WOLVERINE PROJECT

QUARTZ MINING LICENSE QML-0006

2009 ANNUAL REPORT

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1 Introduction

This Annual Report has been prepared to satisfy requirements contained within Quartz Mining License QML-0006 (QML) Condition 10.5 for activities that occurred during the period of January 1st to December 31st, 2009 at the Wolverine Project.

Table 1-1 outlines the QML Annual Report documentation requirements and the corresponding report sectionS where the information is provided herein. Yukon Zinc Corporation (YZC) focused on construction activities and underground development in 2009 and hence QML requirements pertaining to operations are not provided in this report. A Socio-Economic Assessment summary is provided in Section 8 of this report, to satisfy requirements of Environmental Assessment Screening Document.

Table 1-1: QML Annual Report Information Requirements and Corresponding Report Section

QML Section	Requirement	Report Section Where Addressed
10.5 a)	A summary of mining activities at the mine.	2
10.5 b)	A map showing all structures, works and installations associated with the Undertaking.	2
10.5 c)	The total amount of ore and waste removed from the mine.	2
10.5 d)	The total amount and the average head grade of ore processed through the mill.	N/A
10.5 e)	The total amount and grade of all stockpiled ore.	N/A
10.5 f)	The total amount and grade of concentrate produced, stockpiled, and transported from the Undertaking.	N/A
10.5 g)	As-built drawings of the mine and of all structures, works and installations constructed or altered in the mine.	2
10.5 h)	Details respecting any action taken as a result of the recommendations made by the engineer in relation to the inspection referred to in paragraph 10.1.	2
10.5 i)	A summary of any updates to estimates of ore reserves and mine life, including reserve category, tonnage and grade.	N/A
10.5 j)	A summary of any underground stability incidents.	N/A
10.5 k)	A summary of paste backfill placement activities conducted and their locations in the mine.	N/A
10.5 l)	A summary of humidity cell tests undertaken for waste rock and paste backfill.	4
10.5 m)	A summary of quantity and related analysis of leachate collected from paste backfill.	N/A
10.5 n)	The total amount of tailings deposited in the tailings impoundment.	N/A
10.5 o)	An evaluation of the performance of the tailings facility, including an estimate of remaining available storage capacity in the facility.	N/A
10.5 p)	The data generated from the full depth sampling of the tailings.	N/A
10.5 q)	A summary of any hydrogeology studies undertaken and related analysis of these data, including groundwater flow pathways as influenced by underground workings.	3

QML Section	Requirement	Report Section Where Addressed
10.5 r)	A summary and evaluation of data results from the field pilot test of the bio-pass system.	N/A
10.5 s)	A summary of surface water quality monitoring, including any acute lethality testing conducted.	4
10.5 t)	A summary of groundwater quality monitoring in wells downslope of the mine workings.	4
10.5 u)	A summary of the programs undertaken for environmental monitoring and surveillance as outlined in the Monitoring and Surveillance Plan and the Wildlife Protection Plan, including an analysis of these data and any action taken or adaptive management strategies implemented to monitor or address any changes in environmental performance.	4
10.5 v)	A summary of progressive and ongoing reclamation activities.	5
10.5 w)	A summary of proposed development and production for the coming year.	2 and 6
10.5 x)	A summary of activities related to care and maintenance of the Undertaking, including any temporary closure activities, if applicable.	N/A
10.5 y)	A summary of spills and accidents that occurred as a result of the Undertaking.	7
10.5 z)	A summary of the previous and projected use of the access road, including maintenance work conducted, a summary of the level of traffic, access control issues, wildlife incidents and other accidents, and upgrade or maintenance work planned for the upcoming year.	8

N/A = Requirement not applicable due to project and mine in development for 2009 (e.g., no mine or mill operations)

2 Mining Activities at the Mine

2.1 Regulatory Requirements

All major and minor permits are in place for the Wolverine Project, with all infrastructure located on YZC mineral claims. Yukon Energy, Mines and Resources (EMR) approved the following plans in 2009:

- General Site Plan V2008-04 (GSP) (two addendums also submitted and approved)
    - Addendum to GSP: Mill Bypass Road
    - Addendum to GSP: Increase in Camp Size from 205-man to 246-man
- Waste Management Plan V2009-02
- Wildlife Protection Plan V2009-01
- Spill Contingency Plan V2009-02
- Tailings Facility Design and Construction Plan V2009-02

The Revised Reclamation and Closure Plan V2009-03 was submitted for review on November 27, 2009.

All requirements pertaining to QML monitoring and reporting were achieved in 2009, and the submissions to EMR are summarized in Table 2-1.

Table 2-1: QML Submissions 2009

Submission	Date Submitted
General Site Plan 2008-04	9-Feb-09
Tailings Infrastructure Design and Construction Plan	20-Mar-09
Addendum to GSP Mill Bypass Road	26-Mar-09
$1,170,756 - 30 days prior to start of industrial complex construction	23-Mar-09
Annual Report for 2008	31-Mar-09
Update to Spill Report March 23, 2009	7-Apr-09
Wildlife Protection Plan	9-Apr-09
As-constructed report: Mill Bypass road	29-June-09
As-constructed report: STP Sump	29-June-09
As-constructed report: Ditches A & B	29-June-09
P. Eng. Inspection report of site infrastructure	13-July-09
Draft Spill Contingency Plan	2-July-09
As-constructed report: Landfill Area	10-Sept-09
NTF: Addendum to GSP Increase in Camp Size from 205-man to 246-man	30-Sept-09
As-constructed report: Ditches #3 and #4	2-Oct-09
Draft Waste Management Plan	23-Nov-09
Draft Reclamation and Closure Plan V2009-03	27-Nov-09
Waste Management Plan – FINAL	18-Dec-09

The focus of YZC's activities in 2009 was the development of the Wolverine Project for operation in mid 2010. Detailed design progressed and all major equipment was ordered. On March 23, 2009, the required security payment was made 30 days prior to start of industrial complex construction.

2.2 Surface Infrastructure Construction

As per *General Site Plan V2008-04*, approved by Energy Mines and Resources on February 13, 2009, the development of the surface infrastructure and the underground is estimated to take approximately one and one half years, resulting in commissioning of the plant in June 2010 and full production by late summer 2010. The schedule for development activities at the Wolverine Project is provided in Figure 2-1.

Project Development	Pre-2008	2008				2009				2010			
Milestone or Activity		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Access & Transportation													
Phase 1 Road Complete (km 0-24)	♦												
Phase 1 Road Construction (km 23-27)													
Phase 2 Road Construction													
Airstrip Improvements													
Surface Facilities													
Detailed Engineering Design													
Procurement of Equipment													
Camp Area Preparation	♦												
Camp Services and Infrastructure													
Drill Potable Water Wells	♦												
Potable Water Piping/Pumping/Enclosures													
Industrial Complex (IC) Ditches/Sumps													
IC Civil & Foundations													
IC Structural Steel & Bldgs													
IC Utilities													
Service facilities (shops & warehouse)													
Power Facilities													
Tailings Facility													
Construct Diversions/Drainage													
Site Clearing & Borrow Preparation													
Construct Starter Dam/Seepage Dam													
Install Liner & Filling Diversion/Pipelines/Barge													
Mining & Processing													
Geotechnical Drilling													
Mine Development													
Commission Plant													
Ramp up to full production													

Note: blue diamond = completed activity; green diamond/bar = activity to be completed.

Figure 2-1: Project Development and Regulatory Submission Schedule 2008-2010

Surface infrastructure construction commenced in January 2009, the construction and earthworks contract was awarded to general contractor Arctic Construction/Kaska Nation Joint Venture (ACL), and development progressed as per the activities and milestones outlined in GSP 2008-04 and Figure 2-1 above.

Figure 2-2 and Figure 2-3 detail the location of major surface infrastructure at the industrial complex and tailings facility, respectively (as-built drawings will be submitted in 2010).

