_HESS-4_2021-09-20		N		Nemata	100	0.0028	
7	none	RG_FOUKI_HESS-4_2021-09-20		Y	54502	Planariidae	100	0.0317	
12	none	RG_FOUKI_HESS-4_2021-09-20		Y	68510	Enchytraeidae	100	0.0019	
4	none	RG_FOUKI_HESS-4_2021-09-20		Y	68854	Naididae	100	0.0002	
10	Adult	RG_FOUKI_HESS-4_2021-09-20		Y	83033	Lebertiidae	100	0.0031	
14	none	RG_FOUKI_HESS-4_2021-09-20		Y	84195	Ostracoda	100	0.0038	
1		RG_FOUKI_HESS-4_2021-09-20		Y	114093	Elmidae	100	0.0005	
1	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	568544	Ameletidae	100	0.0005	
10	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	100755	Baetidae	100	0.0427	
28	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	101232	Ephemerellidae	100	0.0288	
280	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	100504	Heptageniidae	100	0.1698	
1	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	102643	Capniidae	100	0.0030	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(.	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
2	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	103202	Chloroperlidae	100	0.0144	
9	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	102517	Nemouridae	100	0.0079	
16	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	102994	Perlodidae	100	0.1102	
3	Nymph	RG_FOUKI_HESS-4_2021-09-20		Y	102788	Taeniopterygidae	100	0.0010	
1	larvae/immature	RG_FOUKI_HESS-4_2021-09-20		Y	115095	Trichoptera	100	0.0001	Apataniidae/Uenoidae
3		RG_FOUKI_HESS-4_2021-09-20		Y	116905	Brachycentridae	100	0.0004	
20		RG_FOUKI_HESS-4_2021-09-20		Y	117120	Glossosomatidae	100	0.0097	
6		RG_FOUKI_HESS-4_2021-09-20		Y	115398	Hydropsychidae	100	0.0173	
16		RG_FOUKI_HESS-4_2021-09-20		Y	115096	Rhyacophilidae	100	0.0931	
22		RG_FOUKI_HESS-4_2021-09-20		Y	127076	Ceratopogonidae	100	0.0072	
55		RG_FOUKI_HESS-4_2021-09-20		Y	127917	Chironomidae	100	0.0240	
8		RG_FOUKI_HESS-4_2021-09-20		Y	135830	Empididae	100	0.0116	
474	larvae	RG_FOUKI_HESS-4_2021-09-20		Y	125351	Psychodidae	100	0.3085	
1	larvae	RG_FOUKI_HESS-4_2021-09-20		Y	118840	Tipulidae	100	0.0003	
2	none	RG_FOUKI_HESS-5_2021-09-20		N		Nemata	100	0.0010	
5	none	RG_FOUKI_HESS-5_2021-09-20		Y	54502	Planariidae	100	0.0145	
3	Adult	RG_FOUKI_HESS-5_2021-09-20		Y	83033	Lebertiidae	100	0.0014	
5	none	RG_FOUKI_HESS-5_2021-09-20		Y	84195	Ostracoda	100	0.0016	
1	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	568544	Ameletidae	100	0.0003	
2	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	100755	Baetidae	100	0.0068	
8	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	101232	Ephemerellidae	100	0.0048	
260	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	100504	Heptageniidae	100	0.1093	
1	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	103202	Chloroperlidae	100	0.0021	
4	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	102517	Nemouridae	100	0.0081	
6	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	102994	Perlodidae	100	0.0797	
2	Nymph	RG_FOUKI_HESS-5_2021-09-20		Y	102788	Taeniopterygidae	100	0.0007	
3		RG_FOUKI_HESS-5_2021-09-20		Y	117120	Glossosomatidae	100	0.0012	
1		RG_FOUKI_HESS-5_2021-09-20		Y	115398	Hydropsychidae	100	0.0016	
6		RG_FOUKI_HESS-5_2021-09-20		Y	115096	Rhyacophilidae	100	0.0725	
5		RG_FOUKI_HESS-5_2021-09-20		Y	127076	Ceratopogonidae	100	0.0019	
5		RG_FOUKI_HESS-5_2021-09-20		Y	127917	Chironomidae	100	0.0032	
5		RG_FOUKI_HESS-5_2021-09-20		Y	135830	Empididae	100	0.0086	
291	larvae	RG_FOUKI_HESS-5_2021-09-20		Y	125351	Psychodidae	100	0.1094	
3	none	RG_FOUKI_HESS-6_2021-09-20		N		Nemata	50	0.0719	
2	none	RG_FOUKI_HESS-6_2021-09-20		Y	54502	Planariidae	50	0.0074	
2	none	RG_FOUKI_HESS-6_2021-09-20		Y	68510	Enchytraeidae	50	0.0003	
4	Adult	RG_FOUKI_HESS-6_2021-09-20		Y	83033	Lebertiidae	50	0.0015	
6	none	RG_FOUKI_HESS-6_2021-09-20		Y	84195	Ostracoda	50	0.0018	
1	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	568544	Ameletidae	50	0.0001	
2	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	100755	Baetidae	50	0.0112	
9	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	101232	Ephemerellidae	50	0.0132	
127	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	100504	Heptageniidae	50	0.0639	
1	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	103202	Chloroperlidae	50	0.0011	
9	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	102517	Nemouridae	50	0.0193	
1	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	102914	Perlidae	100	0.0670	large/rare sort
11	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	102994	Perlodidae	50	0.1311	
4	Nymph	RG_FOUKI_HESS-6_2021-09-20		Y	102788	Taeniopterygidae	50	0.0010	
2		RG_FOUKI_HESS-6_2021-09-20		Y	117120	Glossosomatidae	50	0.0001	
3		RG_FOUKI_HESS-6_2021-09-20		Y	115398	Hydropsychidae	100	0.7601	large/rare sort
9		RG_FOUKI_HESS-6_2021-09-20		Y	115398	Hydropsychidae	50	0.0468	
7		RG_FOUKI_HESS-6_2021-09-20		Y	115096	Rhyacophilidae	50	0.0511	
2		RG_FOUKI_HESS-6_2021-09-20		Y	568757	Uenoidae	50	0.0008	
9		RG_FOUKI_HESS-6_2021-09-20		Y	127076	Ceratopogonidae	50	0.0050	
3		RG_FOUKI_HESS-6_2021-09-20		Y	127917	Chironomidae	50	0.0052	
2		RG_FOUKI_HESS-6_2021-09-20		Y	135830	Empididae	50	0.0020	
157	larvae	RG_FOUKI_HESS-6_2021-09-20		Y	125351	Psychodidae	50	0.0823	
2	none	RG_FOUKI_HESS-7_2021-09-20		N		Nemata	100	0.0033	
8	none	RG_FOUKI_HESS-7_2021-09-20		Y	54502	Planariidae	100	0.0179	
5	none	RG_FOUKI_HESS-7_2021-09-20		Y	68510	Enchytraeidae	100	0.0005	
8	Adult	RG_FOUKI_HESS-7_2021-09-20		Y	83033	Lebertiidae	100	0.0025	
4	none	RG_FOUKI_HESS-7_2021-09-20		Y	84195	Ostracoda	100	0.0009	
19	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	101232	Ephemerellidae	100	0.0069	
223	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	100504	Heptageniidae	100	0.1136	
1	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	103202	Chloroperlidae	100	0.0098	
1	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	102840	Leuctridae	100	0.0031	
9	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	102517	Nemouridae	100	0.0640	
7	Nymph	RG_FOUKI_HESS-7_2021-09-20		Y	102994	Perlodidae	100	0.1677	
2		RG_FOUKI_HESS-7_2021-09-20		Y	598182	Apataniidae	100	0.0025	
1		RG_FOUKI_HESS-7_2021-09-20		Y	116905	Brachycentridae	100	0.0001	
5		RG_FOUKI_HESS-7_2021-09-20		Y	117120	Glossosomatidae	100	0.0080	
12		RG_FOUKI_HESS-7_2021-09-20		Y	115096	Rhyacophilidae	100	0.2077	
14		RG_FOUKI_HESS-7_2021-09-20		Y	127076	Ceratopogonidae	100	0.0048	
4		RG_FOUKI_HESS-7_2021-09-20		Y	127917	Chironomidae	100	0.0024	
2		RG_FOUKI_HESS-7_2021-09-20		Y	135830	Empididae	100	0.0029	
226	larvae	RG_FOUKI_HESS-7_2021-09-20		Y	125351	Psychodidae	100	0.1239	
2	larvae	RG_FOUKI_HESS-7_2021-09-20		Y	118840	Tipulidae	100	0.0001	
2	none	RG_FOUKI_HESS-8_2021-09-20		Y	54502	Planariidae	100	0.0065	
13	none	RG_FOUKI_HESS-8_2021-09-20		Y	68510	Enchytraeidae	100	0.0021	
2	none	RG_FOUKI_HESS-8_2021-09-20		Y	68854	Naididae	100	0.0001	
14	Adult	RG_FOUKI_HESS-8_2021-09-20		Y	83033	Lebertiidae	100	0.0045	
1	none	RG_FOUKI_HESS-8_2021-09-20		Y	84195	Ostracoda	100	0.0003	
1	Nymph	RG_FOUKI_HESS-8_2021-09-20		Y	100755	Baetidae	100	0.0001	
8	Nymph	RG_FOUKI_HESS-8_2021-09-20		Y	101232	Ephemerellidae	100	0.0054	
54	Nymph	RG_FOUKI_HESS-8_2021-09-20		Y	100504	Heptageniidae	100	0.0190	
1	Nymph	RG_FOUKI_HESS-8_2021-09-20		Y	102914	Perlidae	100	0.0097	
5	Nymph	RG_FOUKI_HESS-8_2021-09-20		Y	102994	Perlodidae	100	0.0018	
7		RG_FOUKI_HESS-8_2021-09-20		Y	115096	Rhyacophilidae	100	0.0657	
8		RG_FOUKI_HESS-8_2021-09-20		Y	127076	Ceratopogonidae	100	0.0018	
4		RG_FOUKI_HESS-8_2021-09-20		Y	127917	Chironomidae	100	0.0010	
3		RG_FOUKI_HESS-8_2021-09-20		Y	135830	Empididae	100	0.0029	
74	larvae	RG_FOUKI_HESS-8_2021-09-20		Y	125351	Psychodidae	100	0.0253	
3	none	RG_FOUKI_HESS-9_2021-09-20		N		Nemata	50	0.0008	
2	none	RG_FOUKI_HESS-9_2021-09-20		Y	54502	Planariidae	50	0.0034	
2	Adult	RG_FOUKI_HESS-9_2021-09-20		Y	83033	Lebertiidae	50	0.0007	
8	none	RG_FOUKI_HESS-9_2021-09-20		Y	84195	Ostracoda	50	0.0021	
2	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	568544	Ameletidae	50	0.0011	
2	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	100755	Baetidae	50	0.0077	
10	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	101232	Ephemerellidae	50	0.0043	
119	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	100504	Heptageniidae	50	0.0418	
2	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	103202	Chloroperlidae	50	0.0030	
4	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	102517	Nemouridae	50	0.0029	
7	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	102994	Perlodidae	50	0.1155	
2	Nymph	RG_FOUKI_HESS-9_2021-09-20		Y	102788	Taeniopterygidae	50	0.0005	
1	larvae/immature	RG_FOUKI_HESS-9_2021-09-20		Y	115095	Trichoptera	50	0.0001	Apataniidae/Uenoidae
6		RG_FOUKI_HESS-9_2021-09-20		Y	115096	Rhyacophilidae	50	0.0166	
14		RG_FOUKI_HESS-9_2021-09-20		Y	127076	Ceratopogonidae	50	0.0052	
4		RG_FOUKI_HESS-9_2021-09-20		Y	127917	Chironomidae	50	0.0062	
1		RG_FOUKI_HESS-9_2021-09-20		Y	135830	Empididae	50	0.0003	
226	larvae	RG_FOUKI_HESS-9_2021-09-20		Y	125351	Psychodidae	50	0.0773	
1	larvae	RG_FOUKI_HESS-9_2021-09-20		Y	118840	Tipulidae	50	0.0385	
1	none	RG_FOUKI_HESS-10_2021-09-20		N		Nemata	100	0.0007	
2	none	RG_FOUKI_HESS-10_2021-09-20		Y	54502	Planariidae	100	0.0072	
15	none	RG_FOUKI_HESS-10_2021-09-20		Y	68510	Enchytraeidae	100	0.0055	
9	Adult	RG_FOUKI_HESS-10_2021-09-20		Y	83033	Lebertiidae	100	0.0091	
16	none	RG_FOUKI_HESS-10_2021-09-20		Y	84195	Ostracoda	100	0.0125	
3		RG_FOUKI_HESS-10_2021-09-20		Y	114093	Elmidae	100	0.0043	
4	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	568544	Ameletidae	100	0.0023	
7	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	101232	Ephemerellidae	100	0.0242	
96	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	100504	Heptageniidae	100	0.0607	
4	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	103202	Chloroperlidae	100	0.0044	
1	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	102517	Nemouridae	100	0.0008	
6	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	102994	Perlodidae	100	0.1231	
2	Nymph	RG_FOUKI_HESS-10_2021-09-20		Y	102788	Taeniopterygidae	100	0.0009	
1		RG_FOUKI_HESS-10_2021-09-20		Y	115398	Hydropsychidae	100	0.0017	

quantity	**life_stage_code**	observ_sample_code	**I**	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
8		RG_FOUKI_HESS-10_2021-09-20		Y	115096	Rhyacophilidae	100	0.0499	
3		RG_FOUKI_HESS-10_2021-09-20		Y	127076	Ceratopogonidae	100	0.0112	
9		RG_FOUKI_HESS-10_2021-09-20		Y	127917	Chironomidae	100	0.0108	
2		RG_FOUKI_HESS-10_2021-09-20		Y	135830	Empididae	100	0.0031	
292	larvae	RG_FOUKI_HESS-10_2021-09-20		Y	125351	Psychodidae	100	0.1535	
1	none	RG_FOUNGD_HESS-1_2021-09-17		Y	54502	Planariidae	100	0.0011	
3	Adult	RG_FOUNGD_HESS-1_2021-09-17		Y	83033	Lebertiidae	100	0.0012	
2	none	RG_FOUNGD_HESS-1_2021-09-17		Y	84195	Ostracoda	100	0.0009	
5	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	568544	Ameletidae	100	0.0078	
3	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	100755	Baetidae	100	0.0055	
57	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	101232	Ephemerellidae	100	0.0140	
710	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	100504	Heptageniidae	100	0.2494	
6	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	103202	Chloroperlidae	100	0.0047	
6	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	102517	Nemouridae	100	0.0188	
6	Nymph	RG_FOUNGD_HESS-1_2021-09-17		Y	102994	Perlodidae	100	0.0166	
1		RG_FOUNGD_HESS-1_2021-09-17		Y	115398	Hydropsychidae	100	0.1559	
