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# 2007 Sustainability Summary Hemlo Operations

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**Teck**

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# Letter from the General Manager

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I am pleased to share with you our 2007 Sustainability Summary Report. This report is a medium for dialogue with Communities of Interest on our performance and practices.

In 2007, there were three key areas of focus of interest to our stakeholders. They were: the life of the mines and mine closure planning; the tailings spill incident and tailings management; and ensuring that the Operation remains cost-effective. During this year, the Operation initiated a Closure Scoping Study. The purpose of the Study is to develop an executable progressive closure plan for the Hemlo Operation that includes the David Bell mine and Williams mine Operation. Trade-off studies and selection criteria will help to develop a preferred closure concept for the tailings, open pit, underground Operation, concentrate buildings and all associated infrastructure. Preferred concepts will need to be technically feasible and proven and meet closure criteria. In July 2007, a split in a tailings line caused an unexpected discharge of tailings material into an unpermitted area. In response to this incident, we have developed detailed tailings management policies. More information on how we will ensure there is no recurrence of such an incident can be found in the Tailings management section of this report. The biggest challenge for 2008 will be to ensure that the Operation remains cost-effective. Over the next few years, we will be focused on meeting this challenge, and continuing to extend the mine life past 2010.

We are pleased to report on four significant successes. First, we achieved a 10% reduction of on-site electrical power use; this is 1% greater than our original target. Second, we implemented an Energy and Greenhouse Gas Policy. Together with the Tailings Management Policy, the policies aim to promote continuous improvement, modify employee behaviours, and assign clear responsibility and accountability so that resources are appropriately managed and the best interests of all stakeholders are protected. Thirdly, our water management program was also very successful, as conserving

fresh water has now become a critical global sustainability issue. We are now well on the way to achieving our target of 95% recycled water for process water use at both sites; when one considers the GRI definition of recycling (total water used/total recycled water), our current efforts which entail full recycle of tailings water reclaim to mill, equate to 286% of water conservation. Finally, we are proud to have signed a Memorandum of Understanding with the Pic Mobert First Nations.

At the David Bell mine, we signed-off on a Collective Bargaining Agreement, which will be in place until mine closure. Stakeholder groups were informed and consulted about the anticipated remaining mine life and the potential opportunities to extend it; both the Williams and David Bell sites have Labour Adjustment Committees in place for employee relation purposes, and these Committees are always looking for opportunities to help prepare employees for closure.

At Hemlo, we approach Health and Safety with the conviction that every person who works on our site has an equal opportunity to go home safe and healthy every day. We have embraced the Courageous Leadership program, and provide empowerment training which encourages our employees to "do the right thing". Our 5-point safety system and the Filed Level Risk Assessment programs have been implemented with consistent coaching and auditing, ensuring that all employees have the skills necessary to be vigilant of potential hazards in their workplace, especially under changing conditions.

In 2008, we will pursue a more formalized stakeholder engagement program, will continue to meet with Communities Of Interest three times a year, and address any concerns or issues that arise from these meetings in a timely and comprehensive manner.

Chris Woodall  
General Manager

## Overview of Operation/Facility

Teck has a 50% interest in the Hemlo Operation, a gold mining and processing facility located 350 km east of Thunder Bay, Ontario. The mines (Williams mine (an underground facility with an open pit and mill) and the David Bell mine (an underground facility)) are jointly operated by Teck and Barrick Gold Corporation (Barrick). At the end of 2007, the mines employed a total of 550 people.

## Goals and Objectives

- Reduce GHG emissions as per recommendations of MAC audit
- Continue to build our relationships with Communities of Interest and formalize our stakeholder engagement program
- Work with First Nations to build a relationship that will grant more opportunities to the community and the Operation, with respect to building capacity of the community and further diversifying Hemlo's workforce.

## Environmental Programs

As of this year, the Hemlo Operation has successfully implemented the Intalex software database for their Environmental Management System (EMS). The EMS has improved document control, training records management, change management, as well as improved follow-up to environmental non-conformances. An external ISO 14001, 2004 pre-certification audit was completed by SGS and the Hemlo Operation has been recommended to pursue certification.

Recycling has been a priority at Hemlo Operation for a long time, and two programs are well underway: the water recycling project, with a goal of reducing fresh water consumption by up to 95%, is currently in the commissioning stage; and, a comprehensive program to divert all recyclable waste material from the landfill has been implemented. The May-August average for stormwater pond recycling was 89%, meaning that 89% of water required for processes onsite, which would have typically come from a freshwater source, has been replaced by recycled water pulled from the site's stormwater

pond. July and August numbers indicated that recycling levels increased to 97%. According to the GRI definition for water conservation, our efforts have produced a total recycling percentage of 286%.