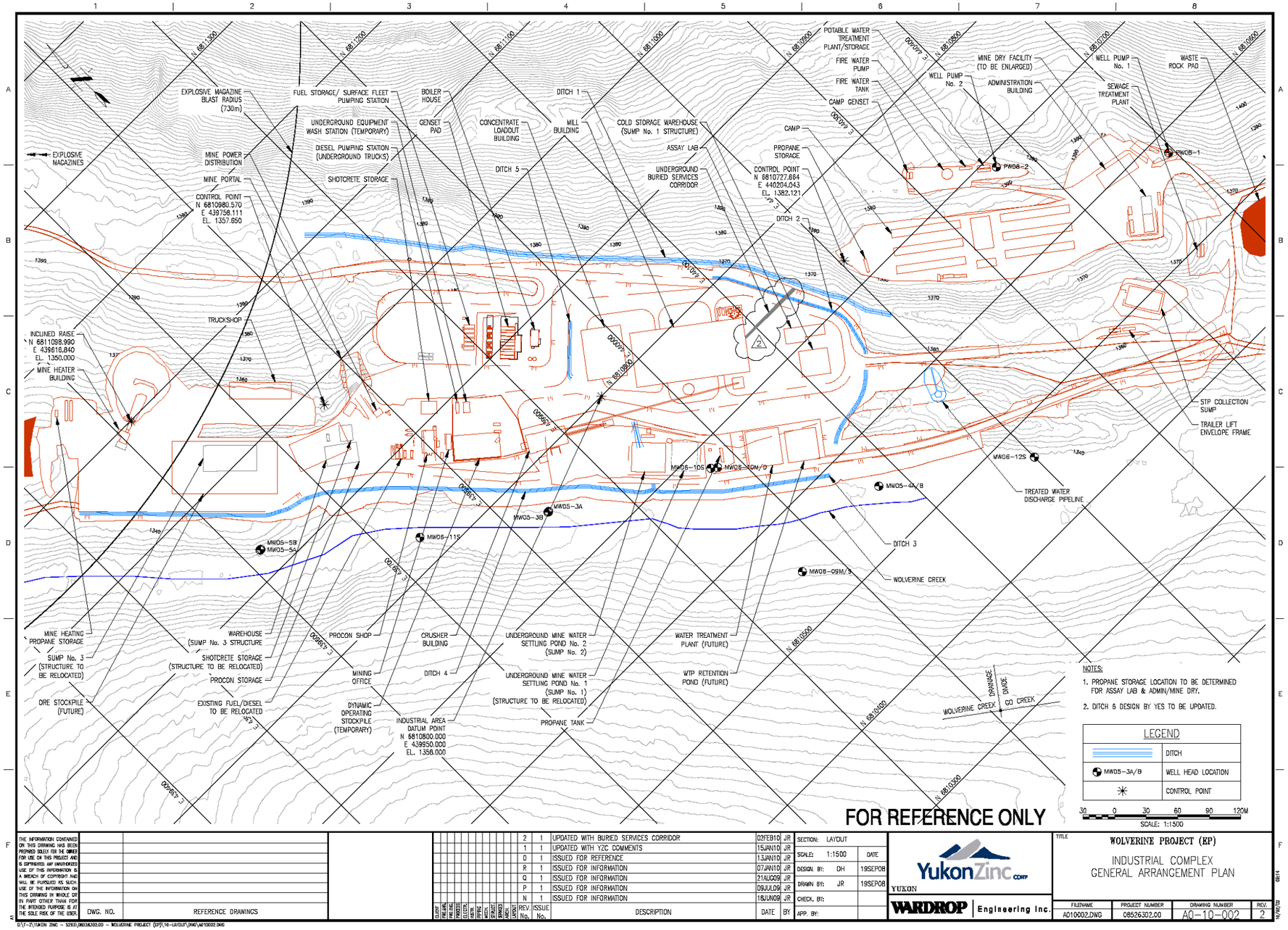


Figure 2-2: Industrial Complex Infrastructure

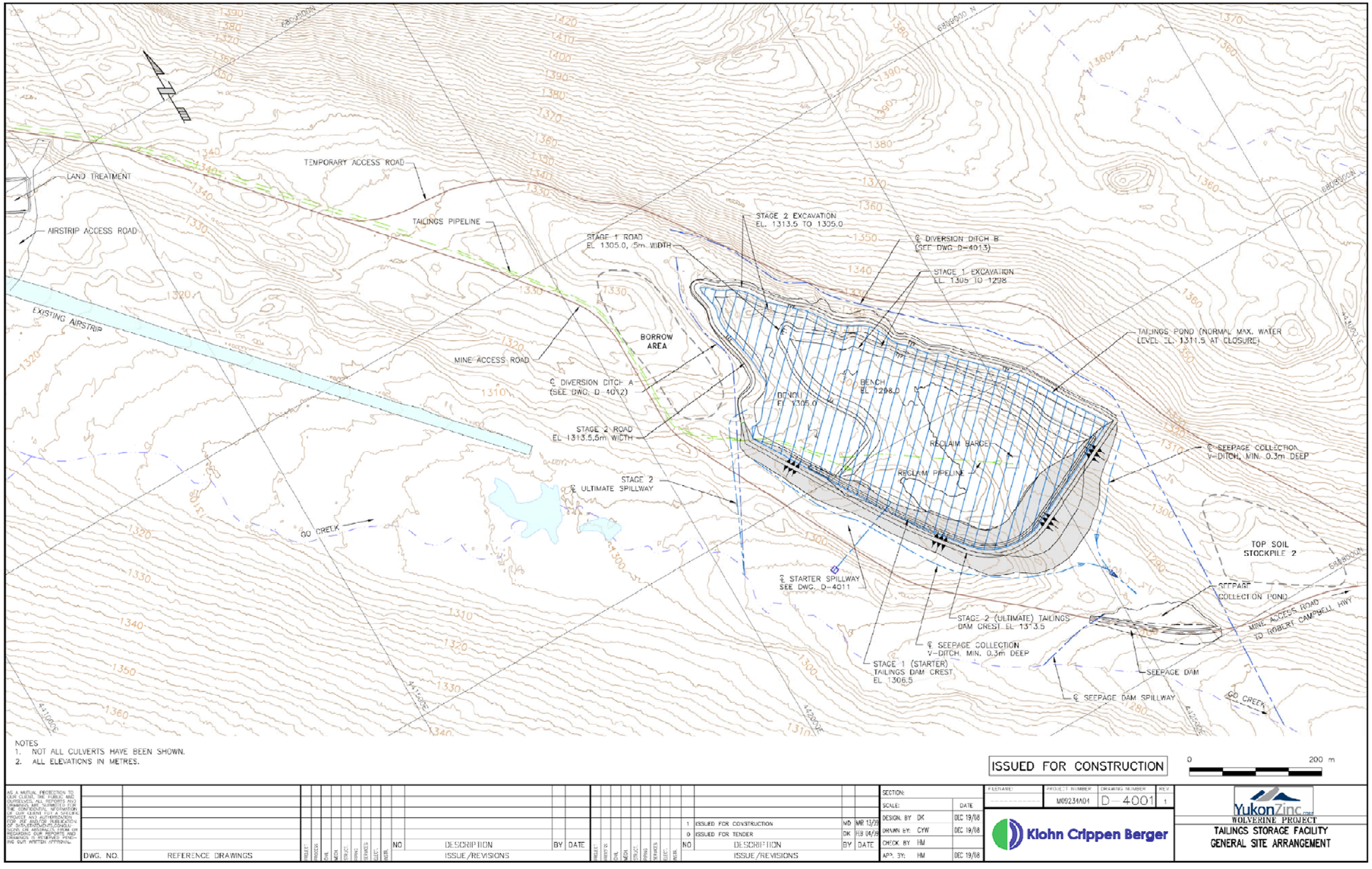


Figure 2-3: Tailings Facility Infrastructure - Issued for Construction drawing

Activities undertaken in 2009 included the following:

- Access road improvements (widening, grading, ditching, and defining shoulders);
- Installation of a 246 person camp and services (potable water and sewage treatment plants);
- Excavation and lining of diversion and collection ditches and water treatment sumps;
- Establishment and operation of a quarry area and concrete batch plant;
- Excavation and grading of mill area followed by erection of crusher, mill, and concentrate load out buildings and installation of mechanical, piping, and electrical services (Picture 2-1 through Picture 2-6 below);
- Installation of diesel fuel and propane storage tanks, and diesel generators;
- Excavation of landfill and construction of waste storage areas, installation of incinerator and bear fence at landfill area;
- Excavation of tailings facility diversion ditches, construction of the starter dam, lining of 520,000 m^3 impoundment, and installation of reclaim and tailings pipelines (Picture 2-7 and Picture 2-8 below);
- Relocation of explosive magazines and creation of two laydown areas for mine equipment;
- Construction of a mill bypass road; and
- 29 definition holes (4, 717 m) were drilled on the surface.



Picture 2-1: Mill Site March 11, 2009



Picture 2-2: Mill Site July 27, 2009



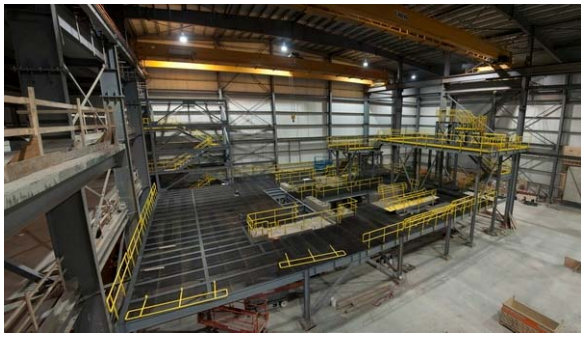
Picture 2-3: Mill Site September 8, 2009



Picture 2-4: Mill Site September 25



Picture 2-5: Mill Building, December 17, 2009



Picture 2-6: Mill Building, December 17, 2009



Picture 2-7: Tailings Facility July 27, 2009



Picture 2-8: Tailings Facility September 8, 2009

2.3 Underground Development

Underground development commenced in April 2009 (Picture 2-9 and Picture 2-10 below), and was conducted by contractor Procon Mining and Tunnelling. 585 m of ramp was developed to provide access to one stope and six stope access ramps for future development (totalling 821 m). A mine ventilation raise (225 m) was completed with a secondary egress to allow for the supply of 274,000 cfm of forced-air for 11 work places, allowing each ore zone to have a separate fresh air system. A

multi-plate culvert was also installed at the opening of the raise. In addition, 18 holes (730 m) were drilled underground for geotechnical purposes.



Picture 2-9: Underground Development, March 3, 2009



Picture 2-10: Underground Development, November 20, 2009

2.4 Total Amount of Ore and Waste Removed From the Mine

The total amount of material stored on the temporary waste rock and ore storage facility, from 2005 to 2009, is 3,622 m^3 of ore and 35,210 m^3 of waste rock (approximately 108,000 tonnes). On the lined dynamic stockpile area within the industrial complex, a total of ~600 m^3 of ore is stockpiled for commissioning of the crusher. Additional material will be added to this material in 2010 to ensure there is a steady feed of material for production in early summer.

2.5 As-Built Drawings

Table 2-2 summarizes the as-built drawings submitted in 2009 (as complete reports) under QML-0006 and Type A Water Use Licence QZ04-065. These as-built drawings are provided in Appendix A. As-built drawings for the Tailings Facility and Industrial Complex will be submitted in 2010 as part of the complete as-built reports for each area.

Table 2-2: As-Built Drawings/Reports Submitted in 2009

Infrastructure Component	Date Submitted
Sump #3	24-Feb-09
Mill Bypass Road	09-Jun-09
Sewage Treatment Plant Sump	29-Jun-09
Ditches A + B at Tailings Facility	29-Jun-09
Landfill area	10-Sep-09
Ditches #3 and #4 within Industrial Complex	2-Oct-09

2.6 Annual Physical Inspection

An annual inspection of all the structures, works and installations located at the site was conducted June 16th through 18th, 2009 by EBA Engineering Consultants, and included a visual inspection of the following structures:

1. Industrial Complex – cut and fill slopes.
2. Industrial Complex Surface and Underground Water Treatment Sumps (1, 2, 3, 4 and 5) liners and slopes.
3. Industrial Complex Diversion Ditches (1 and 6) – cut and fill slopes.
4. Industrial Complex Collection Ditches (2, 3, 4 and 5) – liners, cut and fill slopes.
5. Mine Camp Pad Area including upper generator and water treatment pad, sewage treatment plant pad, and treated effluent pond – liner, cut and fill slopes.
6. Temporary Waste Rock and Ore Storage Facility including seepage collection sump and ore waste stockpiles contained within the facility – cut and fill slopes.
7. Land Treatment Facility (Hydrocarbon Contaminated Material) including runoff collection sump – liners and fill slopes.
8. Tailings Facility Area Diversion Ditches A & B – cut and fill slopes.

Many of these areas were still under construction when the inspection took place; however, the report contained the recommendations summarized in Table 2-3, and the corresponding actions were taken by YZC in 2009, also summarized in Table 2-3. The full report from EBA is provided in Appendix B.