17		RG_FOUNGD_HESS-1_2021-09-17		Y	115096	Rhyacophilidae	100	0.0178	
1		RG_FOUNGD_HESS-1_2021-09-17		Y	127076	Ceratopogonidae	100	0.0011	
3		RG_FOUNGD_HESS-1_2021-09-17		Y	127917	Chironomidae	100	0.0075	
40	larvae	RG_FOUNGD_HESS-1_2021-09-17		Y	125351	Psychodidae	100	0.0194	
1	larvae	RG_FOUNGD_HESS-1_2021-09-17		Y	118840	Tipulidae	100	0.0018	
2	none	RG_FOUNGD_HESS-2_2021-09-17		N		Nemata	50	0.0001	
14	none	RG_FOUNGD_HESS-2_2021-09-17		Y	54502	Planariidae	50	0.0395	
2	none	RG_FOUNGD_HESS-2_2021-09-17		Y	68510	Enchytraeidae	50	0.0004	
5	Adult	RG_FOUNGD_HESS-2_2021-09-17		Y	83033	Lebertiidae	50	0.0007	
4	none	RG_FOUNGD_HESS-2_2021-09-17		Y	84195	Ostracoda	50	0.0009	
3	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	568544	Ameletidae	50	0.0286	
17	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	100755	Baetidae	50	0.0414	
215	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	101232	Ephemerellidae	50	0.0482	
327	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	100504	Heptageniidae	50	0.1145	
1	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	102643	Capniidae	50	0.0003	
19	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	103202	Chloroperlidae	50	0.0083	
1	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	102840	Leuctridae	50	0.0010	
5	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	102517	Nemouridae	50	0.0009	
1	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	102994	Perlodidae	50	0.0011	
1	Nymph	RG_FOUNGD_HESS-2_2021-09-17		Y	102788	Taeniopterygidae	50	0.0002	
1		RG_FOUNGD_HESS-2_2021-09-17		Y	117120	Glossosomatidae	50	0.0004	
1		RG_FOUNGD_HESS-2_2021-09-17		Y	115933	Limnephilidae	100	0.2761	large/rare sort
54		RG_FOUNGD_HESS-2_2021-09-17		Y	115096	Rhyacophilidae	50	0.1012	
5		RG_FOUNGD_HESS-2_2021-09-17		Y	127076	Ceratopogonidae	50	0.0009	
13		RG_FOUNGD_HESS-2_2021-09-17		Y	127917	Chironomidae	50	0.0061	
1		RG_FOUNGD_HESS-2_2021-09-17		Y	135830	Empididae	50	0.0011	
74	larvae	RG_FOUNGD_HESS-2_2021-09-17		Y	125351	Psychodidae	50	0.0325	
1	larvae	RG_FOUNGD_HESS-2_2021-09-17		Y	118840	Tipulidae	100	0.0892	large/rare sort
1	larvae	RG_FOUNGD_HESS-2_2021-09-17		Y	118840	Tipulidae	50	0.0093	
7	none	RG_FOUNGD_HESS-3_2021-09-17		Y	54502	Planariidae	50	0.0076	
1	Adult	RG_FOUNGD_HESS-3_2021-09-17		Y	83033	Lebertiidae	50	0.0006	
8	none	RG_FOUNGD_HESS-3_2021-09-17		Y	84195	Ostracoda	50	0.0007	
4	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	568544	Ameletidae	50	0.0263	
21	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	100755	Baetidae	50	0.0074	
368	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	101232	Ephemerellidae	50	0.0377	
387	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	100504	Heptageniidae	50	0.1445	
18	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	103202	Chloroperlidae	50	0.0190	
1	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	102840	Leuctridae	50	0.0014	
2	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	102517	Nemouridae	50	0.0023	
5	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	102994	Perlodidae	50	0.0024	
11	Nymph	RG_FOUNGD_HESS-3_2021-09-17		Y	102788	Taeniopterygidae	50	0.0050	
2		RG_FOUNGD_HESS-3_2021-09-17		Y	116905	Brachycentridae	50	0.0008	
19		RG_FOUNGD_HESS-3_2021-09-17		Y	115096	Rhyacophilidae	50	0.0178	
6		RG_FOUNGD_HESS-3_2021-09-17		Y	127917	Chironomidae	50	0.0036	
6	larvae	RG_FOUNGD_HESS-3_2021-09-17		Y	125351	Psychodidae	50	0.0029	
3	none	RG_FOUNGD_HESS-4_2021-09-17		N		Nemata	100	0.0015	
6	none	RG_FOUNGD_HESS-4_2021-09-17		Y	54502	Planariidae	100	0.0153	
7	Adult	RG_FOUNGD_HESS-4_2021-09-17		Y	83033	Lebertiidae	100	0.0017	
1	none	RG_FOUNGD_HESS-4_2021-09-17		Y	84195	Ostracoda	100	0.0005	
37	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	100755	Baetidae	100	0.0597	
147	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	101232	Ephemerellidae	100	0.0543	
423	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	100504	Heptageniidae	100	0.2109	
2	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	102643	Capniidae	100	0.0008	
2	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	103202	Chloroperlidae	100	0.0003	
18	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	102517	Nemouridae	100	0.0440	
85	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	102994	Perlodidae	100	0.2110	
6	Nymph	RG_FOUNGD_HESS-4_2021-09-17		Y	102788	Taeniopterygidae	100	0.0020	
7		RG_FOUNGD_HESS-4_2021-09-17		Y	117120	Glossosomatidae	100	0.0082	
50		RG_FOUNGD_HESS-4_2021-09-17		Y	115096	Rhyacophilidae	100	0.2774	
10		RG_FOUNGD_HESS-4_2021-09-17		Y	568757	Uenoidae	100	0.0018	
6		RG_FOUNGD_HESS-4_2021-09-17		Y	127076	Ceratopogonidae	100	0.0012	
58		RG_FOUNGD_HESS-4_2021-09-17		Y	127917	Chironomidae	100	0.0318	
106	larvae	RG_FOUNGD_HESS-4_2021-09-17		Y	125351	Psychodidae	100	0.0590	
3	larvae	RG_FOUNGD_HESS-4_2021-09-17		Y	118840	Tipulidae	100	0.0140	
4	none	RG_FOUNGD_HESS-5_2021-09-17		Y	54502	Planariidae	50	0.0058	
4	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	568544	Ameletidae	50	0.0215	
4	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	100755	Baetidae	50	0.0083	
28	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	101232	Ephemerellidae	50	0.0151	
476	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	100504	Heptageniidae	50	0.2288	
5	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	103202	Chloroperlidae	50	0.0036	
6	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	102517	Nemouridae	50	0.0142	
22	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	102994	Perlodidae	50	0.0546	
23	Nymph	RG_FOUNGD_HESS-5_2021-09-17		Y	102788	Taeniopterygidae	50	0.0082	
3		RG_FOUNGD_HESS-5_2021-09-17		Y	117120	Glossosomatidae	50	0.0197	
1		RG_FOUNGD_HESS-5_2021-09-17		Y	115398	Hydropsychidae	100	0.1601	large/rare sort
9		RG_FOUNGD_HESS-5_2021-09-17		Y	115096	Rhyacophilidae	50	0.0252	
1		RG_FOUNGD_HESS-5_2021-09-17		Y	568757	Uenoidae	50	0.0002	
1		RG_FOUNGD_HESS-5_2021-09-17		Y	127076	Ceratopogonidae	50	0.0008	
2		RG_FOUNGD_HESS-5_2021-09-17		Y	127917	Chironomidae	50	0.0026	
33	larvae	RG_FOUNGD_HESS-5_2021-09-17		Y	125351	Psychodidae	50	0.0256	
1	larvae	RG_FOUNGD_HESS-5_2021-09-17		Y	126640	Simuliidae	50	0.0061	
4	none	RG_FOUNGD_HESS-6_2021-09-17		N		Nemata	50	0.0029	
9	none	RG_FOUNGD_HESS-6_2021-09-17		Y	54502	Planariidae	50	0.0280	
10	none	RG_FOUNGD_HESS-6_2021-09-17		Y	68510	Enchytraeidae	50	0.0052	
1	none	RG_FOUNGD_HESS-6_2021-09-17		Y	69165	Lumbricidae	50	0.0502	
14	Adult	RG_FOUNGD_HESS-6_2021-09-17		Y	83033	Lebertiidae	50	0.0045	
4	Adult	RG_FOUNGD_HESS-6_2021-09-17		Y	895710	Sperchonidae	50	0.0019	
2	none	RG_FOUNGD_HESS-6_2021-09-17		Y	84195	Ostracoda	50	0.0002	
15	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	568544	Ameletidae	50	0.1280	
16	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	100755	Baetidae	50	0.0253	
40	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	101232	Ephemerellidae	50	0.0431	
707	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	100504	Heptageniidae	50	0.2959	
2	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	102643	Capniidae	50	0.0013	
2	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	103202	Chloroperlidae	50	0.0024	
7	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	102517	Nemouridae	50	0.0221	
23	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	102994	Perlodidae	50	0.1330	
2	Nymph	RG_FOUNGD_HESS-6_2021-09-17		Y	102788	Taeniopterygidae	50	0.0022	
1		RG_FOUNGD_HESS-6_2021-09-17		Y	115933	Limnephilidae	50	0.0083	
39		RG_FOUNGD_HESS-6_2021-09-17		Y	115096	Rhyacophilidae	50	0.1913	
2		RG_FOUNGD_HESS-6_2021-09-17		Y	568757	Uenoidae	50	0.0002	
9		RG_FOUNGD_HESS-6_2021-09-17		Y	127076	Ceratopogonidae	50	0.0048	
101		RG_FOUNGD_HESS-6_2021-09-17		Y	127917	Chironomidae	50	0.1034	
271	larvae	RG_FOUNGD_HESS-6_2021-09-17		Y	125351	Psychodidae	50	0.1643	
1	larvae	RG_FOUNGD_HESS-6_2021-09-17		Y	118840	Tipulidae	50	0.0588	
5	none	RG_FOUNGD_HESS-7_2021-09-17		N		Nemata	50	0.0124	
5	none	RG_FOUNGD_HESS-7_2021-09-17		Y	54502	Planariidae	50	0.0030	
10	none	RG_FOUNGD_HESS-7_2021-09-17		Y	68510	Enchytraeidae	50	0.0050	
4	Adult	RG_FOUNGD_HESS-7_2021-09-17		Y	83033	Lebertiidae	50	0.0015	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
1	Adult	RG_FOUNGD_HESS-7_2021-09-17		Y	895710	Sperchonidae	50	0.0003	
1	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	568544	Ameletidae	50	0.0063	
7	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	100755	Baetidae	50	0.0100	
61	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	101232	Ephemerellidae	50	0.0502	
647	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	100504	Heptageniidae	50	0.3393	
1	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	102643	Capniidae	50	0.0005	
4	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	103202	Chloroperlidae	50	0.0091	
3	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	102517	Nemouridae	50	0.0106	
17	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	102994	Perlodidae	50	0.1154	
2	Nymph	RG_FOUNGD_HESS-7_2021-09-17		Y	102788	Taeniopterygidae	50	0.0011	
1		RG_FOUNGD_HESS-7_2021-09-17		Y	115096	Rhyacophilidae	100	0.0412	large/rare sort
29		RG_FOUNGD_HESS-7_2021-09-17		Y	115096	Rhyacophilidae	50	0.0637	
4		RG_FOUNGD_HESS-7_2021-09-17		Y	568757	Uenoidae	50	0.0008	
10		RG_FOUNGD_HESS-7_2021-09-17		Y	127076	Ceratopogonidae	50	0.0028	
16		RG_FOUNGD_HESS-7_2021-09-17		Y	127917	Chironomidae	50	0.0154	
3		RG_FOUNGD_HESS-7_2021-09-17		Y	135830	Empididae	50	0.0028	
170	larvae	RG_FOUNGD_HESS-7_2021-09-17		Y	125351	Psychodidae	50	0.1083	
1	larvae	RG_FOUNGD_HESS-7_2021-09-17		Y	118840	Tipulidae	100	0.1939	large/rare sort
1	none	RG_FOUNGD_HESS-8_2021-09-17		N		Nemata	50	0.0004	
5	none	RG_FOUNGD_HESS-8_2021-09-17		Y	54502	Planariidae	50	0.0081	
7	none	RG_FOUNGD_HESS-8_2021-09-17		Y	68510	Enchytraeidae	50	0.0021	
3	Adult	RG_FOUNGD_HESS-8_2021-09-17		Y	83033	Lebertiidae	50	0.0019	
3	Adult	RG_FOUNGD_HESS-8_2021-09-17		Y	895710	Sperchonidae	50	0.0014	
2	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	568544	Ameletidae	50	0.0008	
8	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	100755	Baetidae	50	0.0158	
45	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	101232	Ephemerellidae	50	0.0324	
164	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	100504	Heptageniidae	50	0.0760	
1	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	102643	Capniidae	50	0.0003	
3	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	103202	Chloroperlidae	50	0.0077	
16	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	102517	Nemouridae	50	0.0106	
22	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	102994	Perlodidae	50	0.0493	
8	Nymph	RG_FOUNGD_HESS-8_2021-09-17		Y	102788	Taeniopterygidae	50	0.0023	
1		RG_FOUNGD_HESS-8_2021-09-17		Y	115933	Limnephilidae	100	0.2349	large/rare sort
17		RG_FOUNGD_HESS-8_2021-09-17		Y	115096	Rhyacophilidae	50	0.1197	
3		RG_FOUNGD_HESS-8_2021-09-17		Y	568757	Uenoidae	50	0.0004	
1		RG_FOUNGD_HESS-8_2021-09-17		Y	127076	Ceratopogonidae	50	0.0005	
194		RG_FOUNGD_HESS-8_2021-09-17		Y	127917	Chironomidae	50	0.2039	
1		RG_FOUNGD_HESS-8_2021-09-17		Y	135830	Empididae	50	0.0018	
57	larvae	RG_FOUNGD_HESS-8_2021-09-17		Y	125351	Psychodidae	50	0.0501	
8	none	RG_FOUNGD_HESS-9_2021-09-17		Y	54502	Planariidae	50	0.0104	
8	Adult	RG_FOUNGD_HESS-9_2021-09-17		Y	83033	Lebertiidae	50	0.0028	
3	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	568544	Ameletidae	50	0.0269	
9	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	100755	Baetidae	50	0.0271	