## Safety and Health

In 2007, the company was successful in improving several key safety indicators. First, we achieved a value of 2.87 for Total Recordable Incident Frequency (TRIF), an improvement over our 2006 value of 3.24. Second, there was a substantial improvement in contractor safety based on a Total Medical Injury Frequency (TMIF), as follows:

1. Williams Operating Corporation (WOC) 2007 contract employees TMIF 5.51 from 2006 TMIF 8.32
2. David Bell Mine (DBM) contract employees in 2007; the TMIF was 34, the 2006 TMIF was 7.45.

## Tailings Management

As a result of the tailings line breach in July of 2007, substantial improvements were made in the operation, maintenance and surveillance of the tailings pipeline corridor at the Operation, to correct deficiencies identified in the investigation:

- a pipe-in-pipe containment system was installed to significantly upgrade containment and protection along an environmentally-sensitive section
- pipeline visibility was improved by removing vegetation from the area
- the frequency of pipeline corridor patrols was doubled
- a procedure was implemented to clarify patrol and inspection requirements
- pipeline inspection training was developed and rolled out to mill supervision
- differential flow monitoring alarms were adjusted to improve leak detection and response
- a procedure was implemented to clarify differential flow alarm response and accountability
- an engineering review of each pipeline system was completed
- valve shacks were extended to provide heated, "indoor" operating environments;

- upgraded tailings corridor design is currently in the works to improve visibility and containment to minimize the potential for a reoccurrence of the July event
- Pipeline containment and leak detection upgrades will be investigated and implemented in 2008 to minimize environmental risks associated with slurry and reclaim water transfer between the Williams Mill and the Hemlo Tailings Basin

The Effluent Treatment Plant did not operate in 2007 due to continuing drought conditions in the region, and low pond water levels in the Tailings Basin. A comprehensive site water balance and pond water level forecast was developed in order to assist in tailings deposition planning and water management. A pilot plant assessment of the Actiflo® water treatment technology was completed as competitive alternative to the current “fixed” water treatment plant. A decision on the future of water treatment at Hemlo will depend upon the life-of-mine, water management and closure requirements. Work is ongoing in 2008 to clarify these requirements.

Active management of water and tailings deposition will be required at Hemlo until the end of mine life. Development of an annual and life-of-mine plan for tailings deposition was well underway by year-end and will be completed in 2008.

### **Reclamation and Closure**

A Closure Scoping Study, initiated in 2007 is going to be fully conducted by a subcontracted engineering firm in 2008. The Study is the first phase in developing an executable progressive closure plan for the Hemlo Operation; one of the major aspects of this plan is to define closure options.

### **Audits (internal)**

- ISO 14001 Internal Audit 2007
- Environmental Compliance Audit 2007 by Teck Cominco
- Health and Safety Compliance Audit 2007 by Barrick.

### **Towards Sustainable Mining (TSM)**

Barrick retained Worley Parsons Komex to conduct an External Verification of the Towards Sustainable Mining (TSM) self-assessment conducted by the Hemlo Facility (Williams and David Bell Mines) for 2007. Hemlo personnel conducted the self-assessment as required by the Mining Association of Canada (MAC) as part of the TSM program. The self-assessment was based on MAC’s performance criteria for Crisis Management Planning, External Outreach, Energy Use/Greenhouse Gas (GHG) Emissions Management, and Tailings Management. The External Verification Results are as follows:

The External Verification Results are summarized on page 6 where 1 is the lowest score in terms of performance and 5 is the highest score. With a perfect score for Crisis Management and a level 3 standard for External Outreach, Hemlo received recognition from the Mining Association of Canada for their externally verified results in 2007.

### **Energy Efficiency and GHG Emissions Management**

The target set for reduction in energy use for Hemlo in 2007 was 10%. A 10% reduction, largely attributed to electricity, was achieved. Energy and greenhouse gas (GHG) training sessions were completed with 85% of employees. Natural Resources Canada and the Ontario Ministry of Agriculture partnered for this training and education program; \$38,000 in funding was obtained from the province through the partnership.

At the Williams mine, an Air Saver unit was installed on-site and saved \$54,000, as well as the amount of compressed air used to ventilate the Alimaks, the raise climbing unit used to develop vertical excavations. Ingersoll Rand did an on-site compressed air audit to identify efficiency gaps. The focus was to identify inefficiencies with the Alimak drilling air supply system as well identified loads and leaks within the compressors for mine air. The mine subsequently purchased an Ultrasonic Leak Detector to help identify underground air leaks. A savings of \$175,500 was realized following implementation of an air- and water-leak tagging system.