Table 2-3: 2009 Inspection Recommendations and Actions Taken

Structures, Works or Installation	Issues	Recommendations	Completed Actions
Industrial complex - Cut and Fill Slopes for Mill, Fuel Storage and Generator Locations			
Cut slope between Ditch #1 and the Mill Pad	The original design also called for a 1:1 slope, which is too steep for the material that was encountered during the excavation. In this area a frozen coluvium material was exposed and started to thaw causing failure and sloughing of the slope. YZC had completed temporary repair to reduce any further damage to the affected area. This repair work consisted of excavating the sloughed material, and covering the slope with geotextile and rock.	It has been suggested that the long term solution will be to reconstruct an engineered fill with a more gradual slope, from the toe to the crest, along the affected area. YZC was informed and will carry out remedial actions.	Remedial action completed w/Geotex and rip rap
South western sides	There are some noticeable erosion channels along the south western side of the Mill fill that were created during the recent heavy rainfalls. Final design incorporates proper grading to divert surface runoff towards designated drainage ditches.	Until this final grading occurs the erosion channels should be filled in with coarse grained material.	To be completed June 2010
Industrial Complex Surface and Underground Water Treatment Sumps (1, 2, 3, 4 and 5) - liners and slopes			
Sumps 1, 2 and 3	All three sumps had noticeable settlement of the backfill along the perimeter liner key trench and buried propane lines - in some areas up to 150 mm of settlement. This settlement is an indication that the key trench and buried propane line backfill material was not compacted to specification during placement.	There is no immediate attention required to filling these settlement areas but filling of these depressions would increase the perimeter grade elevations and reduce the amount of outside surface runoff from flowing into the sump. YZC was informed of these conditions and will carry out repairs as soon as possible.	Monitor and address June 2010
Sumps 4 and 5	During the inspection the surface of the backfill along the perimeter of each sump was soft, which indicates that the backfill material was not compacted during placement. Presently there are no indications of fill deterioration.	This area should be monitored and repaired as required.	Area to be reclaimed summer 2010

Structures, Works or Installation	Issues	Recommendations	Completed Actions
Industrial Complex Collection Ditches (2, 3, 4 and 5) – liners, cut and fill slopes			
	Along Ditch 4 there was a noticeable area where a large tension crack started to form along the western downslope between STA 0+070 and STA 0+170.	YZC was immediately made aware of this situation and repair work commenced right away.	
Mine camp pad area including upper generator and water treatment pad, sewage treatment plant pad, and treated effluent pond – liner, cut and fill slopes.			
	There were some noticeable settlement cracks along the perimeter of the southwest portion of the camp, and upper generator and water treatment pads. It looks as though these areas were constructed during the winter months and during the spring thaw settlement cracks have formed.	These areas should be monitored and repaired as required.	Continue monitoring
TAILINGS FACILITY AREA Diversion Ditches A & B – cut and fill slopes			
Cut and fill slopes	The Tailings Facility Diversion Ditches A and B were inspected and the fill portions (downslope sides) of both trenches had settlement cracks throughout. It is thought that the construction of the ditches was completed in late Fall - early Winter and the cracks formed in the uncompacted fill during the spring thaw. The upslope sides of both ditches were considered stable with the exception of two areas of localized sloughing, one area along the Ditch A and one area along Ditch B.	There is no immediate concern but these areas should be monitored and should be repaired prior to Fall 2009. YZC was advised and will carry out remedial actions.	Remedial actions completed Sept.2009
CSP Culvert	The buried CSP culvert portions of both Ditch A and B were also inspected and there was noticeable settlement depressions along both alignments that indicates that the pipes were installed in the late Fall – early Winter months.	There is no immediate concern but the backfill along these alignments should be graded and compacted to reduce future erosion and settlement problems.	Continue monitoring

3 Hydrogeology Studies

In early 2009 a hydrogeologic assessment for the purposes of establishing underground dewatering wells was conducted by Piteau Associates. The aim of the assessment was to determine the location of surface groundwater wells that would intercept non-contact water in advance of mining to minimize the amount of water that would require treatment prior to discharge to the environment.

Two test wells were drilled in August 2009, DW09-1 and DW09-3 to depths of 192 m and 180 m, respectively (as shown on Figure 4-4). No significant water flow was achieved from either of these wells, due to the low permeability of the immediate hanging wall rock mass, which appears to hydraulically separate the underground development from the overlying hanging wall rocks. Wells drilled into the footwall also indicated that the bedrock fractures in the footwall rock mass are not very permeable either. These results indicate that dewatering wells installed in either the hanging wall or footwall would be of limited benefit. Hence, YZC will not proceed with the installation of dewatering wells (from either surface or underground), or the construction of a freshwater pond for surface storage.

4 Programs Undertaken for Environmental Monitoring and Surveillance

YZC conducted monitoring as per the Monitoring and Surveillance Plan outlined in the *General Site Plan Version 2008-04,* which included:

- Weather monitoring, including temperature, precipitation and evaporation;
- Surface water monitoring, including hydrologic flows, water quality and sediment quality;
- Groundwater monitoring, including water quality and levels;
- Water table-piezometer monitoring;
- Humidity cell testwork; and
- Construction monitoring including geochemical characterization.

Wildlife monitoring was conducted as per Wildlife Protection Plan 2009-01 (April 2009). Results of the 2009 wildlife monitoring program are summarized in the *Wolverine Project Wildlife Protection Plan 2009 Annual Report* (to be submitted in spring 2010).

4.1 Weather Monitoring

Weather is logged on an hourly basis via a "HOBO Onset" weather station located near the south end of the airstrip. The station was installed May 10th, 2006 and collects temperature, relative humidity, solar radiation in and out, wind speed and direction, and barometric pressure. The weather station is downloaded every month by an Environmental Technician.

Due to battery and electronic connector failures, the monthly values provided for April included below are only for April 1-6; for May are May 17-30; for June are June 1-28; for September are September 1-27; and for October are October 25-31. Also, August data is taken from the secondary weather station at km 17.5, and was only recorded August 1-2 and 20-31, inclusively. Consequently the average temperatures is slightly misrepresented, and total precipitation values are likely underestimated.

Snow pack was not measured in 2009, but measurements will be conducted in Spring, 2010.

4.1.1 Temperature

The mean, maximum, and minimum temperatures recorded by the weather station in 2009 are presented in Figure 4-1.

The mean monthly temperature at the project site in 2009 was -4.5°C. Mean monthly temperatures are below freezing December through April and September through December, and above freezing May through August. The minimum recorded temperature in 2009 was -39.6°C and the maximum recorded temperature was 26.7°C.

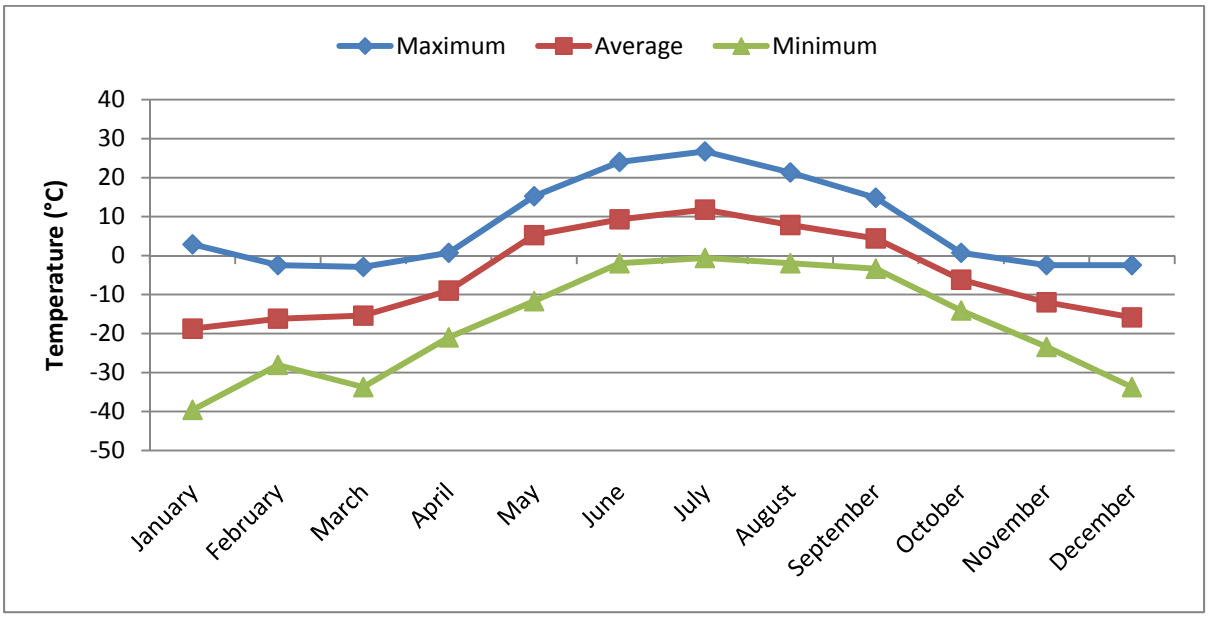


Figure 4-1: Mean, Maximum and Minimum Temperatures (°C) by Month for 2009

Although these monthly values were calculated from incomplete dataset, the averages are comparable to previous temperatures recorded in 1996-7, 2000-1, and 2004-08

4.1.2 Precipitation

The monthly precipitation as rain for 2009 is presented in Figure 4-2. The HOBO weather station does not record precipitation that falls as snow, consequently only precipitation as rain is provided in Figure 4-2 (annual estimates for snow have previously been calculated at 230 mm). In 2009 June was the wettest month with 71 mm of precipitation and December was the driest month with no recorded rain. The annual precipitation as rain was recorded at 181.4 mm; however, the value is lower than actual due to data gaps.

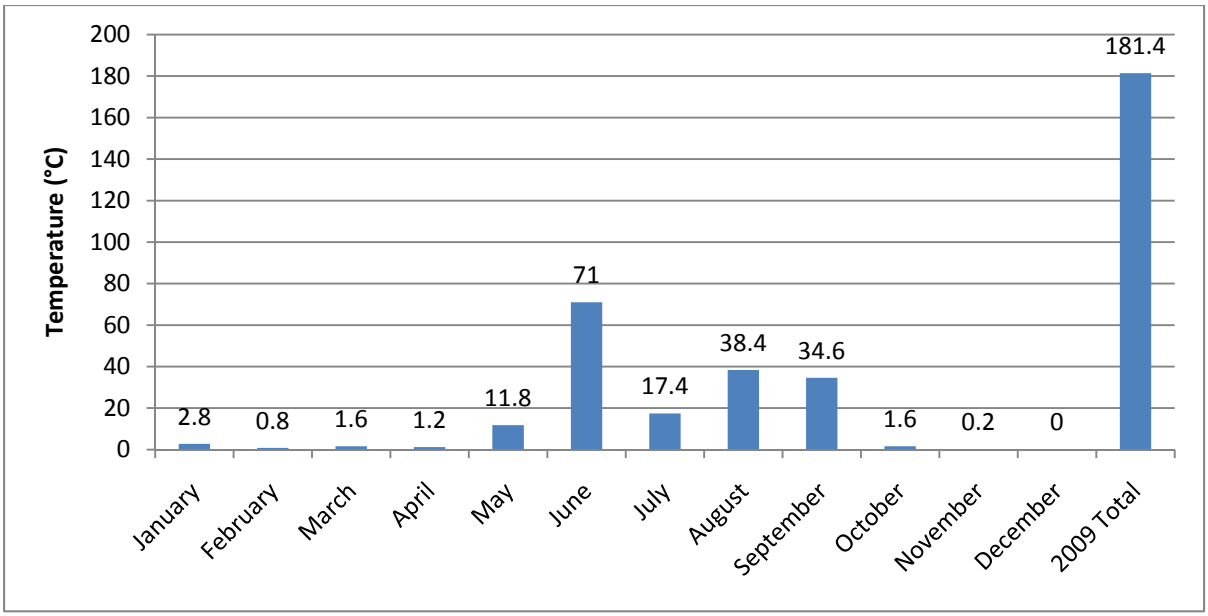


Figure 4-2: 2009 Monthly Precipitation as Rain

4.1.3 Evaporation Rates

Evaporation figures were estimated from the Penman combination formula, and the monthly and annual values are shown in Figure 4-3. The total annual evaporation was 253.6 mm; however, again due to missing data in April, May, August and October, the monthly totals for these months and the annual total evaporation is likely underestimated for 2009.