53	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	101232	Ephemerellidae	50	0.0380	
295	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	100504	Heptageniidae	50	0.1418	
3	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	103202	Chloroperlidae	50	0.0029	
9	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	102517	Nemouridae	50	0.0346	
28	Nymph	RG_FOUNGD_HESS-9_2021-09-17		Y	102994	Perlodidae	50	0.0625	
1	larvae/immature	RG_FOUNGD_HESS-9_2021-09-17		Y	115095	Trichoptera	50	0.0005	Apataniidae/Uenoidae
1		RG_FOUNGD_HESS-9_2021-09-17		Y	117120	Glossosomatidae	50	0.0006	
18		RG_FOUNGD_HESS-9_2021-09-17		Y	115096	Rhyacophilidae	50	0.0389	
2		RG_FOUNGD_HESS-9_2021-09-17		Y	568757	Uenoidae	50	0.0010	
2		RG_FOUNGD_HESS-9_2021-09-17		Y	127076	Ceratopogonidae	50	0.0014	
15		RG_FOUNGD_HESS-9_2021-09-17		Y	127917	Chironomidae	50	0.0244	
72	larvae	RG_FOUNGD_HESS-9_2021-09-17		Y	125351	Psychodidae	50	0.0435	
6	none	RG_FOUNGD_HESS-10_2021-09-17		Y	54502	Planariidae	50	0.0109	
3	Adult	RG_FOUNGD_HESS-10_2021-09-17		Y	83033	Lebertiidae	50	0.0011	
2	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	568544	Ameletidae	50	0.0169	
8	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	100755	Baetidae	50	0.0190	
96	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	101232	Ephemerellidae	50	0.0357	
201	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	100504	Heptageniidae	50	0.0756	
1	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	102643	Capniidae	50	0.0006	
7	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	103202	Chloroperlidae	50	0.0069	
5	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	102840	Leuctridae	50	0.0055	
1	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	102517	Nemouridae	50	0.0026	
7	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	102994	Perlodidae	50	0.0283	
2	Nymph	RG_FOUNGD_HESS-10_2021-09-17		Y	102788	Taeniopterygidae	50	0.0007	
20		RG_FOUNGD_HESS-10_2021-09-17		Y	115096	Rhyacophilidae	50	0.0623	
4		RG_FOUNGD_HESS-10_2021-09-17		Y	127076	Ceratopogonidae	50	0.0020	
12		RG_FOUNGD_HESS-10_2021-09-17		Y	127917	Chironomidae	50	0.0063	
1		RG_FOUNGD_HESS-10_2021-09-17		Y	135830	Empididae	50	0.0012	
78	larvae	RG_FOUNGD_HESS-10_2021-09-17		Y	125351	Psychodidae	50	0.0468	
1	none	RG_FRCP1SW_HESS-1_2021-09-15		Y	54502	Planariidae	50	0.0037	
1	none	RG_FRCP1SW_HESS-1_2021-09-15		Y	69165	Lumbricidae	100	0.0289	large/rare sort
27	Adult	RG_FRCP1SW_HESS-1_2021-09-15		Y	83033	Lebertiidae	50	0.0074	
3	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	100755	Baetidae	50	0.0027	
3	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	101232	Ephemerellidae	50	0.0121	
26	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	100504	Heptageniidae	50	0.0153	
1	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102643	Capniidae	50	0.0001	
44	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102517	Nemouridae	50	0.0271	
1	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102914	Perlidae	100	0.0109	large/rare sort
1	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102994	Perlodidae	100	0.0466	large/rare sort
22	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102994	Perlodidae	50	0.0380	
14	Nymph	RG_FRCP1SW_HESS-1_2021-09-15		Y	102788	Taeniopterygidae	50	0.0044	
9		RG_FRCP1SW_HESS-1_2021-09-15		Y	598182	Apataniidae	50	0.0196	
2		RG_FRCP1SW_HESS-1_2021-09-15		Y	116905	Brachycentridae	50	0.0002	
2		RG_FRCP1SW_HESS-1_2021-09-15		Y	117120	Glossosomatidae	50	0.0118	
1		RG_FRCP1SW_HESS-1_2021-09-15		Y	115398	Hydropsychidae	100	0.0391	large/rare sort
1		RG_FRCP1SW_HESS-1_2021-09-15		Y	115398	Hydropsychidae	50	0.0040	
2		RG_FRCP1SW_HESS-1_2021-09-15		Y	115096	Rhyacophilidae	50	0.0050	
5		RG_FRCP1SW_HESS-1_2021-09-15		Y	127076	Ceratopogonidae	50	0.0018	
8		RG_FRCP1SW_HESS-1_2021-09-15		Y	127917	Chironomidae	50	0.0090	
94	larvae	RG_FRCP1SW_HESS-1_2021-09-15		Y	125351	Psychodidae	50	0.0550	
3	larvae	RG_FRCP1SW_HESS-1_2021-09-15		Y	118840	Tipulidae	50	0.0023	
4	none	RG_FRCP1SW_HESS-2_2021-09-15		N		Nemata	100	0.0006	
2	none	RG_FRCP1SW_HESS-2_2021-09-15		Y	54502	Planariidae	100	0.0049	
2	none	RG_FRCP1SW_HESS-2_2021-09-15		Y	68510	Enchytraeidae	100	0.0007	
2	none	RG_FRCP1SW_HESS-2_2021-09-15		Y	69165	Lumbricidae	100	0.0108	
34	Adult	RG_FRCP1SW_HESS-2_2021-09-15		Y	83033	Lebertiidae	100	0.0100	
1	none	RG_FRCP1SW_HESS-2_2021-09-15		Y	84195	Ostracoda	100	0.0002	
2	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	100755	Baetidae	100	0.0015	
12	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	101232	Ephemerellidae	100	0.0154	
119	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	100504	Heptageniidae	100	0.0739	
6	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	102643	Capniidae	100	0.0081	
3	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	103202	Chloroperlidae	100	0.0024	
67	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	102517	Nemouridae	100	0.0299	
26	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	102994	Perlodidae	100	0.0886	
14	Nymph	RG_FRCP1SW_HESS-2_2021-09-15		Y	102788	Taeniopterygidae	100	0.0042	
4		RG_FRCP1SW_HESS-2_2021-09-15		Y	598182	Apataniidae	100	0.0078	
3		RG_FRCP1SW_HESS-2_2021-09-15		Y	115096	Rhyacophilidae	100	0.0003	
10		RG_FRCP1SW_HESS-2_2021-09-15		Y	127076	Ceratopogonidae	100	0.0039	
27		RG_FRCP1SW_HESS-2_2021-09-15		Y	127917	Chironomidae	100	0.0133	
1		RG_FRCP1SW_HESS-2_2021-09-15		Y	135830	Empididae	100	0.0021	
349	larvae	RG_FRCP1SW_HESS-2_2021-09-15		Y	125351	Psychodidae	100	0.2363	
1	larvae	RG_FRCP1SW_HESS-2_2021-09-15		Y	126640	Simuliidae	100	0.0030	
5	larvae	RG_FRCP1SW_HESS-2_2021-09-15		Y	118840	Tipulidae	100	0.0023	
2	none	RG_FRCP1SW_HESS-3_2021-09-15		N		Nemata	50	0.0025	
2	none	RG_FRCP1SW_HESS-3_2021-09-15		Y	68510	Enchytraeidae	50	0.0009	
1	none	RG_FRCP1SW_HESS-3_2021-09-15		Y	69165	Lumbricidae	50	0.0163	
56	Adult	RG_FRCP1SW_HESS-3_2021-09-15		Y	83033	Lebertiidae	50	0.0152	
1	none	RG_FRCP1SW_HESS-3_2021-09-15		Y	84195	Ostracoda	50	0.0002	
1	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	100755	Baetidae	50	0.0017	
8	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	101232	Ephemerellidae	50	0.0018	
47	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	100504	Heptageniidae	50	0.0389	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(.	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
2	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	102643	Capniidae	50	0.0003	
1	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	103202	Chloroperlidae	50	0.0002	
105	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	102517	Nemouridae	50	0.0458	
5	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	102914	Perlidae	50	0.2179	
18	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	102994	Perlodidae	50	0.0479	
7	Nymph	RG_FRCP1SW_HESS-3_2021-09-15		Y	102788	Taeniopterygidae	50	0.0023	
18		RG_FRCP1SW_HESS-3_2021-09-15		Y	598182	Apataniidae	50	0.0451	
2		RG_FRCP1SW_HESS-3_2021-09-15		Y	116905	Brachycentridae	50	0.0016	
2		RG_FRCP1SW_HESS-3_2021-09-15		Y	117120	Glossosomatidae	50	0.0004	
6		RG_FRCP1SW_HESS-3_2021-09-15		Y	115096	Rhyacophilidae	50	0.0010	
5		RG_FRCP1SW_HESS-3_2021-09-15		Y	127076	Ceratopogonidae	50	0.0028	
40		RG_FRCP1SW_HESS-3_2021-09-15		Y	127917	Chironomidae	50	0.0228	
1		RG_FRCP1SW_HESS-3_2021-09-15		Y	135830	Empididae	50	0.0013	
118	larvae	RG_FRCP1SW_HESS-3_2021-09-15		Y	125351	Psychodidae	50	0.0767	
1	larvae	RG_FRCP1SW_HESS-3_2021-09-15		Y	118840	Tipulidae	50	0.0028	
3	none	RG_FRCP1SW_HESS-4_2021-09-15		N		Nemata	50	0.0027	
6	none	RG_FRCP1SW_HESS-4_2021-09-15		Y	54502	Planariidae	50	0.0112	
8	none	RG_FRCP1SW_HESS-4_2021-09-15		Y	68510	Enchytraeidae	50	0.0030	
1	none	RG_FRCP1SW_HESS-4_2021-09-15		Y	69165	Lumbricidae	50	0.0183	
20	Adult	RG_FRCP1SW_HESS-4_2021-09-15		Y	83033	Lebertiidae	50	0.0044	
2	none	RG_FRCP1SW_HESS-4_2021-09-15		Y	84195	Ostracoda	50	0.0007	
1		RG_FRCP1SW_HESS-4_2021-09-15		Y	114093	Elmidae	50	0.0005	
13	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	100755	Baetidae	50	0.0566	
11	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	101232	Ephemerellidae	50	0.0013	
31	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	100504	Heptageniidae	50	0.0237	
1	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	102643	Capniidae	50	0.0002	
8	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	103202	Chloroperlidae	50	0.0037	
89	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	102517	Nemouridae	50	0.0526	
1	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	102914	Perlidae	50	0.0005	
24	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	102994	Perlodidae	50	0.0150	
38	Nymph	RG_FRCP1SW_HESS-4_2021-09-15		Y	102788	Taeniopterygidae	50	0.0099	
27		RG_FRCP1SW_HESS-4_2021-09-15		Y	598182	Apataniidae	50	0.0937	
5		RG_FRCP1SW_HESS-4_2021-09-15		Y	116905	Brachycentridae	50	0.0008	
4		RG_FRCP1SW_HESS-4_2021-09-15		Y	117120	Glossosomatidae	50	0.0322	
2		RG_FRCP1SW_HESS-4_2021-09-15		Y	115398	Hydropsychidae	50	0.0025	
3		RG_FRCP1SW_HESS-4_2021-09-15		Y	115096	Rhyacophilidae	50	0.0253	
14		RG_FRCP1SW_HESS-4_2021-09-15		Y	127076	Ceratopogonidae	50	0.0047	
28		RG_FRCP1SW_HESS-4_2021-09-15		Y	127917	Chironomidae	50	0.0337	
144	larvae	RG_FRCP1SW_HESS-4_2021-09-15		Y	125351	Psychodidae	50	0.0802	
1	larvae	RG_FRCP1SW_HESS-4_2021-09-15		Y	126640	Simuliidae	50	0.0051	
2	larvae	RG_FRCP1SW_HESS-4_2021-09-15		Y	118840	Tipulidae	50	0.0031	
2	none	RG_FRCP1SW_HESS-5_2021-09-15		N		Nemata	25	0.0003	
1	none	RG_FRCP1SW_HESS-5_2021-09-15		Y	68510	Enchytraeidae	25	0.0002	
2	none	RG_FRCP1SW_HESS-5_2021-09-15		Y	69165	Lumbricidae	100	0.0763	large/rare sort
6	Adult	RG_FRCP1SW_HESS-5_2021-09-15		Y	83033	Lebertiidae	25	0.0016	
2	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	100755	Baetidae	25	0.0056	
1	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	101232	Ephemerellidae	25	0.0001	
65	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	100504	Heptageniidae	25	0.0438	
3	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102643	Capniidae	25	0.0013	
4	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	103202	Chloroperlidae	25	0.0103	
59	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102517	Nemouridae	25	0.0198	
1	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102914	Perlidae	100	0.0587	large/rare sort
4	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102994	Perlodidae	100	0.1511	large/rare sort
24	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102994	Perlodidae	25	0.0182	
19	Nymph	RG_FRCP1SW_HESS-5_2021-09-15		Y	102788	Taeniopterygidae	25	0.0049	
4		RG_FRCP1SW_HESS-5_2021-09-15		Y	598182	Apataniidae	25	0.0066	
1		RG_FRCP1SW_HESS-5_2021-09-15		Y	116905	Brachycentridae	25	0.0001	
1		RG_FRCP1SW_HESS-5_2021-09-15		Y	117120	Glossosomatidae	25	0.0022	
3		RG_FRCP1SW_HESS-5_2021-09-15		Y	115398	Hydropsychidae	100	0.3523	large/rare sort
3		RG_FRCP1SW_HESS-5_2021-09-15		Y	115398	Hydropsychidae	25	0.0450	
2		RG_FRCP1SW_HESS-5_2021-09-15		Y	115096	Rhyacophilidae	100	0.0550	large/rare sort
4		RG_FRCP1SW_HESS-5_2021-09-15		Y	115096	Rhyacophilidae	25	0.0023	
11		RG_FRCP1SW_HESS-5_2021-09-15		Y	127076	Ceratopogonidae	25	0.0038	
14		RG_FRCP1SW_HESS-5_2021-09-15		Y	127917	Chironomidae	25	0.0070	
62	larvae	RG_FRCP1SW_HESS-5_2021-09-15		Y	125351	Psychodidae	25	0.0302	
1	larvae	RG_FRCP1SW_HESS-5_2021-09-15		Y	118840	Tipulidae	25	0.0030	
4	none	RG_FRCP1SW_HESS-6_2021-09-15		N		Nemata	50	0.0042	
3	none	RG_FRCP1SW_HESS-6_2021-09-15		Y	54502	Planariidae	50	0.0039	
8	Adult	RG_FRCP1SW_HESS-6_2021-09-15		Y	83033	Lebertiidae	50	0.0028	