## Energy/Greenhouse Gases (GHG)

Indicator	
Energy use management systems	3
Energy use reporting systems	3
Energy intensity improvement target	2
GHG emissions management systems	3
GHG emissions reporting systems	3
GHG emissions intensity improvement target	2

## Tailings

Indicator	
Tailings management policy	2
Tailings management policy	2
Tailings management policy	3
Annual Review	3
Tailings OMS exists	3

Technological advances were complemented by common-sense initiatives; simply turning ventilation off when no employees are underground on the weekends resulted in energy savings, and a cost savings of \$6,500. In addition:

- Reducing amperage on vent fans between shifts saved \$242,000
- Shutting off the Temprite air handling system when not in use saved \$17,340
- Shutting off vertical mill due to change in ore processing saved \$578,000
- Shutting fans off between shifts at David Bell mine saved \$95,000

The Operation's standout energy reduction initiative focused on conservation of energy, propane and diesel. Proheat X45 Heaters were mounted on 14 pieces of pit equipment, allowing for reduced fuel consumption over the winter months by eliminating the necessity of idling the equipment. The diesel-fired heaters keep the engine coolant, hydraulic oil, and

## Outreach

Indicator	
Hemlo	3
Community of interest (COI) identification	3
Effective COI engagement and consultation	3
COI response mechanism reporting	3

## Crisis Management

Indicator	
Crisis management preparedness	Yes
review	Yes
training	Yes

cab warm when engines are turned off; and burn a maximum of 1.2 litres per hour, versus idling, which burns 40 to 50 litres per hour.

## Community Outreach, Engagement, Dialogue

Representatives from the Operation met regularly with Communities of Interest (COI) in 2007, including stakeholder committees from the Town of Marathon, Pic River First Nation, and Pic Moberg First Nation. No major concerns were raised at the COI meetings, so these served more as information sessions during which business- and Operation-specific issues were discussed and explained. There was uncertainty expressed concerning the impact on the community as a result of workforce reduction; numbers and related estimates were provided to the Town.

## Aboriginal Relations

The Operation continues to have a labour agreement in place with Pic River First Nation that provides opportunities to Pic River employees through operation training, supervisor training and development, and considers other opportunities brought forward.

In addition, the Williams Mine has entered into a Memorandum of Understanding (MOU) with Pic Mobert Band, further advancing relationship-building between the mine and the Band. A labour arrangement, which has been in place for several years, was renegotiated. It is anticipated that the MOU will be broadened and its language refined into an agreement to include such areas as: training, environment, business and economic development opportunity, and traditional knowledge.

One special collaboration involving the mine management, Pic Mobert Band and Confederation College of Ontario is the development of a skills database to improve job readiness. The skills database will allow the citizens of Pic Mobert to be better prepared to enter the workplace, while providing information on opportunities in mining.

## Community Development/ Good Neighbour Practices

Hemlo is an integral part of its community, and seeks to identify and meet needs in cooperation with community representatives, wherever possible. As a standard business practice, approximately 32% of goods and services are procured locally. In the Town of Marathon, in-kind donations were complemented with an additional \$250,000 disbursed throughout 2007. The Operation consistently offers assistance and in-kind donations to schools and sports teams, loans out the company BBQ, donates prizes for events, etc.

As part of a special initiative to assist the Town of Marathon in being a sustainable community after the Operation has closed, both owners (Teck and Barrick) committed to donating \$500,000 over 2 years, with Teck providing funding of \$125,000 towards the Penn Lake

Park Project in 2007. This project is a great sustainability development opportunity for the Town of Marathon. Penn Lake Park will be situated in town and will include: beautiful walking trails, first class camping sites, and excellent playground facilities for the children. This is a three-phase project with completion expected at the end of 2008.

In addition, as in many other Northern Ontario towns, the arena is the heart of the community; Marathon's Olympia ice-cleaning vehicle (used to flood and clean the ice surface) was in great need of replacement, and Hemlo Operation contributed \$75,000 towards a new Olympia for the arena.

## Emergency Preparedness and Risk Management

Formal Risk Assessment training along with Hazard Recognition training for members of the Safety Department was completed in the first two quarters of 2007. A standing High-Level Risk Assessment was reviewed to assist in determining the Operation's action plan on tailings line and corridor upgrades. A formal Risk Assessment on explosives (from a security perspective) was completed. Risk Assessment will again be one of the main focus areas for Hemlo's 2008 strategic plan.

At Hemlo, 35 active Mine Rescue personnel ensure that the Operation is well-prepared for any underground emergency. These employees receive six mandatory training sessions a year, and participate in a District Mine Rescue competition. This is a competition that they won last year, and to which they advanced to the Provincial-level competition.