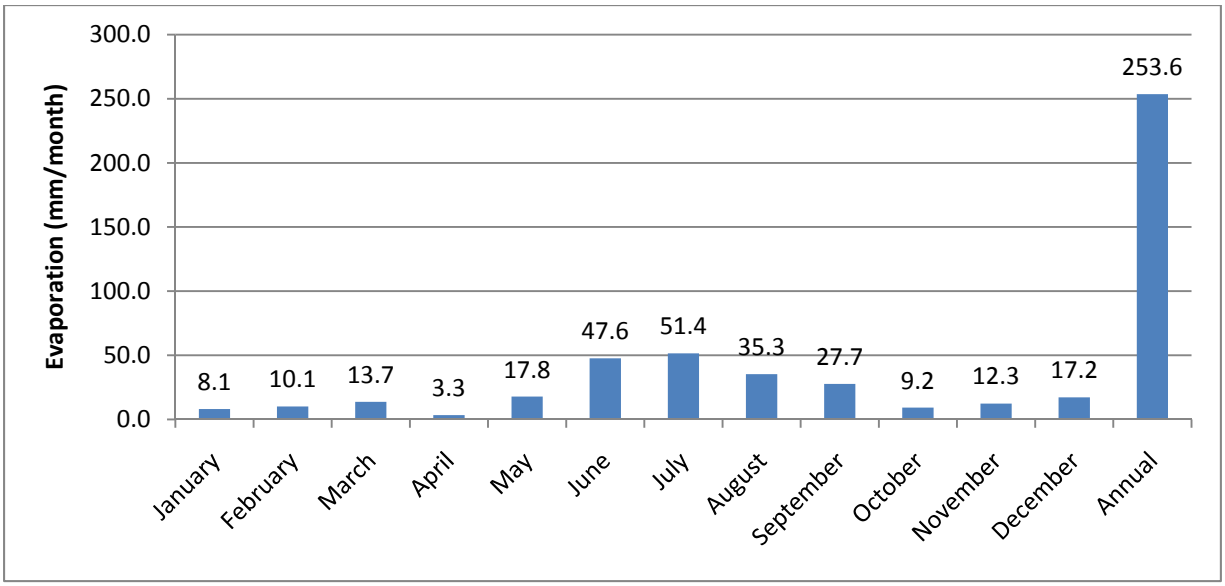


Figure 4-3: 2009 Monthly and Annual Evaporation Estimates

4.2 Surface Water and Groundwater Monitoring

In 2009, both the Type A Water Use Licence QZ04-065 and Type B Water Use Licence QZ01-051 were in effect and surface water and ground water monitoring was conducted as per these licences.

The Annual Reports for both A-Licence QZ04-065 and B-Licence QZ01-051 are provided in Appendix B[1] and include monitoring frequency, lab reports, and analyses conducted for the following:

- Surface water monitoring including hydrologic flows, water quality and sediment quality;
- Groundwater monitoring including water quality and levels;
- Sediment monitoring; and
- Acute lethality testing.

4.3 Piezometer Water Levels

Piezometers installed northeast of the mine portal in two exploration boreholes monitor groundwater conditions in the mineralized zones at the anticipated depth of mining, as shown in Figure 4-4. A graph of potentiometric elevations from deep and shallow piezometer locations PZ-A and PZ-B are presented in Figure 4-5, with precipitation measurements included. Precipitation data was taken from the weather monitoring station described above; however, from July 5 – September 10 the precipitation data used was from the weather station installed at km 17.5 on the site access road. Data from August 3 – 19 was not available from either weather station, due to battery failure.

Battery failure occurred at all four piezometer stations from April 8 – July 29, 2009, when historical increases in water height has been evident (see previous QML Annual Reports). PZ-A deep was also missing data between September 12 – November 2, 2009, again, due to battery failure. While data was collected at PZB shallow after July 29, 2009, the engineering units were not recording, hence the data could not be converted to elevation (m asl). The logger at PZ-B deep was recording in early 2009; however, the recorded values were around 1700 m asl (should be <1380 m asl), hence the logger was sent in for repair in April 2009, and readings presented in Figure 4-5 more accurately represent actual water levels.

Due to the missing data, it is impossible to say if there was an increase in the water level with spring freshet in late May and early June, as was seen in 2007 & 2008 (Figure 4-6). However, it is possible to compare the 2009 values (i.e., development mining) to those achieved in 2007 and 2008 (i.e., care and maintenance period for the test mine). These values are summarized in Table 4-1, and compared to annual precipitation values. While the average values appear to decrease with time, the 2009 averages are not representative of 2009 values due to the amount of data missing for each of the piezometers. However, the minimum values for each year should be more representative of the annual trends for each of the logger locations. The minimum values for PZ-A shallow and deep decreased each year, and the minimum values for PZ-B shallow and deep decreased in 2008, but increased again in 2009 (Figure 4-6). With current data for the deep wells, it was observed that there has been a decrease in groundwater above the mine workings due to the effects of underground development.

[1] A and B Licence Annual Report appendices, which contain data reports, will be provided upon request.