2	Adult	RG_FRCP1SW_HESS-6_2021-09-15		Y	895710	Sperchonidae	50	0.0015	
4	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	100755	Baetidae	50	0.0221	
53	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	100504	Heptageniidae	50	0.0300	
1	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102643	Capniidae	50	0.0026	
1	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102517	Nemouridae	100	0.0078	large/rare sort
89	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102517	Nemouridae	50	0.0649	
4	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102994	Perlodidae	100	0.1810	large/rare sort
38	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102994	Perlodidae	50	0.0390	
28	Nymph	RG_FRCP1SW_HESS-6_2021-09-15		Y	102788	Taeniopterygidae	50	0.0109	
4		RG_FRCP1SW_HESS-6_2021-09-15		Y	116905	Brachycentridae	50	0.0010	
3		RG_FRCP1SW_HESS-6_2021-09-15		Y	115398	Hydropsychidae	100	0.0406	large/rare sort
2		RG_FRCP1SW_HESS-6_2021-09-15		Y	115398	Hydropsychidae	50	0.0103	
7		RG_FRCP1SW_HESS-6_2021-09-15		Y	115096	Rhyacophilidae	100	0.2198	large/rare sort
9		RG_FRCP1SW_HESS-6_2021-09-15		Y	115096	Rhyacophilidae	50	0.0421	
1		RG_FRCP1SW_HESS-6_2021-09-15		Y	127076	Ceratopogonidae	50	0.0008	
123		RG_FRCP1SW_HESS-6_2021-09-15		Y	127917	Chironomidae	50	0.1227	
4		RG_FRCP1SW_HESS-6_2021-09-15		Y	135830	Empididae	50	0.0026	
33	larvae	RG_FRCP1SW_HESS-6_2021-09-15		Y	125351	Psychodidae	50	0.0182	
1	larvae	RG_FRCP1SW_HESS-6_2021-09-15		Y	126640	Simuliidae	50	0.0018	
2	none	RG_FRCP1SW_HESS-7_2021-09-15		Y	68510	Enchytraeidae	50	0.0003	
35	Adult	RG_FRCP1SW_HESS-7_2021-09-15		Y	83033	Lebertiidae	50	0.0087	
1	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	101232	Ephemerellidae	100	0.0077	large/rare sort
11	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	101232	Ephemerellidae	50	0.0151	
41	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	100504	Heptageniidae	50	0.0196	
2	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102643	Capniidae	50	0.0005	
4	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	103202	Chloroperlidae	50	0.0004	
1	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102517	Nemouridae	100	0.0077	large/rare sort
29	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102517	Nemouridae	50	0.0200	
6	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102994	Perlodidae	100	0.0798	large/rare sort
41	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102994	Perlodidae	50	0.0319	
8	Nymph	RG_FRCP1SW_HESS-7_2021-09-15		Y	102788	Taeniopterygidae	50	0.0014	
15		RG_FRCP1SW_HESS-7_2021-09-15		Y	598182	Apataniidae	50	0.0392	
10		RG_FRCP1SW_HESS-7_2021-09-15		Y	117120	Glossosomatidae	50	0.0034	
1		RG_FRCP1SW_HESS-7_2021-09-15		Y	115398	Hydropsychidae	50	0.0083	
1		RG_FRCP1SW_HESS-7_2021-09-15		Y	115933	Limnephilidae	50	0.0003	
2		RG_FRCP1SW_HESS-7_2021-09-15		Y	115096	Rhyacophilidae	100	0.0314	large/rare sort
2		RG_FRCP1SW_HESS-7_2021-09-15		Y	115096	Rhyacophilidae	50	0.0026	
2		RG_FRCP1SW_HESS-7_2021-09-15		Y	127076	Ceratopogonidae	50	0.0008	
15		RG_FRCP1SW_HESS-7_2021-09-15		Y	127917	Chironomidae	50	0.0306	
104	larvae	RG_FRCP1SW_HESS-7_2021-09-15		Y	125351	Psychodidae	50	0.0704	
3	larvae	RG_FRCP1SW_HESS-7_2021-09-15		Y	118840	Tipulidae	50	0.0008	
2	none	RG_FRCP1SW_HESS-8_2021-09-15		N		Nemata	100	0.0031	
20	none	RG_FRCP1SW_HESS-8_2021-09-15		Y	68510	Enchytraeidae	100	0.0075	
94	Adult	RG_FRCP1SW_HESS-8_2021-09-15		Y	83033	Lebertiidae	100	0.0227	
3	Adult	RG_FRCP1SW_HESS-8_2021-09-15		Y	895710	Sperchonidae	100	0.0010	
1	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	100755	Baetidae	100	0.0134	
12	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	101232	Ephemerellidae	100	0.0282	
24	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	100504	Heptageniidae	100	0.0110	
2	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	102643	Capniidae	100	0.0005	
27	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	102517	Nemouridae	100	0.0182	
46	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	102994	Perlodidae	100	0.1186	
7	Nymph	RG_FRCP1SW_HESS-8_2021-09-15		Y	102788	Taeniopterygidae	100	0.0017	
7		RG_FRCP1SW_HESS-8_2021-09-15		Y	598182	Apataniidae	100	0.0115	
9		RG_FRCP1SW_HESS-8_2021-09-15		Y	117120	Glossosomatidae	100	0.0015	
3		RG_FRCP1SW_HESS-8_2021-09-15		Y	115096	Rhyacophilidae	100	0.0242	

quantity	**life_stage_code**	observ_sample_code	**I**	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(.*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
9		RG_FRCP1SW_HESS-8_2021-09-15		Y	127076	Ceratopogonidae	100	0.0035	
47		RG_FRCP1SW_HESS-8_2021-09-15		Y	127917	Chironomidae	100	0.0258	
43	larvae	RG_FRCP1SW_HESS-8_2021-09-15		Y	125351	Psychodidae	100	0.0228	
1	larvae	RG_FRCP1SW_HESS-8_2021-09-15		Y	118840	Tipulidae	100	0.0004	
16	none	RG_FRCP1SW_HESS-9_2021-09-15		Y	68510	Enchytraeidae	50	0.0037	
34	Adult	RG_FRCP1SW_HESS-9_2021-09-15		Y	83033	Lebertiidae	50	0.0072	
2	Adult	RG_FRCP1SW_HESS-9_2021-09-15		Y	895710	Sperchonidae	50	0.0006	
3	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	100755	Baetidae	50	0.0036	
7	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	101232	Ephemerellidae	50	0.0095	
26	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	100504	Heptageniidae	50	0.0134	
4	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	102643	Capniidae	50	0.0005	
71	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	102517	Nemouridae	50	0.0361	
1	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	102914	Perlidae	50	0.0061	
68	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	102994	Perlodidae	50	0.4013	
14	Nymph	RG_FRCP1SW_HESS-9_2021-09-15		Y	102788	Taeniopterygidae	50	0.0032	
1		RG_FRCP1SW_HESS-9_2021-09-15		Y	598182	Apataniidae	50	0.0008	
4		RG_FRCP1SW_HESS-9_2021-09-15		Y	116905	Brachycentridae	50	0.0004	
4		RG_FRCP1SW_HESS-9_2021-09-15		Y	117120	Glossosomatidae	50	0.0026	
4		RG_FRCP1SW_HESS-9_2021-09-15		Y	115398	Hydropsychidae	50	0.0208	
5		RG_FRCP1SW_HESS-9_2021-09-15		Y	115096	Rhyacophilidae	50	0.0345	
8		RG_FRCP1SW_HESS-9_2021-09-15		Y	127076	Ceratopogonidae	50	0.0024	
79		RG_FRCP1SW_HESS-9_2021-09-15		Y	127917	Chironomidae	50	0.0457	
1		RG_FRCP1SW_HESS-9_2021-09-15		Y	135830	Empididae	50	0.0004	
36	larvae	RG_FRCP1SW_HESS-9_2021-09-15		Y	125351	Psychodidae	50	0.0168	
5	larvae	RG_FRCP1SW_HESS-9_2021-09-15		Y	118840	Tipulidae	50	0.0005	
5	none	RG_FRCP1SW_HESS-10_2021-09-15		N		Nemata	100	0.0033	
58	none	RG_FRCP1SW_HESS-10_2021-09-15		Y	68510	Enchytraeidae	100	0.0087	
31	Adult	RG_FRCP1SW_HESS-10_2021-09-15		Y	83033	Lebertiidae	100	0.0057	
3	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	100755	Baetidae	100	0.0144	
7	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	101232	Ephemerellidae	100	0.0104	
74	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	100504	Heptageniidae	100	0.0315	
2	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	102643	Capniidae	100	0.0018	
2	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	103202	Chloroperlidae	100	0.0004	
239	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	102517	Nemouridae	100	0.1347	
98	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	102994	Perlodidae	100	0.3835	
65	Nymph	RG_FRCP1SW_HESS-10_2021-09-15		Y	102788	Taeniopterygidae	100	0.0177	
5		RG_FRCP1SW_HESS-10_2021-09-15		Y	598182	Apataniidae	100	0.0116	
5		RG_FRCP1SW_HESS-10_2021-09-15		Y	116905	Brachycentridae	100	0.0006	
18		RG_FRCP1SW_HESS-10_2021-09-15		Y	117120	Glossosomatidae	100	0.0197	
8		RG_FRCP1SW_HESS-10_2021-09-15		Y	115398	Hydropsychidae	100	0.0783	
5		RG_FRCP1SW_HESS-10_2021-09-15		Y	115096	Rhyacophilidae	100	0.0040	
47		RG_FRCP1SW_HESS-10_2021-09-15		Y	127076	Ceratopogonidae	100	0.0128	
55		RG_FRCP1SW_HESS-10_2021-09-15		Y	127917	Chironomidae	100	0.0316	
2		RG_FRCP1SW_HESS-10_2021-09-15		Y	135830	Empididae	100	0.0008	
2	larvae	RG_FRCP1SW_HESS-10_2021-09-15		Y	130914	Pelecorhyncidae	100	0.0044	
108	larvae	RG_FRCP1SW_HESS-10_2021-09-15		Y	125351	Psychodidae	100	0.0511	
4	larvae	RG_FRCP1SW_HESS-10_2021-09-15		Y	126640	Simuliidae	100	0.0085	
5	larvae	RG_FRCP1SW_HESS-10_2021-09-15		Y	118840	Tipulidae	100	0.0045	
3	none	RG_FRUPO_HESS-1_2021-09-19		N		Nemata	50	0.0005	
8	none	RG_FRUPO_HESS-1_2021-09-19		Y	54502	Planariidae	50	0.0180	
48	Adult	RG_FRUPO_HESS-1_2021-09-19		Y	83033	Lebertiidae	50	0.0121	
1	Adult	RG_FRUPO_HESS-1_2021-09-19		Y	895710	Sperchonidae	50	0.0002	
25		RG_FRUPO_HESS-1_2021-09-19		Y	114093	Elmidae	50	0.0269	
4	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	100755	Baetidae	50	0.0141	
10	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	101232	Ephemerellidae	50	0.0221	
5	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	100504	Heptageniidae	50	0.0008	
3	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	102643	Capniidae	50	0.0003	
2	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	103202	Chloroperlidae	50	0.0007	
54	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	102517	Nemouridae	50	0.0454	
170	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	102994	Perlodidae	50	0.1841	
3	Nymph	RG_FRUPO_HESS-1_2021-09-19		Y	102788	Taeniopterygidae	50	0.0006	
19		RG_FRUPO_HESS-1_2021-09-19		Y	598182	Apataniidae	50	0.0484	
13		RG_FRUPO_HESS-1_2021-09-19		Y	117120	Glossosomatidae	50	0.0141	
2		RG_FRUPO_HESS-1_2021-09-19		Y	115398	Hydropsychidae	50	0.0009	
2		RG_FRUPO_HESS-1_2021-09-19		Y	115933	Limnephilidae	50	0.0003	
22		RG_FRUPO_HESS-1_2021-09-19		Y	115096	Rhyacophilidae	50	0.1559	
3		RG_FRUPO_HESS-1_2021-09-19		Y	568757	Uenoidae	50	0.0002	
224		RG_FRUPO_HESS-1_2021-09-19		Y	127917	Chironomidae	50	0.2075	
26		RG_FRUPO_HESS-1_2021-09-19		Y	135830	Empididae	50	0.0439	
24	larvae	RG_FRUPO_HESS-1_2021-09-19		Y	125351	Psychodidae	50	0.0060	
1	larvae	RG_FRUPO_HESS-1_2021-09-19		Y	118840	Tipulidae	100	0.2332	large/rare sort
7	larvae	RG_FRUPO_HESS-1_2021-09-19		Y	118840	Tipulidae	50	0.1941	
5	none	RG_FRUPO_HESS-2_2021-09-19		N		Nemata	25	0.0013	
2	none	RG_FRUPO_HESS-2_2021-09-19		Y	54502	Planariidae	25	0.0029	
1	none	RG_FRUPO_HESS-2_2021-09-19		Y	68510	Enchytraeidae	25	0.0001	
21	Adult	RG_FRUPO_HESS-2_2021-09-19		Y	83033	Lebertiidae	25	0.0045	
17		RG_FRUPO_HESS-2_2021-09-19		Y	114093	Elmidae	25	0.0135	
2	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	100755	Baetidae	25	0.0143	
12	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	101232	Ephemerellidae	25	0.0040	
4	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	100504	Heptageniidae	25	0.0010	
5	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	103202	Chloroperlidae	25	0.0004	
30	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	102517	Nemouridae	25	0.0363	
110	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	102994	Perlodidae	25	0.1520	
4	Nymph	RG_FRUPO_HESS-2_2021-09-19		Y	102788	Taeniopterygidae	25	0.0003	
4		RG_FRUPO_HESS-2_2021-09-19		Y	598182	Apataniidae	25	0.0049	
18		RG_FRUPO_HESS-2_2021-09-19		Y	117120	Glossosomatidae	25	0.0304	
1		RG_FRUPO_HESS-2_2021-09-19		Y	115629	Hydroptilidae	25	0.0006	
3		RG_FRUPO_HESS-2_2021-09-19		Y	115933	Limnephilidae	25	0.0004	
22		RG_FRUPO_HESS-2_2021-09-19		Y	115096	Rhyacophilidae	25	0.3252	
1		RG_FRUPO_HESS-2_2021-09-19		Y	127076	Ceratopogonidae	25	0.0005	
168		RG_FRUPO_HESS-2_2021-09-19		Y	127917	Chironomidae	25	0.1604	
16		RG_FRUPO_HESS-2_2021-09-19		Y	135830	Empididae	25	0.0319	
20	larvae	RG_FRUPO_HESS-2_2021-09-19		Y	125351	Psychodidae	25	0.0049	
3	larvae	RG_FRUPO_HESS-2_2021-09-19		Y	118840	Tipulidae	100	1.0297	large/rare sort
5	larvae	RG_FRUPO_HESS-2_2021-09-19		Y	118840	Tipulidae	25	0.0281	