In addition, the Operation has a Surface Emergency crew of sixteen, which makes the site well-equipped to address any surface emergency such as a fire or spill response. As with the Mine Rescue team, the Surface Emergency team attend six mandatory annual training sessions.

## Human Resources

Training has always been a priority at Hemlo Operation. It ensures that all employees have the confidence and expertise required to perform their job-related tasks, as is required. The Ministry of Training, Colleges and Universities have excellent mining programs. The Operation promotes participation in these programs to ensure that employees are engaged in life-long learning opportunities.

Our apprenticeship program produced six graduates in 2007: three millwrights, one welder, and two mobile mechanics. This program has been a noteworthy success and a particular source of pride; there are currently eight apprentices, including participants under the agreements with neighbouring First Nations communities. There is a vibrant student co-op program for various trades and technical opportunities; four co-op students participated in the trades area in 2007.

In terms of labour relations, a new Collective Bargaining Agreement was negotiated and will be in effect until the closure of the David Bell mine. As a result of the successful negotiation of the Collective Bargaining Agreement, the relationship between union and management has grown to consistently demonstrate good faith and professionalism in dealings.

## Awards and Recognition

Hemlo Operation won a number of awards in 2007, including:











- Williams Mine Mines Aggregates Safety and Health Association (MASHA) Award;
- David Bell MASHA Award;
- David Bell Ryan Award;
- Award for Conservation of Energy in Ontario








	2007	2006	2005	
<b>Health &amp; Safety Statistics</b>				
Total Recordable Incident Frequency	2.87	3.24	2.68	
Fatalities	✔ 0	0	0	
Lost Time Injuries	✔ 2	6	3	
LTI Frequency	✔ 0.25	0.72	0.37	
Severity	✔ 0.75	12.94	11.81	
<b>Permit Compliance</b>				
Number of Excursions	✔ 6	3	0	
% Compliance Water	✔ 90.16%			
% Compliance Air	n/a			
<b>Reportable Spills</b>				
Number	✔ 2	3	6	
Volume (L)	✔ 11,055,200	916		
Weight (kg)	0	0		
<b>Average Concentrations in Effluent (mg/L)</b>				Permitted
Cyanide	✔ 0.054	0.020	0.015	1.0
Copper	✔ 0.004	0.007	0.011	0.3
Zinc	✔ 0.019	0.011	0.025	0.5
<b>Energy Use<sup>(1)</sup></b>				
Electricity (TJ)	✔ 436	481	506	
Fuel (TJ)	✔ 255	236	259	
Carbon Energy Intensity in Product (GJ/oz)	✔ 1.51	1.15	1.13	
Energy Intensity in Product (GJ/oz)	✔ 4.10	3.50	3.33	
<b>GHG Emissions<sup>(1)</sup></b>				
CO <sub>2</sub> equivalents (kt) (Direct)	✔ 17.2	16.2	17.4	
CO <sub>2</sub> equivalents (kt) (Indirect)	36.7			
CO <sub>2</sub> equivalents (kt) (Total)	53.9			
Carbon Intensity in Product (t/oz) (Direct)	✔ 0.10	0.08	0.08	
Carbon Intensity in Product (t/oz) (Total)	0.32			
<b>Production (oz)<sup>(1)</sup></b>				
Gold	168,658	205,000	230,000	
<b>Recycling</b>				
Total solid material (tonnes)	✔ 1,163	294	394	
Total liquid materials (m <sup>3</sup> )	✔ 1,484	598	316	
Total items counted (count)	✔ 4,701	455	786	

		2007	2006	2005
<b>Managed Waste</b>				
Total Waste Rock ('000 tonnes)		5,439	4,940	
Total tailings dry ('000 tonnes)		2,551	7,830	
Total solid non-haz. material to landfill (tonnes)		3,403	3,845	
<b>Water Conservation</b>				
Total groundwater withdrawal (m <sup>3</sup> /yr)		0	0	
Total surface water withdrawal (m <sup>3</sup> /yr)		1,464,049	1,404,485	
Total volume of water recycled/reused (m <sup>3</sup> /yr)		4,193,447	4,775,552	
Total percentage water recycled/reused %		286%	340%	
<b>Reclamation</b>				
New reclamation for the year (ha)		0		
Reclaimed land (ha)		171	171	167
Land to be reclaimed (ha)		318	318	322
Trees/shrubs planted (count)		0	6,000	n/a

n/a = not available

(1) Gold production, energy use and greenhouse gas emissions are shown 50% based on the mine's 50/50 ownership with Barrick

Deloitte & Touche LLP reviewed selected environmental, health and safety data in the 2007 Sustainability Report. Their Independent Reviewers' Report is available on page 54. Only performance data with the following symbol  was independently reviewed by Deloitte & Touche LLP.

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