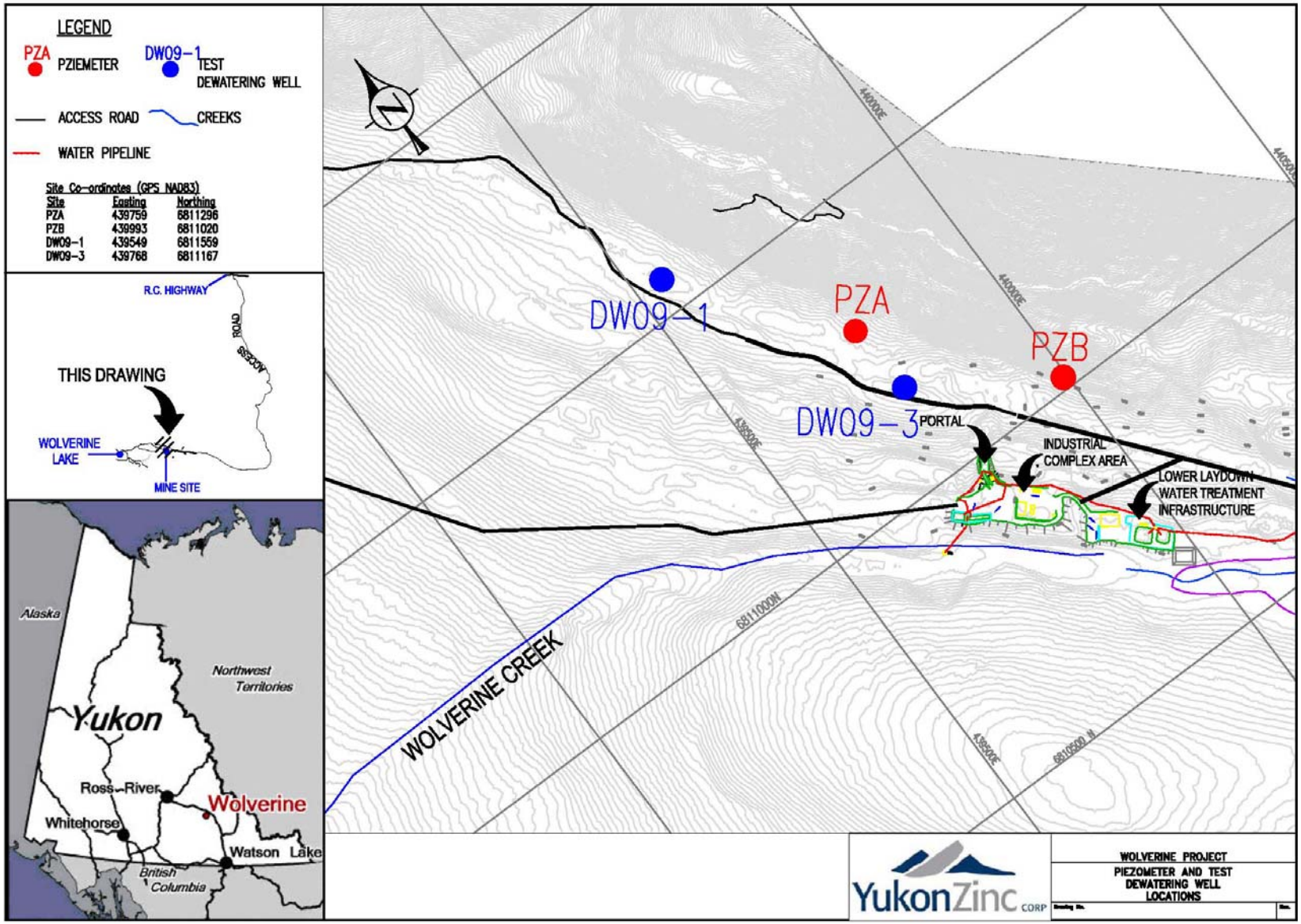


Figure 4-4: Piezometer and Test Dewatering Well Locations and Co-ordinates

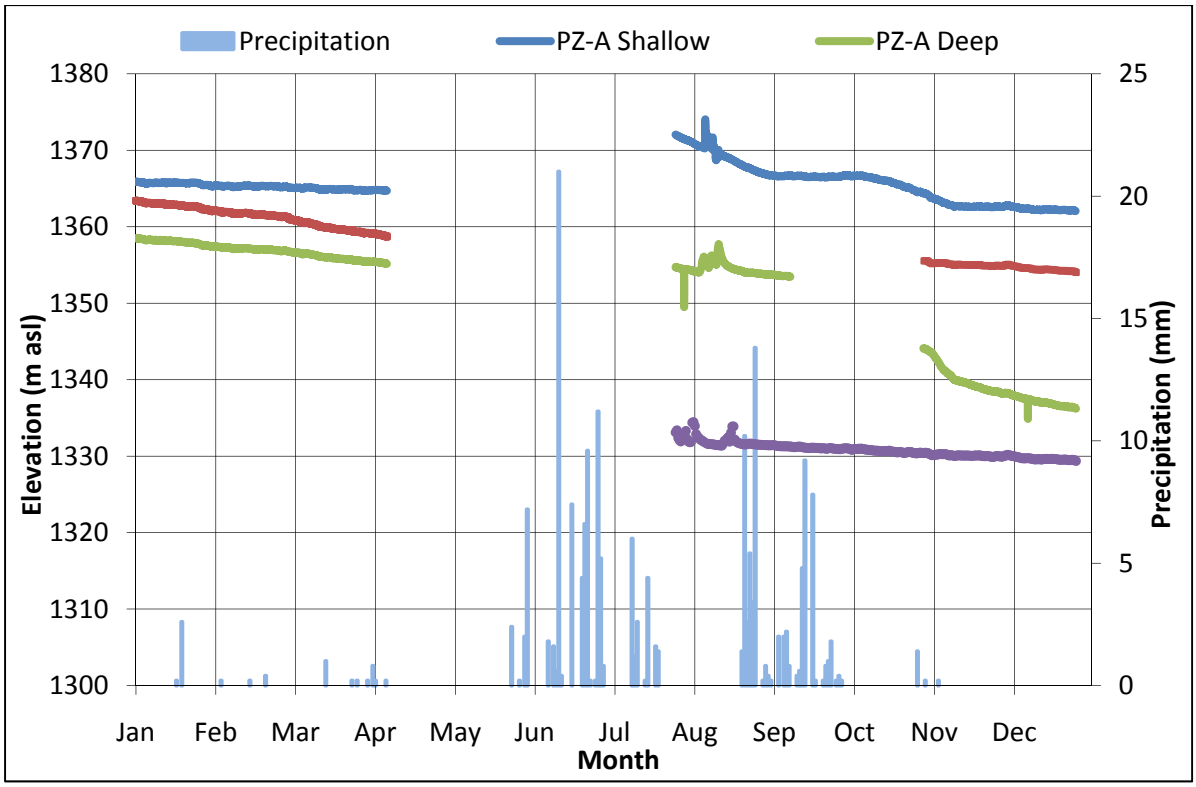


Figure 4-5: 2009 Potentiometric Elevations with Precipitation

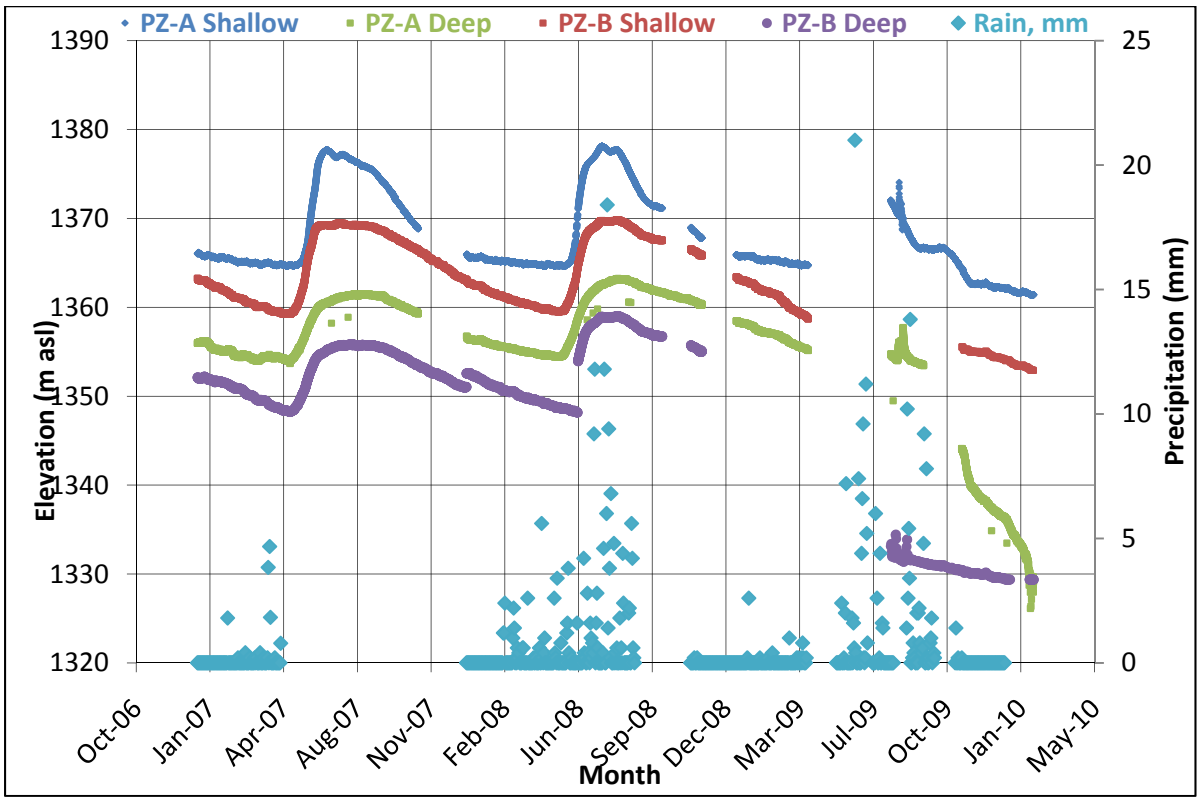


Figure 4-6: 2006 to 2009 Potentiometric Data

Table 4-1: Average, Minimum and Maximum Potentiometric Elevations for 2007, 2008 & 2009

	2007	2008	2009
PZA Shallow			
Average	1370	1369	1365
Minimum	1365	1365	1362
Maximum	1378	1378	1374
PZA Deep			
Average	1358	1359	1351
Minimum	1354	1354	1335
Maximum	1362	1363	1358
PZB Shallow			
Average	1365	1360	1361
Minimum	1359	1329	1359
Maximum	1369	1370	1363
PZB Deep			
Average	1353	1349	1331
Minimum	1348	1318	1329
Maximum	1356	1359	1334
Precipitation (mm)	195.1	170.6	157.4

4.4 Humidity cell tests undertaken for waste rock and paste backfill

Waste rock, paste backfill, ore, DMS float, and tailings humidity cells testing commenced in either 2005 or 2006. Table 4-2 summarizes the cell contents, the start date of operation, the date decommissioned (if applicable) and the weeks in operation as of December 31st, 2009. In February 2009 humidity cells HC1, HC2, HC3, HC5, HC8, HC9, HC11, HC12, HC13, HC14, HC15, HC16, HC17, HC18, HC19, HC20 and HC22 were decommissioned. The report summarizing the final results for these decommissioned cells and an update on the seven operating cells containing waste rock, ore and paste backfill to January 28, 2010 is provided in Appendix D (AMEC report).

Based on analytical frequency for tailings cells Overall Ore Composite (OC) and Overall Diluted ore composite (OD), laboratory analyses were reduced to once every 4 weeks in late September 2008, with flushing continuing weekly. The report summarizing the results to December 29th, 2009, for cells OC and OD is provided in Appendix D (MEA report).

Table 4-2: Waste Rock, Paste Backfill, Ore, DMS Float and Tailings Humidity Cell Composition and Duration of Operation

Humidity Cell	Composition	Date Started	Date Decommissioned (and total operating weeks)	Weeks in operation - end of 2009
HC1	Rhyolite/rhyolite fragmental	22-Dec-05	19-Feb-09 (165)	-
HC2	Iron formation	22-Dec-05	19-Feb-09 (165)	-
HC3	Rhyolite/rhyolite fragmental	22-Dec-05	19-Feb-09 (165)	-
HC4	Rhyolite/rhyolite fragmental	22-Dec-05	Operating	210
HC5	Calcite-pyrite exhalite	22-Dec-05	19-Feb-09 (165)	-
HC6	Calcite-pyrite exhalite	22-Dec-05	Operating	216
HC7	Carbonaceous argillite	22-Dec-05	Operating	216
HC8	Carbonaceous argillite	22-Dec-05	19-Feb-09 (165)	-
HC9	Non-carbonaceous argillite	12-Jan-06	19-Feb-09 (162)	-
HC10	Non-carbonaceous argillite	12-Jan-06	Operating	207
HC11	Iron formation	12-Jan-06	19-Feb-09 (162)	-
HC12	Rhyolite/argillite	12-Jan-06	19-Feb-09 (162)	-
HC13	Rhyolite/argillite	12-Jan-06	19-Feb-09 (162)	-
HC14	Ore	16-Feb-06	19-Feb-09 (157)	-
HC15	Ore	16-Feb-06	19-Feb-09 (157)	-
HC16	Ore	16-Feb-06	19-Feb-09 (157)	-
HC17	DMS float	23-Feb-06	17-Feb-09 (156)	-
HC18	DMS float	23-Feb-06	17-Feb-09 (156)	-
HC19	DMS float	23-Feb-06	17-Feb-09 (156)	-
HC20	NP[1] depleted ore	23-May-06	17-Feb-09 (143)	-
HC21	NP depleted ore	23-May-06	Operating	188
HC22	NP depleted ore	23-May-06	17-Feb-09 (143)	-
T1	Paste backfill	23-May-06	Operating	188
T2	Paste backfill	23-May-06	Operating	188
LD	Tailings - Lynx zone diluted ore composite	22-Jul-05	03-Oct-06 (63)	-
WD	Tailings - Wolverine zone diluted ore composite	22-Jul-05	03-Oct-06 (63)	-
OC	Tailings - Overall ore composite	6-Jun-05	Operating	238
OD	Tailings - Overall diluted ore composite	22-Jul-05	Operating	232

1. Neutralization potential

4.5 Construction Monitoring

4.5.1 Erosion and Sediment Control

Erosion and sediment control activities around the worksite areas completed in 2009 included seeding of exposed areas, and the installation 3000 m of silt fence and 400 straw bales in various areas around the mine site, including inlets and outlets of culverts, ditch lines, and along the toe of disturbed slopes. In 2009, approximately 27 ha of exposed areas were seeded using the prescribed seed mixes outlined in the *Reclamation and Closure Plan 2008-02* (March 2008). Table 4-3 summarizes the areas seeded.

Table 4-3: Exposed Areas Seeded in 2009

Infrastructure Location	Seeded Areas
YZC Camp	All slopes around YZC Camp
Sewage Treatment Plant	Ditch and catchment area adjacent to STP
Batch Plant	Slope behind batch plant
Waste Rock Pad	Top strip and contoured slopes by old access road
Access Road (both sides)	• km 14 to 16.5 • Temporary access to Hawkowl Creek • km 24 to Temporary Construction Camp • Temporary Construction camp to km 27 • Wedge from Km 27. 2 between uppper and lower road to Rip Rap ditch • Organic stockpile at Km 28.7 to Km 29 • Old access road from mill site to new powder magazine storage site
Tailings Facility	• Ditch B from Temporary Construction camp to Access road • Tailings perimeter -All slopes and ditches • South end of Tailings dam and associated drainage • Tailings pipeline clearing from Km 25 to Km 26.1 • Organic stockpiles from tailings facility excavation (South end of airstrip)
Airstrip	• Toe and contoured slopes of warehousing laydown area and around warehouse offices • Decommissioned airport access, organic stock piles, and area around Land Treatment Facility
Industrial Complex	• Berms around diesel fuel tanks, above portal generator pad • Ditch #3 and 4 creek side from Km 27 to Km 29 • Ditch #1 cut and fill slopes plus access road
2009 Diamond Drill Sites	All disturbed areas from drilling program

4.5.2 Environmental Monitoring

Environmental monitoring reports for all construction activities were prepared by YZC Environmental Monitors onsite during the construction phase. Table 4-4 summarizes the Environmental Monitoring Reports (provided in Appendix E), the monitoring period and the date of the monitoring report.