5	none	RG_FRUPO_HESS-3_2021-09-19		N		Nemata	50	0.0012	
2	none	RG_FRUPO_HESS-3_2021-09-19		Y	68510	Enchytraeidae	50	0.0006	
29	Adult	RG_FRUPO_HESS-3_2021-09-19		Y	83033	Lebertiidae	50	0.0062	
1	Adult	RG_FRUPO_HESS-3_2021-09-19		Y	895710	Sperchonidae	50	0.0001	
8		RG_FRUPO_HESS-3_2021-09-19		Y	114093	Elmidae	50	0.0051	
1	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	100755	Baetidae	50	0.0001	
6	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	101232	Ephemerellidae	50	0.0124	
1	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	100504	Heptageniidae	50	0.0001	
1	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	102643	Capniidae	50	0.0001	
4	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	103202	Chloroperlidae	50	0.0012	
21	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	102517	Nemouridae	50	0.0031	
170	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	102994	Perlodidae	50	0.2512	
4	Nymph	RG_FRUPO_HESS-3_2021-09-19		Y	102788	Taeniopterygidae	50	0.0008	
3		RG_FRUPO_HESS-3_2021-09-19		Y	598182	Apataniidae	50	0.0037	
1		RG_FRUPO_HESS-3_2021-09-19		Y	116905	Brachycentridae	50	0.0002	
30		RG_FRUPO_HESS-3_2021-09-19		Y	117120	Glossosomatidae	50	0.0709	
1		RG_FRUPO_HESS-3_2021-09-19		Y	115398	Hydropsychidae	50	0.0006	
1		RG_FRUPO_HESS-3_2021-09-19		Y	115933	Limnephilidae	50	0.0002	
20		RG_FRUPO_HESS-3_2021-09-19		Y	115096	Rhyacophilidae	50	0.0897	
1		RG_FRUPO_HESS-3_2021-09-19		Y	568757	Uenoidae	50	0.0002	
2		RG_FRUPO_HESS-3_2021-09-19		Y	127076	Ceratopogonidae	50	0.0008	
363		RG_FRUPO_HESS-3_2021-09-19		Y	127917	Chironomidae	50	0.4314	
12		RG_FRUPO_HESS-3_2021-09-19		Y	135830	Empididae	50	0.0198	
12	larvae	RG_FRUPO_HESS-3_2021-09-19		Y	125351	Psychodidae	50	0.0035	
1	larvae	RG_FRUPO_HESS-3_2021-09-19		Y	118840	Tipulidae	100	0.2747	large/rare sort
4	larvae	RG_FRUPO_HESS-3_2021-09-19		Y	118840	Tipulidae	50	0.0034	
10	none	RG_FRUPO_HESS-4_2021-09-19		N		Nemata	50	0.0032	
1	none	RG_FRUPO_HESS-4_2021-09-19		Y	54502	Planariidae	50	0.0006	
1	none	RG_FRUPO_HESS-4_2021-09-19		Y	68510	Enchytraeidae	50	0.0004	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
26	Adult	RG_FRUPO_HESS-4_2021-09-19		Y	83033	Lebertiidae	50	0.0058	
6		RG_FRUPO_HESS-4_2021-09-19		Y	114093	Elmidae	50	0.0052	
5	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	101232	Ephemerellidae	50	0.0092	
4	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	100504	Heptageniidae	50	0.0168	
2	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	102643	Capniidae	50	0.0002	
8	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	103202	Chloroperlidae	50	0.0027	
10	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	102517	Nemouridae	50	0.0209	
95	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	102994	Perlodidae	50	0.0746	
19	Nymph	RG_FRUPO_HESS-4_2021-09-19		Y	102788	Taeniopterygidae	50	0.0064	
32		RG_FRUPO_HESS-4_2021-09-19		Y	117120	Glossosomatidae	50	0.0863	
1		RG_FRUPO_HESS-4_2021-09-19		Y	115398	Hydropsychidae	50	0.0004	
14		RG_FRUPO_HESS-4_2021-09-19		Y	115096	Rhyacophilidae	50	0.0708	
1		RG_FRUPO_HESS-4_2021-09-19		Y	568757	Uenoidae	50	0.0001	
2		RG_FRUPO_HESS-4_2021-09-19		Y	127076	Ceratopogonidae	50	0.0006	
165		RG_FRUPO_HESS-4_2021-09-19		Y	127917	Chironomidae	50	0.2185	
1		RG_FRUPO_HESS-4_2021-09-19		Y	135830	Empididae	50	0.0014	
4	larvae	RG_FRUPO_HESS-4_2021-09-19		Y	125351	Psychodidae	50	0.0012	
1	larvae	RG_FRUPO_HESS-4_2021-09-19		Y	118840	Tipulidae	100	0.1365	large/rare sort
6	larvae	RG_FRUPO_HESS-4_2021-09-19		Y	118840	Tipulidae	50	0.0123	
3	none	RG_FRUPO_HESS-5_2021-09-19		N		Nemata	25	0.0001	
2	none	RG_FRUPO_HESS-5_2021-09-19		Y	54502	Planariidae	25	0.0162	
1	none	RG_FRUPO_HESS-5_2021-09-19		Y	69165	Lumbricidae	25	0.0329	
20	Adult	RG_FRUPO_HESS-5_2021-09-19		Y	83033	Lebertiidae	25	0.0055	
3	none	RG_FRUPO_HESS-5_2021-09-19		Y	84195	Ostracoda	25	0.0005	
1		RG_FRUPO_HESS-5_2021-09-19		Y	114093	Elmidae	25	0.0008	
1	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	100755	Baetidae	25	0.0001	
3	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	100504	Heptageniidae	25	0.0108	
3	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	102643	Capniidae	25	0.0001	
3	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	103202	Chloroperlidae	25	0.0007	
49	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	102517	Nemouridae	25	0.0188	
112	Nymph	RG_FRUPO_HESS-5_2021-09-19		Y	102994	Perlodidae	25	0.1238	
29		RG_FRUPO_HESS-5_2021-09-19		Y	598182	Apataniidae	25	0.0632	
25		RG_FRUPO_HESS-5_2021-09-19		Y	117120	Glossosomatidae	25	0.0138	
2		RG_FRUPO_HESS-5_2021-09-19		Y	115933	Limnephilidae	25	0.0003	
7		RG_FRUPO_HESS-5_2021-09-19		Y	115096	Rhyacophilidae	25	0.0297	
128		RG_FRUPO_HESS-5_2021-09-19		Y	127917	Chironomidae	25	0.1118	
9		RG_FRUPO_HESS-5_2021-09-19		Y	135830	Empididae	25	0.0131	
1	larvae	RG_FRUPO_HESS-5_2021-09-19		Y	130914	Pelecorhyncidae	25	0.0001	
49	larvae	RG_FRUPO_HESS-5_2021-09-19		Y	125351	Psychodidae	25	0.0206	
2	larvae	RG_FRUPO_HESS-5_2021-09-19		Y	118840	Tipulidae	100	0.4524	large/rare sort
6	larvae	RG_FRUPO_HESS-5_2021-09-19		Y	118840	Tipulidae	25	0.1465	
5	none	RG_FRUPO_HESS-6_2021-09-19		N		Nemata	50	0.0007	
1	none	RG_FRUPO_HESS-6_2021-09-19		Y	54502	Planariidae	50	0.0001	
1	none	RG_FRUPO_HESS-6_2021-09-19		Y	68510	Enchytraeidae	50	0.0001	
45	Adult	RG_FRUPO_HESS-6_2021-09-19		Y	83033	Lebertiidae	50	0.0127	
2		RG_FRUPO_HESS-6_2021-09-19		Y	114093	Elmidae	50	0.0019	
4	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	100755	Baetidae	50	0.0161	
7	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	101232	Ephemerellidae	50	0.0191	
3	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	100504	Heptageniidae	50	0.0008	
4	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	102643	Capniidae	50	0.0069	
1	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	103202	Chloroperlidae	50	0.0029	
34	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	102517	Nemouridae	50	0.0297	
2	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	102914	Perlidae	50	0.0411	
135	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	102994	Perlodidae	50	0.1686	
2	Nymph	RG_FRUPO_HESS-6_2021-09-19		Y	102788	Taeniopterygidae	50	0.0005	
18		RG_FRUPO_HESS-6_2021-09-19		Y	598182	Apataniidae	50	0.0398	
26		RG_FRUPO_HESS-6_2021-09-19		Y	117120	Glossosomatidae	50	0.0278	
1		RG_FRUPO_HESS-6_2021-09-19		Y	115933	Limnephilidae	50	0.0001	
7		RG_FRUPO_HESS-6_2021-09-19		Y	115096	Rhyacophilidae	50	0.1239	
1		RG_FRUPO_HESS-6_2021-09-19		Y	127076	Ceratopogonidae	50	0.0001	
169		RG_FRUPO_HESS-6_2021-09-19		Y	127917	Chironomidae	50	0.1372	
36		RG_FRUPO_HESS-6_2021-09-19		Y	135830	Empididae	50	0.0554	
34	larvae	RG_FRUPO_HESS-6_2021-09-19		Y	125351	Psychodidae	50	0.0112	
5	larvae	RG_FRUPO_HESS-6_2021-09-19		Y	118840	Tipulidae	50	0.0032	
16	none	RG_FRUPO_HESS-7_2021-09-19		N		Nemata	100	0.0282	
1	none	RG_FRUPO_HESS-7_2021-09-19		Y	54502	Planariidae	100	0.0013	
25	none	RG_FRUPO_HESS-7_2021-09-19		Y	68510	Enchytraeidae	100	0.0085	
19	Adult	RG_FRUPO_HESS-7_2021-09-19		Y	83033	Lebertiidae	100	0.0044	
1	Adult	RG_FRUPO_HESS-7_2021-09-19		Y	895710	Sperchonidae	100	0.0002	
4		RG_FRUPO_HESS-7_2021-09-19		Y	114093	Elmidae	100	0.0096	
3	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	100755	Baetidae	100	0.0028	
9	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	101232	Ephemerellidae	100	0.0131	
1	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	100504	Heptageniidae	100	0.0003	
3	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	102643	Capniidae	100	0.0006	
8	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	103202	Chloroperlidae	100	0.0029	
33	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	102517	Nemouridae	100	0.0184	
174	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	102994	Perlodidae	100	0.4596	
20	Nymph	RG_FRUPO_HESS-7_2021-09-19		Y	102788	Taeniopterygidae	100	0.0079	
2		RG_FRUPO_HESS-7_2021-09-19		Y	598182	Apataniidae	100	0.0024	
74		RG_FRUPO_HESS-7_2021-09-19		Y	117120	Glossosomatidae	100	0.3636	
1		RG_FRUPO_HESS-7_2021-09-19		Y	115398	Hydropsychidae	100	0.2948	
2		RG_FRUPO_HESS-7_2021-09-19		Y	115933	Limnephilidae	100	0.0010	
19		RG_FRUPO_HESS-7_2021-09-19		Y	115096	Rhyacophilidae	100	0.1128	
5		RG_FRUPO_HESS-7_2021-09-19		Y	127076	Ceratopogonidae	100	0.0028	
173		RG_FRUPO_HESS-7_2021-09-19		Y	127917	Chironomidae	100	0.1904	
27		RG_FRUPO_HESS-7_2021-09-19		Y	135830	Empididae	100	0.0462	
2	larvae	RG_FRUPO_HESS-7_2021-09-19		Y	130914	Pelecorhyncidae	100	0.0440	
27	larvae	RG_FRUPO_HESS-7_2021-09-19		Y	125351	Psychodidae	100	0.0116	
4	larvae	RG_FRUPO_HESS-7_2021-09-19		Y	126640	Simuliidae	100	0.0071	
8	larvae	RG_FRUPO_HESS-7_2021-09-19		Y	118840	Tipulidae	100	0.0139	
6	none	RG_FRUPO_HESS-8_2021-09-19		N		Nemata	50	0.0027	
3	none	RG_FRUPO_HESS-8_2021-09-19		Y	54502	Planariidae	50	0.0047	
1	none	RG_FRUPO_HESS-8_2021-09-19		Y	68510	Enchytraeidae	50	0.0001	
1	none	RG_FRUPO_HESS-8_2021-09-19		Y	69165	Lumbricidae	50	0.0393	
37	Adult	RG_FRUPO_HESS-8_2021-09-19		Y	83033	Lebertiidae	50	0.0096	
1	Adult	RG_FRUPO_HESS-8_2021-09-19		Y	895710	Sperchonidae	50	0.0004	
6		RG_FRUPO_HESS-8_2021-09-19		Y	114093	Elmidae	50	0.0045	
6	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	100755	Baetidae	50	0.0176	
11	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	101232	Ephemerellidae	50	0.0013	
2	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	100504	Heptageniidae	50	0.0002	
5	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102643	Capniidae	50	0.0011	
8	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	103202	Chloroperlidae	50	0.0015	
3	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102840	Leuctridae	50	0.0012	
26	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102517	Nemouridae	50	0.0447	
1	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102914	Perlidae	50	0.0270	
99	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102994	Perlodidae	50	0.1186	
8	Nymph	RG_FRUPO_HESS-8_2021-09-19		Y	102788	Taeniopterygidae	50	0.0010	
1	larvae/immature	RG_FRUPO_HESS-8_2021-09-19		Y	115095	Trichoptera	50	0.0001	Apataniidae/Uenoidae
14		RG_FRUPO_HESS-8_2021-09-19		Y	598182	Apataniidae	50	0.0495	
23		RG_FRUPO_HESS-8_2021-09-19		Y	117120	Glossosomatidae	50	0.0703	
1		RG_FRUPO_HESS-8_2021-09-19		Y	115398	Hydropsychidae	50	0.0001	
11		RG_FRUPO_HESS-8_2021-09-19		Y	115096	Rhyacophilidae	50	0.1308	
3		RG_FRUPO_HESS-8_2021-09-19		Y	127076	Ceratopogonidae	50	0.0005	
156		RG_FRUPO_HESS-8_2021-09-19		Y	127917	Chironomidae	50	0.1494	
13		RG_FRUPO_HESS-8_2021-09-19		Y	135830	Empididae	50	0.0227	
1	larvae	RG_FRUPO_HESS-8_2021-09-19		Y	150025	Muscidae	50	0.0149	
2	larvae	RG_FRUPO_HESS-8_2021-09-19		Y	130914	Pelecorhyncidae	50	0.0464	
41	larvae	RG_FRUPO_HESS-8_2021-09-19		Y	125351	Psychodidae	50	0.0149	
5	larvae	RG_FRUPO_HESS-8_2021-09-19		Y	118840	Tipulidae	50	0.0082	
32	none	RG_FRUPO_HESS-9_2021-09-19		N		Nemata	100	0.0126	
7	none	RG_FRUPO_HESS-9_2021-09-19		Y	54502	Planariidae	100	0.0570	
4	none	RG_FRUPO_HESS-9_2021-09-19		Y	68510	Enchytraeidae	100	0.0002	
3	none	RG_FRUPO_HESS-9_2021-09-19		Y	69165	Lumbricidae	100	0.0181	
92	Adult	RG_FRUPO_HESS-9_2021-09-19		Y	83033	Lebertiidae	100	0.0363	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(.	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
3	Adult	RG_FRUPO_HESS-9_2021-09-19		Y	895710	Sperchonidae	100	0.0014	
6	none	RG_FRUPO_HESS-9_2021-09-19		Y	84195	Ostracoda	100	0.0019	
2		RG_FRUPO_HESS-9_2021-09-19		Y	114093	Elmidae	100	0.0033	