Table 4-4: 2009 Summary of Completed Environmental Monitoring Reports by Area

	Monitoring Period		
	From	To	Date of Report
Access Road			
	04-May-09	04-May-09	04-May-09
	05-May-09	05-May-09	05-May-09
	04-Jun-09	12-Jun-09	12-Jun-09
	07-Jul-10	13-Jul-09	13-Jul-09
	12-Sep-09	12-Sep-09	12-Sep-09
	15-Sep-09	21-Sep-09	21-Sep-09
	26-Sep-09	27-Sep-09	27-Sep-09
	10-Oct-09	10-Oct-09	10-Oct-09
Arctic Camp			
	03-Feb-09	16-Feb-09	16-Feb-09
	18-Feb-09	02-Mar-09	02-Mar-09
	03-Mar-09	23-Mar-09	23-Mar-09
	31-Mar-09	06-Apr-09	06-Apr-09
	08-Jun-09	08-Jun-09	08-Jun-09
	30-Jul-09	30-Jul-09	30-Jul-09
	01-Sep-09	01-Sep-09	01-Sep-09
	13-Nov-09	21-Nov-09	21-Nov-09
27+300/Batch Plant			
	06-Feb-09	16-Feb-09	16-Feb-09
	18-Feb-09	02-Mar-09	02-Mar-09
	03-Mar-09	23-Mar-09	23-Mar-09
	29-Apr-09	09-May-09	09-May-09
	04-Jun-09	10-Jun-09	10-Jun-09
Industrial Complex			
Industrial complex	20-Mar-09	19-May-09	19-May-09
	04-Jun-09	12-Jun-09	12-Jun-09
	15-Jun-09	22-Jun-09	22-Jun-09
	07-Jul-09	13-Jul-09	13-Jul-09
	21-Jul-09	03-Aug-09	03-Aug-09
	04-Aug-09	10-Aug-09	10-Aug-09
	10-Aug-09	17-Aug-09	17-Aug-09
	21-Aug-09	21-Aug-09	21-Aug-09
	10-Sep-09	12-Sep-09	12-Sep-09
	15-Sep-09	29-Sep-09	29-Sep-09
	10-Oct-09	10-Oct-09	10-Oct-09
	30-Oct-09	02-Nov-09	02-Nov-09
	10-Nov-09	17-Nov-09	17-Nov-09
	30-Nov-09	30-Nov-09	30-Nov-09
	17-Dec-09	22-Dec-09	22-Dec-09
Reco wall	21-Jul-09	03-Aug-09	03-Aug-09
	21-Aug-09	21-Aug-09	21-Aug-09
Ditch 1	09-Apr-09	13-Apr-09	13-Apr-09
	14-Apr-09	20-Apr-09	20-Apr-09
	05-May-09	09-May-09	09-May-09
	04-Jun-09	14-Jun-09	14-Jun-09
	15-Jun-09	22-Jun-09	22-Jun-09
Ditch 3 and 4	07-Apr-09	13-Apr-09	13-Apr-09
	14-Apr-09	20-Apr-09	20-Apr-09
	12-May-09	18-May-09	18-May-09
	20-May-09	25-May-09	25-May-09
	26-May-09	01-Jun-09	01-Jun-09
	12-Sep-09	30-Sep-09	30-Sep-09
Ditch 3	19-Mar-09	06-Apr-09	06-Apr-09
	04-Jun-09	14-Jun-09	14-Jun-09
Ditch 4	19-Mar-09	06-Apr-09	06-Apr-09
	29-Apr-09	30-Apr-09	30-Apr-09
	29-Apr-09	11-May-09	11-May-09
	04-Jun-09	14-Jun-09	14-Jun-09
Mill Bypass Rd	31-Mar-09	03-Apr-09	03-Apr-09

	Monitoring Period		
	From	To	Date of Report
Vent raise			
	01-Jun-09	26-Oct-09	26-Oct-09
Drill sites			
	10-Aug-09	17-Aug-09	17-Aug-09
Environmental Impact Surveys for all holes	01-May-09	31-Aug-09	
Explosive Magazine/Procon Laydown			
	05-Feb-09	16-Feb-09	16-Feb-09
	11-Mar-09	16-Mar-09	16-Mar-09
Landfill			
	13-Jun-09	22-Jun-09	22-Jun-09
	07-Jul-09	13-Jul-09	13-Jul-09
	21-Jul-09	26-Jul-09	26-Jul-09
	04-Aug-09	10-Aug-09	10-Aug-09
	21-Aug-09	21-Aug-09	21-Aug-09
	12-Sep-09	12-Sep-09	12-Sep-09
	15-Sep-09	30-Sep-09	30-Sep-09
	10-Oct-09	10-Oct-09	10-Oct-09
	20-Oct-09	20-Oct-09	20-Oct-09
	03-Nov-09	03-Nov-09	03-Nov-09
	10-Nov-09	17-Nov-09	17-Nov-09
	17-Nov-09	24-Nov-09	24-Nov-09
	25-Nov-09	25-Nov-09	25-Nov-09
	20-Dec-09	20-Dec-09	20-Dec-09
	31-Dec-09	31-Dec-09	31-Dec-09
New camp			
	03-Feb-09	17-Feb-09	17-Feb-09
	18-Feb-09	02-Mar-09	02-Mar-09
	03-Mar-09	23-Mar-09	23-Mar-09
	04-Jun-09	14-Jun-09	14-Jun-09
	21-Jul-09	03-Aug-09	03-Aug-09
Sewage Treatment plant			
	19-Mar-09	06-Apr-09	06-Apr-09
	07-Apr-09	13-Apr-09	13-Apr-09
	14-Apr-09	20-Apr-09	20-Apr-09
	30-Apr-09	30-Apr-09	30-Apr-09
	30-Apr-09	07-May-09	07-May-09
Tailings			
	30-Apr-09	08-May-09	08-May-09
	15-May-09	01-Jun-09	01-Jun-09
	05-Jun-09	12-Jun-09	12-Jun-09
	15-Jun-09	22-Jun-09	22-Jun-09
	07-Jul-09	13-Jul-09	13-Jul-09
	21-Jul-09	25-Jul-09	25-Jul-09
	04-Aug-09	10-Aug-09	10-Aug-09
	10-Aug-09	17-Aug-09	17-Aug-09
	18-Aug-09	23-Aug-09	23-Aug-09
	09-Sep-09	12-Sep-09	12-Sep-09
Ditch B	18-Feb-09	02-Mar-09	02-Mar-09
	03-Mar-09	17-Mar-09	17-Mar-09
	31-Mar-09	06-Apr-09	06-Apr-09
Pipeline	04-Aug-09	10-Aug-09	10-Aug-09
	11-Aug-09	14-Sep-09	14-Sep-09
	10-Oct-09	10-Oct-09	10-Oct-09
	03-Nov-09	03-Nov-09	03-Nov-09
	10-Nov-09	17-Nov-09	17-Nov-09
	18-Nov-09	20-Nov-09	20-Nov-09
	25-Nov-09	14-Dec-09	14-Dec-09
Powerline	14-Oct-09	14-Oct-09	14-Oct-09
	16-Oct-09	16-Oct-09	16-Oct-09
	28-Oct-09	02-Nov-09	02-Nov-09
	10-Nov-09	17-Nov-09	17-Nov-09
	18-Nov-09	29-Nov-09	29-Nov-09

4.5.3 Geochemical Characterization

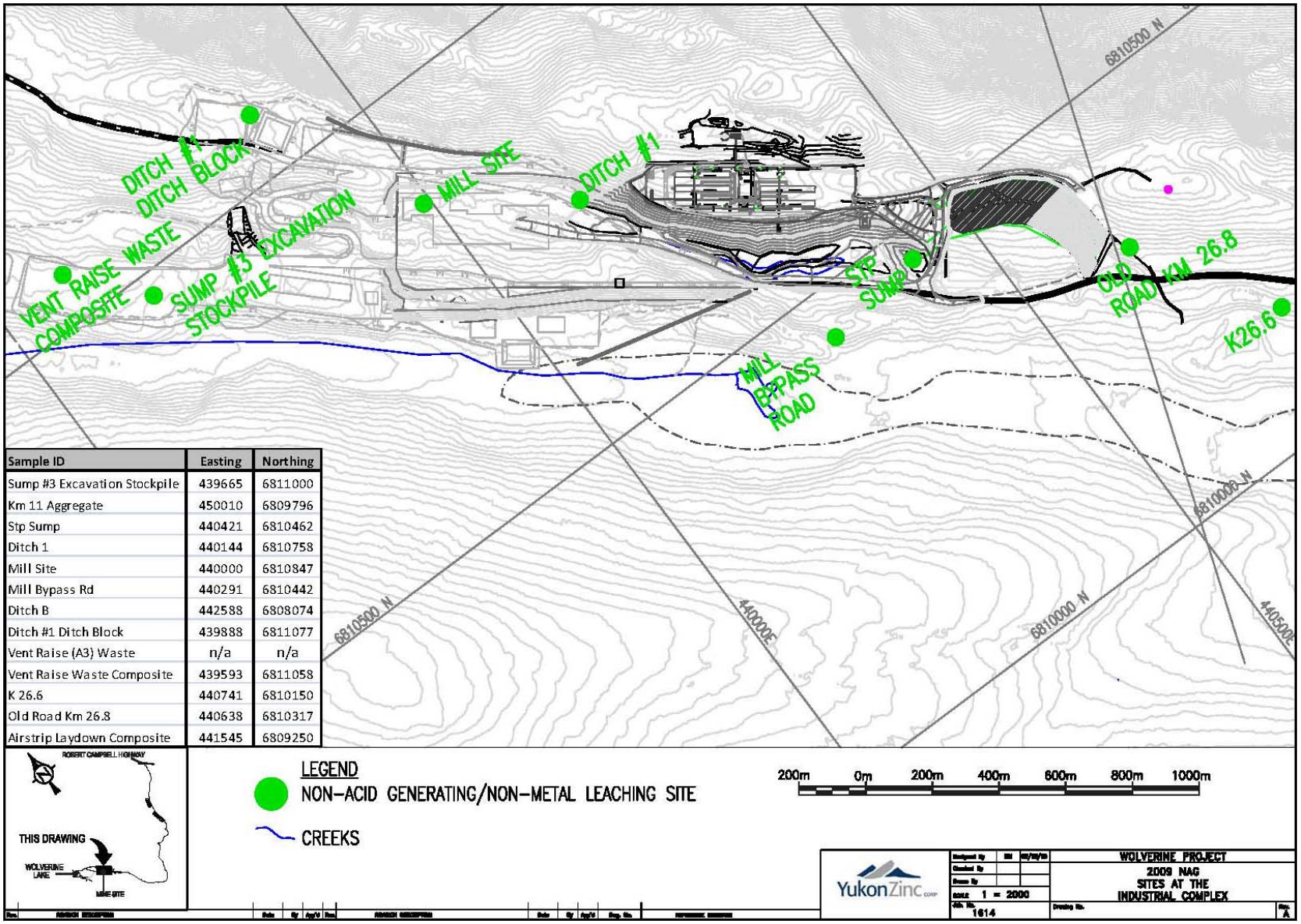
Geochemical characterization via acid base accounting was conducted on native material to establish metal leaching potential: all material that was deemed non-acid generating material (NAG) based on criterion provided by AMEC Earth and Environmental (AMEC) (as detailed in General Site Plan V2008-04) was used in construction activities. Figure 4-7 summarizes the sites where samples were taken at the industrial complex in 2009. Sample sites not shown on the figure include those taken at the tailings storage facility area (sample "Ditch B"), the airstrip (sample "Airstrip Laydown Composite") and along the access road (sample "Km 11 Aggregate"). GPS co-ordinates for the sample labeled "Vent raise (A3) waste" were not taken, hence it is not shown on Figure 4-7; however, it is assumed to be in a similar area as the sample "Vent Raise Waste Composite".

4.5.3.1 Acid Base Accounting

Acid base accounting was conducted to establish neutralization potential, acid generation potential and metal leaching potential of borrow sources or excavated sites. The following analyses were conducted: paste pH, total sulphur (Total S), sulphate sulphur (Sulphate), sulphide sulpher (by difference) (Sulphide) and neutralization potential (NP). The results are summarized in Table 4-5 and full lab results provided in Appendix F. Samples are labelled according to their location on the industrial complex. Twelve samples deemed PAG (Table 4-5) were sent to ALS Environmental Laboratories (ALS) for shake flask testing to quantify the metal leaching potential of the material.

4.5.3.2 Shake Flask Testing

Shake flask testing involved 24 hour 3:1 deionized water to rock extraction procedure, and the resulting leachate was analyzed for pH and metals using ICP-MS. These results are presented in Table 4-6, and the full lab reports are presented in Appendix F. Leachate pH values ranged from 5.78 to 8.19 and for the most part are within the acceptable range in pH as regulated by the MMER, except for the sample labelled "old road km 26.8"; which was not used for construction material. Regulated metals arsenic, copper, lead, nickel and zinc were below the MMER guidelines for all samples taken in 2009.



Sample ID	Easting	Northing
Sump #3 Excavation Stockpile	439665	6811000
Km 11 Aggregate	450010	6809796
Stp Sump	440421	6810462
Ditch 1	440144	6810758
Mill Site	440000	6810847
Mill Bypass Rd	440291	6810442
Ditch B	442588	6808074
Ditch #1 Ditch Block	439888	6811077
Vent Raise (A3) Waste	n/a	n/a
Vent Raise Waste Composite	439593	6811058
K 26.6	440741	6810150
Old Road Km 26.8	440638	6810317
Airstrip Laydown Composite	441545	6809250

Figure 4-7: 2009 Geochemistry Sample Locations at Wolverine Industrial Complex

Table 4-5: 2009 Acid Base Accounting Results for Borrow and Excavation Sites

Sample ID	Lab Report	Easting	Northing	ABA Test Results									
				Paste pH	Fizz Rating	NP kg CaCO3/t rock	AP kg CaCO3/t rock	NNP kg CaCO3/t rock	NPR -	Total S %	Sulphate S %	Sulphide S %	Acid Potential
Sump #3 Excavation Stockpile	VA09023063	439665	681100	5.6	1	0	1.3	-1	0	0.04	<0.01	0.04	PAG
Km 11 Aggregate	VA09012568	450010	6809796	6.7	1	5	0.6	4	8	0.02	<0.01	0.02	PAG
Stp Sump	VA09040007	446355	6810506	5	1	4	1.3	3	3.2	0.04	0.03	0.01	PAG
Ditch 1	VA09040007	440144	6810758	5	1	2	0.3	2	6.4	0.01	0.01	<0.01	PAG
Mill Site	VA09040007	440000	6810847	6.8	1	8	1.6	6	5.12	0.05	0.03	0.02	PAG
Mill Bypass Rd	VA09040007	440291	6810442	7.6	1	11	1.9	9	5.87	0.06	0.05	0.01	NAG
Ditch B	VA09040007	442588	6808074	5.1	1	3	0.3	3	9.6	0.01	0.02	<0.01	PAG
Ditch #1 Ditch Block	VA09049898	439888	6811077	6.7	1	4	22.8	-19	0.18	0.73	0.66	0.07	PAG
Vent Raise (A3) Waste[1]	VA09063946	~439593	~6811058	7.8	1	20	42.2	-22	0.47	1.35	0.03	1.32	PAG
Vent Raise Waste Composite	VA09063946	439593	6811058	8.5	2	38	20.9	17	1.81	0.67	0.02	0.65	PAG
K 26.6	VA09083648	440741	6810150	5.7	1	5	<0.3	5	32	<0.01	<0.01	<0.01	PAG
Old Road Km 26.8	VA09101398	440638	6810317	5.5	1	4	2.5	2	1.6	0.08	0.07	0.01	PAG
Airstrip Laydown Composite	VA09101398	441545	6809250	6.4	1	5	0.9	4	5.33	0.03	0.02	0.01	PAG

[1] Vent Raise A3 Waste assumed to be at the Vent Raise Composite sampling area

Table 4-6: Shake Flask Testing Results for 2009 Borrow and Excavation Sites

Sample ID	MMER	KM 11 AGGREGATE	SUMP#3 EXCAVATION STOCKPILE	STP SUMP	DITCH 1	MILL SITE	DITCH B	Ditch #1 Ditch Block	VENT RAISE (A3)	VENT RAISE WASTE COMPOSITE	K 26.6	OLD ROAD KM 26.8	AIRSTRIP LAYDOWN COMPOSITE
Date Sampled		**2-Feb-09**	**16-Mar-09**	**24-Apr-09**	**24-Apr-09**	**24-Apr-09**	**24-Apr-09**	**18-May-09**	**25-Jun-09**	**25-Jun-09**	**6-Aug-09**	**16-Sep-09**	**16-Sep-09**
ALS Sample ID		**L737044**	**L742356**	**L759446**	**L759446**	**L759446**	**L759446**	**L778116**	**L796495**	**L796495**	**L820901**	**L826173**	**L826173**
Leachable Anions & Nutrients													
pH	**6.0-9.0**	7.03	6.92	6.39	6.48	6.58	6.61	6.48	7.93	8.19	7.52	5.78	6.24
% Moisture		<0.10	1.02	0.14	0.63	4.45	0.34	<0.10	0.57	<0.10	0.59	0.64	0.59
Leachable Metals													
Aluminum (Al)		4.65	0.185	0.356	0.403	0.0101	1.6	0.91	0.086	0.132	1.99	4.48	3.78
Antimony (Sb)		0.00129	0.00659	0.00017	0.00011	<0.00010	0.0002	0.00047	0.0147	0.0164	0.00044	<0.00050	0.00066
Arsenic (As)	**0.5**	0.0049	0.0058	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0050	<0.0050	0.0022	0.0074	0.0085
Barium (Ba)		0.277	0.121	0.328	0.0183	0.139	0.0841	1.33	0.0681	0.111	0.0383	1.25	0.802
Beryllium (Be)		<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025	<0.00050	<0.0025	<0.0025
Bismuth (Bi)		<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025	<0.00050	<0.0025	<0.0025
Boron (B)		0.027	0.56	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	0.01	<0.050	<0.050
Cadmium (Cd)		0.000283	0.00061	0.000507	<0.000050	<0.000050	0.000052	0.000058	0.00074	<0.00025	0.000066	<0.00025	<0.00025
Calcium (Ca)		1.52	543	1.03	0.24	7.94	0.98	2.15	30.4	26.5	1.25	1.62	3.95
Chromium (Cr)		0.0172	<0.0025	0.00078	0.00119	<0.00050	0.00372	0.001	<0.0025	<0.0025	0.00509	0.0055	0.0116
Cobalt (Co)		0.00362	0.00199	0.00448	0.0008	<0.00010	0.00262	0.00021	<0.00050	<0.00050	0.00196	0.00461	0.0052
Copper (Cu)	**0.3**	0.0194	0.24	0.0324	0.0304	0.0104	0.0979	0.0184	0.032	0.026	0.0499	0.0928	0.0753
Iron (Fe)		7.31	3.39	2.43	1.36	0.072	5.19	1.63	0.095	<0.090	3.18	8.57	9.31
Lead (Pb)	**0.2**	0.00658	0.00674	0.00575	0.00235	<0.00050	0.00527	0.0064	0.007	0.004	0.00954	0.0206	0.0151
Lithium (Li)		<0.0050	0.051	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.025	<0.0050	<0.025	<0.025
Magnesium (Mg)		2.48	117	0.575	0.118	0.377	0.704	0.363	7.97	4.2	0.735	1.15	2.5
Manganese (Mn)		0.426	0.441	0.394	0.054	0.0014	0.175	0.0845	0.0989	0.0613	0.061	0.383	0.643
Mercury (Hg)		<0.000050	0.000545	<0.000050	<0.000050	<0.000050	<0.000050	0.000201	0.000194	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)		0.00181	0.0126	0.00024	0.00011	0.00141	0.00018	0.00145	0.00945	0.0152	0.00203	0.00312	0.00281
Nickel (Ni)	**0.5**	0.0208	0.0184	0.00937	0.00262	<0.00050	0.00506	0.00286	<0.0025	<0.0025	0.00616	0.0123	0.0197
Phosphorus (P)		<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	<0.30	<0.90	<0.90	<0.90	<0.90	<0.90
Potassium (K)		5.91	40.3	1.26	0.785	0.966	0.9	3.85	9.05	12.9	1.01	2.8	2.34
Selenium (Se)		0.00088	0.0141	<0.00050	<0.00050	<0.00050	<0.00050	0.00132	0.399	0.0276	<0.00050	<0.0025	<0.0025
Silicon (Si)		18.1	9.9	9.41	6.56	2.75	15	8.2	2.17	2.94	8.99	16.3	15.7
Silver (Ag)		0.000135	0.00038	<0.000050	<0.000050	<0.000050	<0.000050	0.000056	<0.00025	<0.00025	0.000069	<0.00025	<0.00025
Sodium (Na)		3.21	320	1.45	1.39	0.503	1.59	0.449	0.63	0.97	2.35	1.32	2.35
Strontium (Sr)		0.0171	4.63	0.00649	0.00128	0.0337	0.00404	0.0422	0.0789	0.121	0.00331	0.0161	0.0195
Thallium (Tl)		<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00010	<0.00050	<0.00050
Tin (Sn)		<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0025	<0.00050	<0.0025	<0.0025
Titanium (Ti)		0.12	0.134	0.09	0.082	<0.010	0.312	0.015	<0.030	<0.030	0.118	0.34	0.58
Uranium (U)		0.000372	0.00584	0.000052	0.000063	<0.000010	0.000103	0.0001	0.00102	0.00352	0.000144	0.000287	0.000325
Vanadium (V)		0.0175	<0.0050	0.0022	0.0014	<0.0010	0.0051	0.0027	<0.0050	<0.0050	0.0086	0.012	0.021
Zinc (Zn)	**0.5**	0.04	0.059	0.083	<0.010	<0.010	0.014	0.022	<0.050	<0.050	<0.010	0.051	0.056

5 Progressive Reclamation and Ongoing Reclamation Activities

In 2009, there were no progressive reclamation activities conducted. The success of the seeding outlined in Section 4.5.1 will be monitored in spring-summer of 2010 and a plan and implementation schedule for a reclamation research program will be developed based on the early results of this seeding program. Monitoring locations will include randomly allocated plots located within representative areas.