1	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	100755	Baetidae	100	0.0002	
24	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	101232	Ephemerellidae	100	0.0372	
27	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	100504	Heptageniidae	100	0.0091	
49	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102643	Capniidae	100	0.0865	
3	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	103202	Chloroperlidae	100	0.0162	
1	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102840	Leuctridae	100	0.0006	
144	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102517	Nemouridae	100	0.2109	
1	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102488	Peltoperlidae	100	0.0016	
398	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102994	Perlodidae	100	0.6046	
1	Nymph	RG_FRUPO_HESS-9_2021-09-19		Y	102788	Taeniopterygidae	100	0.0002	
124		RG_FRUPO_HESS-9_2021-09-19		Y	598182	Apataniidae	100	0.2142	
87		RG_FRUPO_HESS-9_2021-09-19		Y	117120	Glossosomatidae	100	0.3577	
1		RG_FRUPO_HESS-9_2021-09-19		Y	115398	Hydropsychidae	100	0.0008	
8		RG_FRUPO_HESS-9_2021-09-19		Y	115933	Limnephilidae	100	0.0032	
28		RG_FRUPO_HESS-9_2021-09-19		Y	115096	Rhyacophilidae	100	0.3182	
8		RG_FRUPO_HESS-9_2021-09-19		Y	568757	Uenoidae	100	0.0019	
11		RG_FRUPO_HESS-9_2021-09-19		Y	127076	Ceratopogonidae	100	0.0045	
299		RG_FRUPO_HESS-9_2021-09-19		Y	127917	Chironomidae	100	0.1923	
52		RG_FRUPO_HESS-9_2021-09-19		Y	135830	Empididae	100	0.0923	
1	larvae	RG_FRUPO_HESS-9_2021-09-19		Y	130914	Pelecorhyncidae	100	0.0165	
239	larvae	RG_FRUPO_HESS-9_2021-09-19		Y	125351	Psychodidae	100	0.1229	
24	larvae	RG_FRUPO_HESS-9_2021-09-19		Y	118840	Tipulidae	100	0.0366	
6	none	RG_FRUPO_HESS-10_2021-09-19		N		Nemata	25	0.0016	
3	none	RG_FRUPO_HESS-10_2021-09-19		Y	54502	Planariidae	25	0.0124	
2	none	RG_FRUPO_HESS-10_2021-09-19		Y	68510	Enchytraeidae	25	0.0001	
1	none	RG_FRUPO_HESS-10_2021-09-19		Y	69165	Lumbricidae	100	0.2537	large/rare sort
1	none	RG_FRUPO_HESS-10_2021-09-19		Y	69165	Lumbricidae	25	0.0265	
23	Adult	RG_FRUPO_HESS-10_2021-09-19		Y	83033	Lebertiidae	25	0.0076	
1	Adult	RG_FRUPO_HESS-10_2021-09-19		Y	895710	Sperchonidae	25	0.0001	
9	none	RG_FRUPO_HESS-10_2021-09-19		Y	84195	Ostracoda	25	0.0020	
1		RG_FRUPO_HESS-10_2021-09-19		Y	111963	Dytiscidae	25	0.0004	
1		RG_FRUPO_HESS-10_2021-09-19		Y	114093	Elmidae	25	0.0002	
6	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	101232	Ephemerellidae	25	0.0087	
14	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	100504	Heptageniidae	25	0.0030	
10	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	102643	Capniidae	25	0.0096	
2	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	103202	Chloroperlidae	25	0.0117	
161	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	102517	Nemouridae	25	0.1053	
2	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	102914	Perlidae	100	0.5074	large/rare sort
126	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	102994	Perlodidae	25	0.1246	
1	Nymph	RG_FRUPO_HESS-10_2021-09-19		Y	102788	Taeniopterygidae	25	0.0001	
21		RG_FRUPO_HESS-10_2021-09-19		Y	598182	Apataniidae	25	0.0338	
7		RG_FRUPO_HESS-10_2021-09-19		Y	117120	Glossosomatidae	25	0.0209	
1		RG_FRUPO_HESS-10_2021-09-19		Y	115398	Hydropsychidae	100	0.2295	large/rare sort
3		RG_FRUPO_HESS-10_2021-09-19		Y	115933	Limnephilidae	25	0.0007	
11		RG_FRUPO_HESS-10_2021-09-19		Y	115096	Rhyacophilidae	25	0.0956	
1		RG_FRUPO_HESS-10_2021-09-19		Y	568757	Uenoidae	25	0.0001	
2		RG_FRUPO_HESS-10_2021-09-19		Y	127076	Ceratopogonidae	25	0.0001	
62		RG_FRUPO_HESS-10_2021-09-19		Y	127917	Chironomidae	25	0.0499	
29		RG_FRUPO_HESS-10_2021-09-19		Y	135830	Empididae	25	0.0440	
4	larvae	RG_FRUPO_HESS-10_2021-09-19		Y	130914	Pelecorhyncidae	25	0.0458	
111	larvae	RG_FRUPO_HESS-10_2021-09-19		Y	125351	Psychodidae	25	0.0355	
1	larvae	RG_FRUPO_HESS-10_2021-09-19		Y	118840	Tipulidae	100	0.7430	large/rare sort
11	larvae	RG_FRUPO_HESS-10_2021-09-19		Y	118840	Tipulidae	25	0.0201	
10	none	RG_HENUP_HESS-1_2021-09-16		Y	54502	Planariidae	100	0.0123	
1	none	RG_HENUP_HESS-1_2021-09-16		Y	69165	Lumbricidae	100	0.0546	
2	Adult	RG_HENUP_HESS-1_2021-09-16		Y	83033	Lebertiidae	100	0.0001	
13	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	101232	Ephemerellidae	100	0.0132	
236	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	100504	Heptageniidae	100	0.1564	
46	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	103202	Chloroperlidae	100	0.0851	
1	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	102840	Leuctridae	100	0.0004	
8	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	102517	Nemouridae	100	0.0089	
3	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	102994	Perlodidae	100	0.0167	
6	Nymph	RG_HENUP_HESS-1_2021-09-16		Y	102788	Taeniopterygidae	100	0.0014	
1	larvae/immature	RG_HENUP_HESS-1_2021-09-16		Y	115095	Trichoptera	100	0.0001	Apataniidae/Uenoidae
9		RG_HENUP_HESS-1_2021-09-16		Y	117120	Glossosomatidae	100	0.0291	
1		RG_HENUP_HESS-1_2021-09-16		Y	115398	Hydropsychidae	100	0.0706	
1		RG_HENUP_HESS-1_2021-09-16		Y	115933	Limnephilidae	100	0.0001	
9		RG_HENUP_HESS-1_2021-09-16		Y	115096	Rhyacophilidae	100	0.0630	
2		RG_HENUP_HESS-1_2021-09-16		Y	127076	Ceratopogonidae	100	0.0010	
14		RG_HENUP_HESS-1_2021-09-16		Y	127917	Chironomidae	100	0.0086	
12		RG_HENUP_HESS-1_2021-09-16		Y	135830	Empididae	100	0.0204	
5	larvae	RG_HENUP_HESS-1_2021-09-16		Y	125351	Psychodidae	100	0.0026	
1	none	RG_HENUP_HESS-2_2021-09-16		N		Nemata	100	0.0013	
12	none	RG_HENUP_HESS-2_2021-09-16		Y	54502	Planariidae	100	0.0373	
3	Adult	RG_HENUP_HESS-2_2021-09-16		Y	83033	Lebertiidae	100	0.0014	
4	Adult	RG_HENUP_HESS-2_2021-09-16		Y	895710	Sperchonidae	100	0.0020	
2	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	100755	Baetidae	100	0.0055	
4	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	101232	Ephemerellidae	100	0.0050	
417	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	100504	Heptageniidae	100	0.3770	
5	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	102643	Capniidae	100	0.0049	
35	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	103202	Chloroperlidae	100	0.0737	
3	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	102840	Leuctridae	100	0.0012	
4	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	102517	Nemouridae	100	0.0037	
7	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	102994	Perlodidae	100	0.1046	
41	Nymph	RG_HENUP_HESS-2_2021-09-16		Y	102788	Taeniopterygidae	100	0.0136	
8		RG_HENUP_HESS-2_2021-09-16		Y	117120	Glossosomatidae	100	0.0519	
3		RG_HENUP_HESS-2_2021-09-16		Y	115096	Rhyacophilidae	100	0.0050	
1		RG_HENUP_HESS-2_2021-09-16		Y	127076	Ceratopogonidae	100	0.0010	
157		RG_HENUP_HESS-2_2021-09-16		Y	127917	Chironomidae	100	0.0455	
3		RG_HENUP_HESS-2_2021-09-16		Y	135830	Empididae	100	0.0176	
1	larvae	RG_HENUP_HESS-2_2021-09-16		Y	130914	Pelecorhyncidae	100	0.0002	
8	larvae	RG_HENUP_HESS-2_2021-09-16		Y	125351	Psychodidae	100	0.0041	
8	none	RG_HENUP_HESS-3_2021-09-16		Y	54502	Planariidae	100	0.0180	
1	Adult	RG_HENUP_HESS-3_2021-09-16		Y	83033	Lebertiidae	100	0.0008	
1	Adult	RG_HENUP_HESS-3_2021-09-16		Y	895710	Sperchonidae	100	0.0001	
1	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	568544	Ameletidae	100	0.0002	
2	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	100755	Baetidae	100	0.0078	
8	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	101232	Ephemerellidae	100	0.0004	
463	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	100504	Heptageniidae	100	0.7000	
34	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	103202	Chloroperlidae	100	0.1271	
3	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	102840	Leuctridae	100	0.0037	
12	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	102517	Nemouridae	100	0.0290	
5	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	102994	Perlodidae	100	0.0955	
16	Nymph	RG_HENUP_HESS-3_2021-09-16		Y	102788	Taeniopterygidae	100	0.0046	
8		RG_HENUP_HESS-3_2021-09-16		Y	117120	Glossosomatidae	100	0.0423	
9		RG_HENUP_HESS-3_2021-09-16		Y	115398	Hydropsychidae	100	0.2658	
5		RG_HENUP_HESS-3_2021-09-16		Y	115096	Rhyacophilidae	100	0.0203	
1		RG_HENUP_HESS-3_2021-09-16		Y	568757	Uenoidae	100	0.0001	
124		RG_HENUP_HESS-3_2021-09-16		Y	127917	Chironomidae	100	0.0307	
9		RG_HENUP_HESS-3_2021-09-16		Y	135830	Empididae	100	0.0204	
2	larvae	RG_HENUP_HESS-3_2021-09-16		Y	125351	Psychodidae	100	0.0003	
3	Adult	RG_HENUP_HESS-4_2021-09-16		Y	895710	Sperchonidae	100	0.0017	
1	none	RG_HENUP_HESS-4_2021-09-16		Y	84195	Ostracoda	100	0.0002	
3	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	568544	Ameletidae	100	0.0010	
1	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	100755	Baetidae	100	0.0001	
14	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	101232	Ephemerellidae	100	0.1229	
154	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	100504	Heptageniidae	100	0.2927	
10	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	102643	Capniidae	100	0.0082	
24	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	103202	Chloroperlidae	100	0.0644	
1	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	102840	Leuctridae	100	0.0007	
13	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	102517	Nemouridae	100	0.0260	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
8	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	102994	Perlodidae	100	0.0530	
32	Nymph	RG_HENUP_HESS-4_2021-09-16		Y	102788	Taeniopterygidae	100	0.0094	
12		RG_HENUP_HESS-4_2021-09-16		Y	117120	Glossosomatidae	100	0.1236	
5		RG_HENUP_HESS-4_2021-09-16		Y	115398	Hydropsychidae	100	0.0017	
3		RG_HENUP_HESS-4_2021-09-16		Y	115096	Rhyacophilidae	100	0.0462	
4		RG_HENUP_HESS-4_2021-09-16		Y	127076	Ceratopogonidae	100	0.0021	
117		RG_HENUP_HESS-4_2021-09-16		Y	127917	Chironomidae	100	0.0285	
5		RG_HENUP_HESS-4_2021-09-16		Y	135830	Empididae	100	0.0218	
9	larvae	RG_HENUP_HESS-4_2021-09-16		Y	125351	Psychodidae	100	0.0044	
2	larvae	RG_HENUP_HESS-4_2021-09-16		Y	118840	Tipulidae	100	0.0016	
3	none	RG_HENUP_HESS-5_2021-09-16		Y	54502	Planariidae	100	0.0014	
1	Adult	RG_HENUP_HESS-5_2021-09-16		Y	895710	Sperchonidae	100	0.0003	
1	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	100755	Baetidae	100	0.0021	
4	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	101232	Ephemerellidae	100	0.0203	
251	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	100504	Heptageniidae	100	0.2622	
59	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	103202	Chloroperlidae	100	0.1511	
9	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	102517	Nemouridae	100	0.0168	
8	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	102994	Perlodidae	100	0.1779	
10	Nymph	RG_HENUP_HESS-5_2021-09-16		Y	102788	Taeniopterygidae	100	0.0036	
16		RG_HENUP_HESS-5_2021-09-16		Y	117120	Glossosomatidae	100	0.0999	
7		RG_HENUP_HESS-5_2021-09-16		Y	115398	Hydropsychidae	100	0.2108	
3		RG_HENUP_HESS-5_2021-09-16		Y	115096	Rhyacophilidae	100	0.0036	
1		RG_HENUP_HESS-5_2021-09-16		Y	568757	Uenoidae	100	0.0001	
2		RG_HENUP_HESS-5_2021-09-16		Y	127076	Ceratopogonidae	100	0.0002	
65		RG_HENUP_HESS-5_2021-09-16		Y	127917	Chironomidae	100	0.0159	
4		RG_HENUP_HESS-5_2021-09-16		Y	135830	Empididae	100	0.0047	
1	larvae	RG_HENUP_HESS-5_2021-09-16		Y	125351	Psychodidae	100	0.0002	
1	none	RG_HENUP_HESS-6_2021-09-16		N		Nemata	100	0.0010	
1	Adult	RG_HENUP_HESS-6_2021-09-16		Y	895710	Sperchonidae	100	0.0002	
2	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	100755	Baetidae	100	0.0046	
7	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	101232	Ephemerellidae	100	0.0017	
293	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	100504	Heptageniidae	100	0.2720	
10	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	103202	Chloroperlidae	100	0.0554	
2	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	102840	Leuctridae	100	0.0028	
8	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	102517	Nemouridae	100	0.0189	
4	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	102994	Perlodidae	100	0.1027	
10	Nymph	RG_HENUP_HESS-6_2021-09-16		Y	102788	Taeniopterygidae	100	0.0036	
15		RG_HENUP_HESS-6_2021-09-16		Y	117120	Glossosomatidae	100	0.0979	
1		RG_HENUP_HESS-6_2021-09-16		Y	115398	Hydropsychidae	100	0.0005	
3		RG_HENUP_HESS-6_2021-09-16		Y	115096	Rhyacophilidae	100	0.0005	
3		RG_HENUP_HESS-6_2021-09-16		Y	127076	Ceratopogonidae	100	0.0023	
141		RG_HENUP_HESS-6_2021-09-16		Y	127917	Chironomidae	100	0.0880	
5		RG_HENUP_HESS-6_2021-09-16		Y	135830	Empididae	100	0.0133	
14	larvae	RG_HENUP_HESS-6_2021-09-16		Y	125351	Psychodidae	100	0.0038	
1	larvae	RG_HENUP_HESS-6_2021-09-16		Y	118840	Tipulidae	100	0.0001	
2	none	RG_HENUP_HESS-7_2021-09-16		N		Nemata	100	0.0035	
1	none	RG_HENUP_HESS-7_2021-09-16		Y	54502	Planariidae	100	0.0021	
4	Adult	RG_HENUP_HESS-7_2021-09-16		Y	895710	Sperchonidae	100	0.0008	
1	none	RG_HENUP_HESS-7_2021-09-16		Y	84195	Ostracoda	100	0.0002	
4	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	568544	Ameletidae	100	0.0011	
11	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	101232	Ephemerellidae	100	0.0021	
231	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	100504	Heptageniidae	100	0.1778	
6	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	103202	Chloroperlidae	100	0.0157	
21	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	102517	Nemouridae	100	0.0328	
4	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	102994	Perlodidae	100	0.0693	
40	Nymph	RG_HENUP_HESS-7_2021-09-16		Y	102788	Taeniopterygidae	100	0.0086	
7		RG_HENUP_HESS-7_2021-09-16		Y	117120	Glossosomatidae	100	0.0524	
13		RG_HENUP_HESS-7_2021-09-16		Y	115398	Hydropsychidae	100	0.0516	
2		RG_HENUP_HESS-7_2021-09-16		Y	115096	Rhyacophilidae	100	0.0016	
56		RG_HENUP_HESS-7_2021-09-16		Y	127917	Chironomidae	100	0.0166	
9		RG_HENUP_HESS-7_2021-09-16		Y	135830	Empididae	100	0.0194	
7	larvae	RG_HENUP_HESS-7_2021-09-16		Y	125351	Psychodidae	100	0.0017	
1	larvae	RG_HENUP_HESS-7_2021-09-16		Y	118840	Tipulidae	100	0.0005	
1	none	RG_HENUP_HESS-8_2021-09-16		Y	54502	Planariidae	50	0.0005	
2	Adult	RG_HENUP_HESS-8_2021-09-16		Y	895710	Sperchonidae	50	0.0008	
1	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	568544	Ameletidae	50	0.0003	
14	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	101232	Ephemerellidae	50	0.0435	
224	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	100504	Heptageniidae	50	0.3126	
4	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	103202	Chloroperlidae	50	0.0067	
19	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	102517	Nemouridae	50	0.0378	
5	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	102994	Perlodidae	50	0.1378	
7	Nymph	RG_HENUP_HESS-8_2021-09-16		Y	102788	Taeniopterygidae	50	0.0023	
15		RG_HENUP_HESS-8_2021-09-16		Y	117120	Glossosomatidae	50	0.0828	
4		RG_HENUP_HESS-8_2021-09-16		Y	115398	Hydropsychidae	100	0.5426	large/rare sort
8		RG_HENUP_HESS-8_2021-09-16		Y	115398	Hydropsychidae	50	0.0039	
3		RG_HENUP_HESS-8_2021-09-16		Y	115096	Rhyacophilidae	50	0.0022	
1		RG_HENUP_HESS-8_2021-09-16		Y	127076	Ceratopogonidae	50	0.0007	
61		RG_HENUP_HESS-8_2021-09-16		Y	127917	Chironomidae	50	0.0241	
3		RG_HENUP_HESS-8_2021-09-16		Y	135830	Empididae	50	0.0038	
4	larvae	RG_HENUP_HESS-8_2021-09-16		Y	125351	Psychodidae	50	0.0011	
7	none	RG_HENUP_HESS-9_2021-09-16		Y	54502	Planariidae	100	0.0157	
3	Adult	RG_HENUP_HESS-9_2021-09-16		Y	83033	Lebertiidae	100	0.0210	
2	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	568544	Ameletidae	100	0.0005	
6	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	101232	Ephemerellidae	100	0.0295	
386	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	100504	Heptageniidae	100	0.3992	
15	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	103202	Chloroperlidae	100	0.0595	
4	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	102517	Nemouridae	100	0.0138	
3	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	102994	Perlodidae	100	0.0663	
16	Nymph	RG_HENUP_HESS-9_2021-09-16		Y	102788	Taeniopterygidae	100	0.0041	
12		RG_HENUP_HESS-9_2021-09-16		Y	117120	Glossosomatidae	100	0.0650	
81		RG_HENUP_HESS-9_2021-09-16		Y	127917	Chironomidae	100	0.0322	
8		RG_HENUP_HESS-9_2021-09-16		Y	135830	Empididae	100	0.0084	
3	larvae	RG_HENUP_HESS-9_2021-09-16		Y	125351	Psychodidae	100	0.0210	
1	none	RG_HENUP_HESS-10_2021-09-16		N		Nemata	100	0.0001	
2	none	RG_HENUP_HESS-10_2021-09-16		Y	54502	Planariidae	100	0.0010	
3	Adult	RG_HENUP_HESS-10_2021-09-16		Y	895710	Sperchonidae	100	0.0006	
1	none	RG_HENUP_HESS-10_2021-09-16		Y	84195	Ostracoda	100	0.0001	
2	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	100755	Baetidae	100	0.0070	
11	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	101232	Ephemerellidae	100	0.0368	
627	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	100504	Heptageniidae	100	0.4966	
10	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	102643	Capniidae	100	0.0055	
38	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	103202	Chloroperlidae	100	0.1524	
15	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	102517	Nemouridae	100	0.0399	
8	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	102994	Perlodidae	100	0.2498	
30	Nymph	RG_HENUP_HESS-10_2021-09-16		Y	102788	Taeniopterygidae	100	0.0076	
1	larvae/immature	RG_HENUP_HESS-10_2021-09-16		Y	115095	Trichoptera	100	0.0001	
4		RG_HENUP_HESS-10_2021-09-16		Y	117120	Glossosomatidae	100	0.0338	
7		RG_HENUP_HESS-10_2021-09-16		Y	115398	Hydropsychidae	100	0.0027	
10		RG_HENUP_HESS-10_2021-09-16		Y	115096	Rhyacophilidae	100	0.0088	
3		RG_HENUP_HESS-10_2021-09-16		Y	568757	Uenoidae	100	0.0002	
2		RG_HENUP_HESS-10_2021-09-16		Y	127076	Ceratopogonidae	100	0.0016	
368		RG_HENUP_HESS-10_2021-09-16		Y	127917	Chironomidae	100	0.0724	
9		RG_HENUP_HESS-10_2021-09-16		Y	135830	Empididae	100	0.0231	
15	larvae	RG_HENUP_HESS-10_2021-09-16		Y	125351	Psychodidae	100	0.0038	
2	larvae	RG_HENUP_HESS-10_2021-09-16		Y	118840	Tipulidae	100	0.0150	
3	none	RG_SCOUTDS_HESS-1_2021-09-14		N		Nemata	100	0.0025	
13	none	RG_SCOUTDS_HESS-1_2021-09-14		Y	54502	Planariidae	100	0.0078	
186	none	RG_SCOUTDS_HESS-1_2021-09-14		Y	68510	Enchytraeidae	100	0.0332	
9	Adult	RG_SCOUTDS_HESS-1_2021-09-14		Y	83033	Lebertiidae	100	0.0036	
2	none	RG_SCOUTDS_HESS-1_2021-09-14		Y	84195	Ostracoda	100	0.0005	
4		RG_SCOUTDS_HESS-1_2021-09-14		Y	114093	Elmidae	100	0.0005	
6	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	100755	Baetidae	100	0.0197	
26	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	101232	Ephemerellidae	100	0.0092	
178	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	100504	Heptageniidae	100	0.1295	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	Text(20)	Text(40)	(.	Text(255)	Text(255)	Text(255)	Numeric	Text(255)	Text(255)
1	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	102643	Capniidae	100	0.0001	
2	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	103202	Chloroperlidae	100	0.0015	
43	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	102517	Nemouridae	100	0.0296	
39	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	102994	Perlodidae	100	0.1230	
9	Nymph	RG_SCOUTDS_HESS-1_2021-09-14		Y	102788	Taeniopterygidae	100	0.0025	
1		RG_SCOUTDS_HESS-1_2021-09-14		Y	598182	Apataniidae	100	0.0011	
6		RG_SCOUTDS_HESS-1_2021-09-14		Y	116905	Brachycentridae	100	0.0008	
2		RG_SCOUTDS_HESS-1_2021-09-14		Y	117120	Glossosomatidae	100	0.0005	
2		RG_SCOUTDS_HESS-1_2021-09-14		Y	115398	Hydropsychidae	100	0.0021	
33		RG_SCOUTDS_HESS-1_2021-09-14		Y	115096	Rhyacophilidae	100	0.1743	
57		RG_SCOUTDS_HESS-1_2021-09-14		Y	127076	Ceratopogonidae	100	0.0125	
11		RG_SCOUTDS_HESS-1_2021-09-14		Y	127917	Chironomidae	100	0.0254	
5		RG_SCOUTDS_HESS-1_2021-09-14		Y	135830	Empididae	100	0.0040	
1	larvae	RG_SCOUTDS_HESS-1_2021-09-14		Y	130914	Pelecorhyncidae	100	0.0004	
452	larvae	RG_SCOUTDS_HESS-1_2021-09-14		Y	125351	Psychodidae	100	0.3200	
1	larvae	RG_SCOUTDS_HESS-1_2021-09-14		Y	126640	Simuliidae	100	0.0004	
1	larvae	RG_SCOUTDS_HESS-1_2021-09-14		Y	118840	Tipulidae	100	0.0001	
1	none	RG_SCOUTDS_HESS-1_2021-09-14		Y	81388	Pisidiidae	100	0.0004	syn. Sphaeriidae
1	none	RG_SCOUTDS_HESS-2_2021-09-14		N		Nemata	100	0.0018	
4	none	RG_SCOUTDS_HESS-2_2021-09-14		Y	54502	Planariidae	100	0.0034	
16	none	RG_SCOUTDS_HESS-2_2021-09-14		Y	68510	Enchytraeidae	100	0.0048	
9	Adult	RG_SCOUTDS_HESS-2_2021-09-14		Y	83033	Lebertiidae	100	0.0034	
2	Adult	RG_SCOUTDS_HESS-2_2021-09-14		Y	895710	Sperchonidae	100	0.0007	
11	none	RG_SCOUTDS_HESS-2_2021-09-14		Y	84195	Ostracoda	100	0.0033	
1	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	568544	Ameletidae	100	0.0010	
1	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	100755	Baetidae	100	0.0003	
15	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	101232	Ephemerellidae	100	0.0124	
78	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	100504	Heptageniidae	100	0.0349	
1	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	102643	Capniidae	100	0.0003	
1	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	103202	Chloroperlidae	100	0.0001	
6	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	102517	Nemouridae	100	0.0037	
5	Nymph	RG_SCOUTDS_HESS-2_2021-09-14		Y	102994	Perlodidae	100	0.0247	
5		RG_SCOUTDS_HESS-2_2021-09-14		Y	598182	Apataniidae	100	0.0084	
1		RG_SCOUTDS_HESS-2_2021-09-14		Y	116793	Lepidostomatidae	100	0.0001	
4		RG_SCOUTDS_HESS-2_2021-09-14		Y	115096	Rhyacophilidae	100	0.0417	
11		RG_SCOUTDS_HESS-2_2021-09-14		Y	127076	Ceratopogonidae	100	0.0039	
6		RG_SCOUTDS_HESS-2_2021-09-14		Y	127917	Chironomidae	100	0.0053	
2		RG_SCOUTDS_HESS-2_2021-09-14		Y	135830	Empididae	100	0.0019	
258	larvae	RG_SCOUTDS_HESS-2_2021-09-14		Y	125351	Psychodidae	100	0.1502	
2	larvae	RG_SCOUTDS_HESS-2_2021-09-14		Y	118840	Tipulidae	100	0.3348	
3	none	RG_SCOUTDS_HESS-3_2021-09-14		N		Nemata	100	0.0015	
3	none	RG_SCOUTDS_HESS-3_2021-09-14		Y	54502	Planariidae	100	0.0052	
43	none	RG_SCOUTDS_HESS-3_2021-09-14		Y	68510	Enchytraeidae	100	0.0094	
7	Adult	RG_SCOUTDS_HESS-3_2021-09-14		Y	83033	Lebertiidae	100	0.0015	
1	Adult	RG_SCOUTDS_HESS-3_2021-09-14		Y	895710	Sperchonidae	100	0.0004	
4	none	RG_SCOUTDS_HESS-3_2021-09-14		Y	84195	Ostracoda	100	0.0022	
2		RG_SCOUTDS_HESS-3_2021-09-14		Y	114093	Elmidae	100	0.0012	
4	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	100755	Baetidae	100	0.0110	
9	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	101232	Ephemerellidae	100	0.0059	
183	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	100504	Heptageniidae	100	0.1345	
1	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	102643	Capniidae	100	0.0008	
2	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	103202	Chloroperlidae	100	0.0004	
15	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	102517	Nemouridae	100	0.0210	
4	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	102914	Perlidae	100	0.5555	
13	Nymph	RG_SCOUTDS_HESS-3_2021-09-14		Y	102994	Perlodidae	100	0.0448	
1		RG_SCOUTDS_HESS-3_2021-09-14		Y	598182	Apataniidae	100	0.0008	
2		RG_SCOUTDS_HESS-3_2021-09-14		Y	116905	Brachycentridae	100	0.0003	
1		RG_SCOUTDS_HESS-3_2021-09-14		Y	115398	Hydropsychidae	100	0.0020	
10		RG_SCOUTDS_HESS-3_2021-09-14		Y	115096	Rhyacophilidae	100	0.0677	
8		RG_SCOUTDS_HESS-3_2021-09-14		Y	127076	Ceratopogonidae	100	0.0023	
10		RG_SCOUTDS_HESS-3_2021-09-14		Y	127917	Chironomidae	100	0.0144	
6		RG_SCOUTDS_HESS-3_2021-09-14		Y	135830	Empididae	100	0.0033	
183	larvae	RG_SCOUTDS_HESS-3_2021-09-14		Y	125351	Psychodidae	100	0.1302	
2	larvae	RG_SCOUTDS_HESS-3_2021-09-14		Y	126640	Simuliidae	100	0.0081	
2	larvae	RG_SCOUTDS_HESS-3_2021-09-14		Y	118840	Tipulidae	100	0.0314	
3	none	RG_SCOUTDS_HESS-4_2021-09-14		N		Nemata	100	0.0017	
5	none	RG_SCOUTDS_HESS-4_2021-09-14		Y	54502	Planariidae	100	0.0136	
28	none	RG_SCOUTDS_HESS-4_2021-09-14		Y	68510	Enchytraeidae	100	0.0038	
7	Adult	RG_SCOUTDS_HESS-4_2021-09-14		Y	83033	Lebertiidae	100	0.0016	
2		RG_SCOUTDS_HESS-4_2021-09-14		Y	114093	Elmidae	100	0.0003	
1	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	100755	Baetidae	100	0.0020	
30	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	101232	Ephemerellidae	100	0.0058	
121	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	100504	Heptageniidae	100	0.0709	
5	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	102517	Nemouridae	100	0.0052	
1	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	102914	Perlidae	100	0.0071	
23	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	102994	Perlodidae	100	0.0480	
2	Nymph	RG_SCOUTDS_HESS-4_2021-09-14		Y	102788	Taeniopterygidae	100	0.0004	
12		RG_SCOUTDS_HESS-4_2021-09-14		Y	598182	Apataniidae	100	0.0100	
5		RG_SCOUTDS_HESS-4_2021-09-14		Y	117120	Glossosomatidae	100	0.0009	
5		RG_SCOUTDS_HESS-4_2021-09-14		Y	115096	Rhyacophilidae	100	0.0362	
3		RG_SCOUTDS_HESS-4_2021-09-14		Y	127076	Ceratopogonidae	100	0.0006	
10		RG_SCOUTDS_HESS-4_2021-09-14		Y	127917	Chironomidae	100	0.0224	
1		RG_SCOUTDS_HESS-4_2021-09-14		Y	135830	Empididae	100	0.0015	
44	larvae	RG_SCOUTDS_HESS-4_2021-09-14		Y	125351	Psychodidae	100	0.0244	
3	larvae	RG_SCOUTDS_HESS-4_2021-09-14		Y	118840	Tipulidae	100	0.0019	
12	none	RG_SCOUTDS_HESS-5_2021-09-14		N		Nemata	50	0.0083	
2	none	RG_SCOUTDS_HESS-5_2021-09-14		Y	54502	Planariidae	50	0.0003	
2	none	RG_SCOUTDS_HESS-5_2021-09-14		Y	68510	Enchytraeidae	50	0.0011	
4	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	100755	Baetidae	50	0.0176	
8	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	101232	Ephemerellidae	50	0.0246	
61	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	100504	Heptageniidae	50	0.0599	
2	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	103202	Chloroperlidae	50	0.0012	
5	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	102517	Nemouridae	50	0.0090	
5	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	102914	Perlidae	100	0.9709	large/rare sort
2	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	102994	Perlodidae	100	0.0501	large/rare sort
5	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	102994	Perlodidae	50	0.0035	
4	Nymph	RG_SCOUTDS_HESS-5_2021-09-14		Y	102788	Taeniopterygidae	50	0.0004	
1		RG_SCOUTDS_HESS-5_2021-09-14		Y	115398	Hydropsychidae	100	0.0854	large/rare sort
2		RG_SCOUTDS_HESS-5_2021-09-14		Y	115398	Hydropsychidae	50	0.0199	
1		RG_SCOUTDS_HESS-5_2021-09-14		Y	115096	Rhyacophilidae	100	0.0369	large/rare sort
9		RG_SCOUTDS_HESS-5_2021-09-14		Y	115096	Rhyacophilidae	50	0.0384	
2		RG_SCOUTDS_HESS-5_2021-09-14		Y	127076	Ceratopogonidae	50	0.0007	
4		RG_SCOUTDS_HESS-5_2021-09-14		Y	127917	Chironomidae	50	0.0007	
81	larvae	RG_SCOUTDS_HESS-5_2021-09-14		Y	125351	Psychodidae	50	0.0525	
2	none	RG_SCOUTDS_HESS-6_2021-09-14		N		Nemata	100	0.0022	
7	none	RG_SCOUTDS_HESS-6_2021-09-14		Y	54502	Planariidae	100	0.0049	
17	Adult	RG_SCOUTDS_HESS-6_2021-09-14		Y	83033	Lebertiidae	100	0.0043	
10	none	RG_SCOUTDS_HESS-6_2021-09-14		Y	84195	Ostracoda	100	0.0026	
3	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	100755	Baetidae	100	0.0072	
16	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	101232	Ephemerellidae	100	0.0084	
137	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	100504	Heptageniidae	100	0.1150	
2	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	102643	Capniidae	100	0.0010	
14	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	103202	Chloroperlidae	100	0.0139	
8	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	102517	Nemouridae	100	0.0123	
2	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	102914	Perlidae	100	0.0140	
11	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	102994	Perlodidae	100	0.0857	
6	Nymph	RG_SCOUTDS_HESS-6_2021-09-14		Y	102788	Taeniopterygidae	100	0.0015	
1		RG_SCOUTDS_HESS-6_2021-09-14		Y	117120	Glossosomatidae	100	0.0006	
4		RG_SCOUTDS_HESS-6_2021-09-14		Y	115096	Rhyacophilidae	100	0.0010	
1		RG_SCOUTDS_HESS-6_2021-09-14		Y	568757	Uenoidae	100	0.0001	
10		RG_SCOUTDS_HESS-6_2021-09-14		Y	127076	Ceratopogonidae	100	0.0030	
7		RG_SCOUTDS_HESS-6_2021-09-14		Y	127917	Chironomidae	100	0.0041	
1		RG_SCOUTDS_HESS-6_2021-09-14		Y	135830	Empididae	100	0.0019	
168	larvae	RG_SCOUTDS_HESS-6_2021-09-14		Y	125351	Psychodidae	100	0.0737	

quantity	life_stage_code	observ_sample_code	I	ITIS_TAXON_NAME_Y-N	ITIS_TSN	BENCH_TAXON_NAME	PERCENT_SAMPLED	RAW_BIOMASS	QC_COMMENTS
Numeric	*Text(20)*	*Text(40)*	*(*	*Text(255)*	*Text(255)*	*Text(255)*	*Numeric*	*Text(255)*	*Text(255)*
1	larvae	RG_SCOUTDS_HESS-6_2021-09-14		Y	118840	Tipulidae	100	0.1566	
1	none	RG_SCOUTDS_HESS-7_2021-09-14		Y	54502	Planariidae	100	0.0007	
4	none	RG_SCOUTDS_HESS-7_2021-09-14		Y	68510	Enchytraeidae	100	0.0008	
8	Adult	RG_SCOUTDS_HESS-7_2021-09-14		Y	83033	Lebertiidae	100	0.0020	
22	none	RG_SCOUTDS_HESS-7_2021-09-14		Y	84195	Ostracoda	100	0.0048	
2		RG_SCOUTDS_HESS-7_2021-09-14		Y	114093	Elmidae	100	0.0001	
3	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	568544	Ameletidae	100	0.0005	
7	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	100755	Baetidae	100	0.0246	
10	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	101232	Ephemerellidae	100	0.0046	
37	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	100504	Heptageniidae	100	0.0187	
11	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	102643	Capniidae	100	0.0098	
6	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	103202	Chloroperlidae	100	0.0186	
9	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	102517	Nemouridae	100	0.0100	
1	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	102914	Perlidae	100	0.0505	
9	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	102994	Perlodidae	100	0.0351	
2	Nymph	RG_SCOUTDS_HESS-7_2021-09-14		Y	102788	Taeniopterygidae	100	0.0003	
1		RG_SCOUTDS_HESS-7_2021-09-14		Y	117120	Glossosomatidae	100	0.0001	
3		RG_SCOUTDS_HESS-7_2021-09-14		Y	115398	Hydropsychidae	100	0.0237	
6		RG_SCOUTDS_HESS-7_2021-09-14		Y	115096	Rhyacophilidae	100	0.0117	
1		RG_SCOUTDS_HESS-7_2021-09-14		Y	568757	Uenoidae	100	0.0001	
9		RG_SCOUTDS_HESS-7_2021-09-14		Y	127076	Ceratopogonidae	100	0.0041	
14		RG_SCOUTDS_HESS-7_2021-09-14		Y	127917	Chironomidae	100	0.0101	
1		RG_SCOUTDS_HESS-7_2021-09-14		Y	135830	Empididae	100	0.0001	
385	larvae	RG_SCOUTDS_HESS-7_2021-09-14		Y	125351	Psychodidae	100	0.2993	
1	larvae	RG_SCOUTDS_HESS-7_2021-09-14		Y	118840	Tipulidae	100	0.0001	
4	none	RG_SCOUTDS_HESS-8_2021-09-14		N		Nemata	100	0.0015	
4	none	RG_SCOUTDS_HESS-8_2021-09-14		Y	54502	Planariidae	100	0.0039	
6	none	RG_SCOUTDS_HESS-8_2021-09-14		Y	68510	Enchytraeidae	100	0.0027	
1	none	RG_SCOUTDS_HESS-8_2021-09-14		Y	69165	Lumbricidae	100	0.0702	
2	Adult	RG_SCOUTDS_HESS-8_2021-09-14		Y	83033	Lebertiidae	100	0.0003	
1	none	RG_SCOUTDS_HESS-8_2021-09-14		Y	84195	Ostracoda	100	0.0002	
2		RG_SCOUTDS_HESS-8_2021-09-14		Y	114093	Elmidae	100	0.0002	
3	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	100755	Baetidae	100	0.0140	
10	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	101232	Ephemerellidae	100	0.0018	
83	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	100504	Heptageniidae	100	0.0745	
16	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	103202	Chloroperlidae	100	0.0051	
40	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	102517	Nemouridae	100	0.0251	
3	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	102914	Perlidae	100	0.0323	
15	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	102994	Perlodidae	100	0.1071	
2	Nymph	RG_SCOUTDS_HESS-8_2021-09-14		Y	102788	Taeniopterygidae	100	0.0002	
4		RG_SCOUTDS_HESS-8_2021-09-14		Y	116905	Brachycentridae	100	0.0006	
5		RG_SCOUTDS_HESS-8_2021-09-14		Y	117120	Glossosomatidae	100	0.0086	
1		RG_SCOUTDS_HESS-8_2021-09-14		Y	115398	Hydropsychidae	100	0.0025	
21		RG_SCOUTDS_HESS-8_2021-09-14		Y	115096	Rhyacophilidae	100	0.0985	
11		RG_SCOUTDS_HESS-8_2021-09-14		Y	127076	Ceratopogonidae	100	0.0027	
6		RG_SCOUTDS_HESS-8_2021-09-14		Y	127917	Chironomidae	100	0.0053	
4		RG_SCOUTDS_HESS-8_2021-09-14		Y	135830	Empididae	100	0.0018	
283	larvae	RG_SCOUTDS_HESS-8_2021-09-14		Y	125351	Psychodidae	100	0.2173	
5	larvae	RG_SCOUTDS_HESS-8_2021-09-14		Y	118840	Tipulidae	100	0.0057	
11	none	RG_SCOUTDS_HESS-9_2021-09-14		Y	68510	Enchytraeidae	100	0.0020	
29	Adult	RG_SCOUTDS_HESS-9_2021-09-14		Y	83033	Lebertiidae	100	0.0075	
6	none	RG_SCOUTDS_HESS-9_2021-09-14		Y	84195	Ostracoda	100	0.0021	
4	Nymph	RG_SCOUTDS_HESS-9_2021-09-14		Y	101232	Ephemerellidae	100	0.0021	
10	Nymph	RG_SCOUTDS_HESS-9_2021-09-14		Y	100504	Heptageniidae	100	0.0035	
1	Nymph	RG_SCOUTDS_HESS-9_2021-09-14		Y	102517	Nemouridae	100	0.0002	
6	Nymph	RG_SCOUTDS_HESS-9_2021-09-14		Y	102994	Perlodidae	100	0.0624	
1	Nymph	RG_SCOUTDS_HESS-9_2021-09-14		Y	102788	Taeniopterygidae	100	0.0004	
4		RG_SCOUTDS_HESS-9_2021-09-14		Y	598182	Apataniidae	100	0.0028	
1		RG_SCOUTDS_HESS-9_2021-09-14		Y	117120	Glossosomatidae	100	0.0003	
6		RG_SCOUTDS_HESS-9_2021-09-14		Y	115096	Rhyacophilidae	100	0.0527	
3		RG_SCOUTDS_HESS-9_2021-09-14		Y	127076	Ceratopogonidae	100	0.0013	
3		RG_SCOUTDS_HESS-9_2021-09-14		Y	127917	Chironomidae	100	0.0048	
32	larvae	RG_SCOUTDS_HESS-9_2021-09-14		Y	125351	Psychodidae	100	0.0159	
1	larvae	RG_SCOUTDS_HESS-9_2021-09-14		Y	118840	Tipulidae	100	0.0003	
8	none	RG_SCOUTDS_HESS-10_2021-09-14		Y	54502	Planariidae	100	0.0117	
6	none	RG_SCOUTDS_HESS-10_2021-09-14		Y	68510	Enchytraeidae	100	0.0012	
22	Adult	RG_SCOUTDS_HESS-10_2021-09-14		Y	83033	Lebertiidae	100	0.0046	
4	none	RG_SCOUTDS_HESS-10_2021-09-14		Y	84195	Ostracoda	100	0.0005	
1	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	100755	Baetidae	100	0.0009	
15	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	101232	Ephemerellidae	100	0.0157	
46	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	100504	Heptageniidae	100	0.0317	
5	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	102517	Nemouridae	100	0.0113	
13	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	102994	Perlodidae	100	0.1185	
1	Nymph	RG_SCOUTDS_HESS-10_2021-09-14		Y	102788	Taeniopterygidae	100	0.0001	
5		RG_SCOUTDS_HESS-10_2021-09-14		Y	598182	Apataniidae	100	0.0029	
3		RG_SCOUTDS_HESS-10_2021-09-14		Y	116905	Brachycentridae	100	0.0002	
1		RG_SCOUTDS_HESS-10_2021-09-14		Y	117120	Glossosomatidae	100	0.0001	
5		RG_SCOUTDS_HESS-10_2021-09-14		Y	115096	Rhyacophilidae	100	0.0559	
8		RG_SCOUTDS_HESS-10_2021-09-14		Y	127076	Ceratopogonidae	100	0.0024	
5		RG_SCOUTDS_HESS-10_2021-09-14		Y	127917	Chironomidae	100	0.0009	
2		RG_SCOUTDS_HESS-10_2021-09-14		Y	135830	Empididae	100	0.0011	
118	larvae	RG_SCOUTDS_HESS-10_2021-09-14		Y	125351	Psychodidae	100	0.0884	
1	larvae	RG_SCOUTDS_HESS-10_2021-09-14		Y	118840	Tipulidae	100	0.0001	