6 Spills and Accidents

There were four reportable (defined by the *Yukon Spills Regulations* as a release of a hazardous substance to the environment in quantities above the spill reporting thresholds, or any amount of spill onto a watercourse) environmental incidents in 2009, summarized in Table 6-1. The full spill reports were submitted to EMR within 10 days of their respective occurrences, and are available upon request.

Table 6-1: Environmental Incidents in 2009

Date	Volume and Substance	Who	Cause	Report and Follow-up Actions
23-Mar-09	200-833 L of diesel	Arctic Construction Ltd.	Overturned fuel truck	Initial Report: 2-Apr-09 Follow-up Report: 7-Apr-09 190 m^3 contaminated material moved to the LTF
30-Jun-09	Unknown volume diesel	YZC	Leak in connector joints of storage tank	Initial Report: 18-Sept-09 Follow-up Report: 29-Sept-09 Area to be excavated when tanks are relocated
21-Sept-09	1.2-1.5 m^3 treated STP water	Norcope Enterprises	Hole in temporary tailings pipeline discovered when testing	Report: 29-Sept-09 Pipeline fixed, samples taken, no effects
5-Dec-09	13 L Antifreeze	Source One Distributers	Loose clamp on hose dislodged	Initial Report: 5-Dec-09 Follow-up Report: 29-Sept-09

7 Access Road

Access road activities outlined in the sections below include the 2009 use and projected 2010 use, maintenance work, access control, and 2010 road upgrade or maintenance activities.

7.1 2009 and Projected 2010 Use

In 2009, between May 1st and December 31st, there were approximately 300 freight truck deliveries along the access road to supply materials for construction purposes. Starting in late July, all freight and service vehicles entering and exiting site were tracked by site security, and vehicle traffic, summarized by month, is provided in Table 7-1.

Table 7-1: 2009 Access Road Vehicle Usage

Month	Vehicle Traffic
July (starting July 27)	44
August	178
September	350
October	389
November	402
December	447
Total	**1810**

Once in the operations phase, in mid 2010, the number of trucks on the road daily will average 30 concentrate haul trucks and service vehicles.

7.2 2009 Work and Upgrades Conducted

A temporary mill bypass road was constructed from km 27+200 to km 28+00 in early April for the purpose of constructing the mill.

Improvements to the access road included widening, grading, ditching, and defining shoulders, specifically at km 14-15, 16-17, 19+00 and 21.2 and these works were completed by the beginning of October. Drilling and blasting occurred at km 19 to reduce grade and improve the alignment. The blasted rock was hauled to the crusher site and used for rip rap material. Borrow pit development occurred at km 17+500 and quarried material was stockpiled to be crushed later. Crushed and screen material was produced for concrete aggregate, road dressing, etc. Drainage ditches were constructed to keep the borrow area and crusher pad dry.

Construction of the access road also occurred on the west side of the tailings facility from km 23+150 to km 27+200. The site road on the upslope (east) side of the tailings facility was used to construct tailings facility diversion Ditch B.

7.3 Access Control Issues

There have been no issues with access control. There are two Wolverine Mine Access Control Gates at km 0.1 and km 0.49, to prevent public use of the access road. In 2008, a radio-controlled automated gate opener was installed at the gate at km 0.1. At the end of July 2009, when freight traffic increased, the gate was manned 24 hours a day by site security and all vehicles entering the site were signed in and out.

7.4 Projected Road Construction Activities

YZC will improve the road to a Phase 2 level for concentrate haul trucks and service vehicle use throughout 2010. The main improvements include decreasing side slopes, widening the road or adding pull out bays in certain locations, replacing culverts at Hawkowl Creek, and surfacing.

As required by the QML, within 60 days of completing construction of the access road to the Transportation Association of Canada RLU 60 Single Lane Resource Road level (previously referred to as Phase 2), YZC will submit an as-built report containing engineered-stamped drawings and descriptions of any reclamation activities undertaken or to be undertaken in relation to any borrow sites used in construction of the access road.

8 Socio-Economic Assessment

The EA Screening Report requires that YZC report annually on the following:

- The number of Yukoners and non-Yukoners employed at the mine; and,
- The value of goods and services procured within Ross River, Watson Lake and the Yukon as a whole.

Over the course of the year, 272 Yukoners and 401 non-Yukoners were employed at the project site by YZC and the contracting companies, Procon Mining and Tunneling Ltd., ESS Compass Group Canada, Western Protection Alliance Inc., Total North Communications, Superior Propane, EBA Engineering, Yukon Engineering Services, Kluane Drilling Ltd., Arctic Construction Ltd. and its subcontractors Gisborne Group, IDL Projects Inc. and Underhill Geomatics Ltd. The numbers noted above represent the majority of the main contractors at the Wolverine Project (some smaller contractors were not captured in the total numbers provided). The value of goods and services procured, excluding Kaska joint venture contracts, is provided in Table 8-1. YZC is not privy to the share of value that goes to the Kaska.

Table 8-1: Goods and services procured from Ross River, Watson Lake and the Yukon for 2008

Location	Amount
Ross River	$354,318
Watson Lake	$529,601
Yukon	$13,118,972
Total	**14,002,891**

9 Project Projection for 2010

In the first half of 2010, the focus at the Wolverine Project is to complete construction of the industrial complex buildings, hire a ~200 person workforce, complete the mine main fresh air raises, develop the underground workings to allow access to approximately 10 headings prior to operations, commission the mill floatation circuits in May, and start milling in late June. In 2010, the mill is anticipated to be operational for approximately 185 days, with milling rates ramping up from 1400 tpd to 177 tpd by the end of the year. Additional information will be provided in the Mill Operating Plan and Mine Operating Plan, containing specific details for these activities. Both of these plans will be submitted to EMR for approval in spring 2010.

Appendix A: As-Built Drawings Submitted in 2009

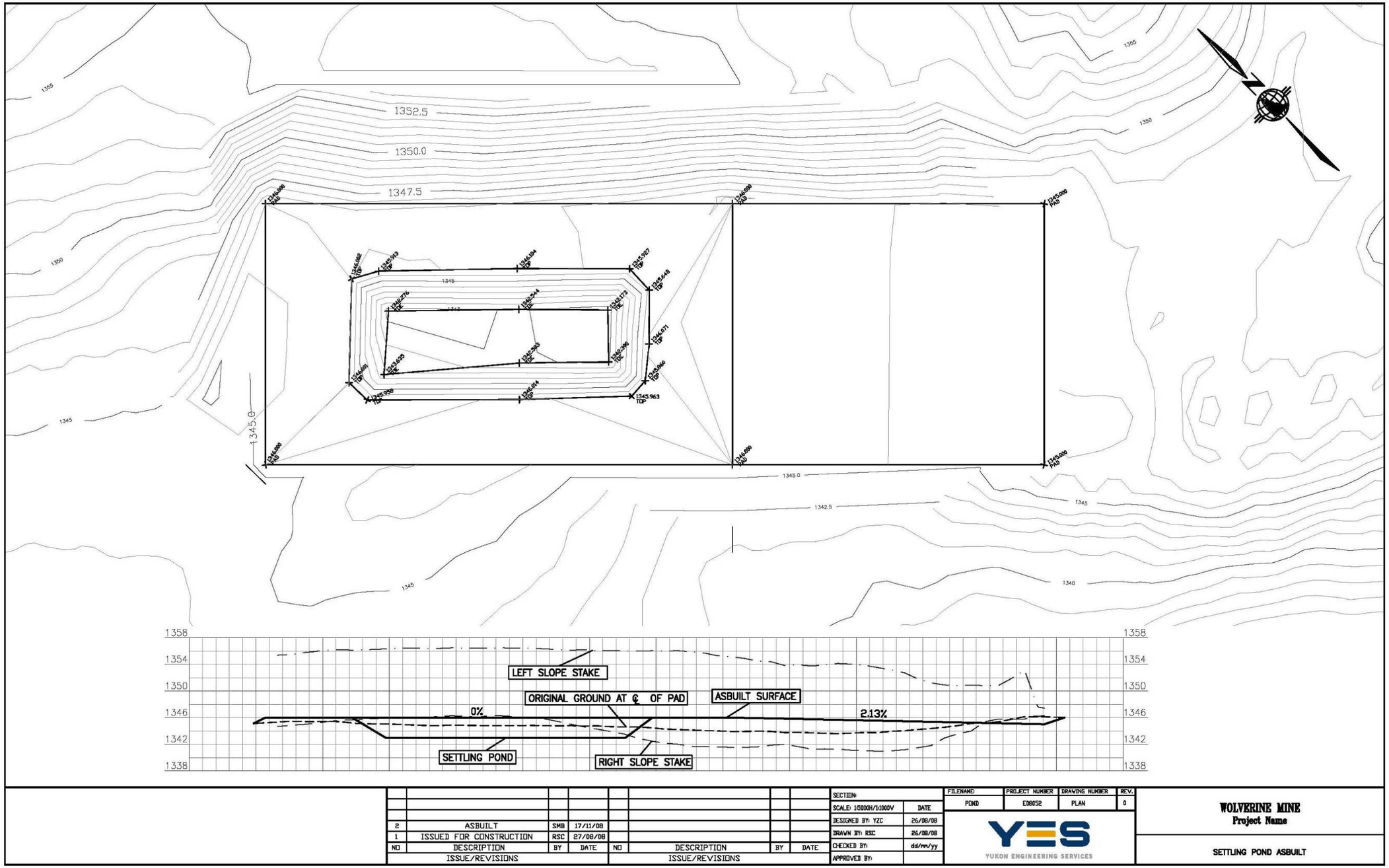


Figure 4. Settling Sump As-built Drawing – Yukon Engineering Services

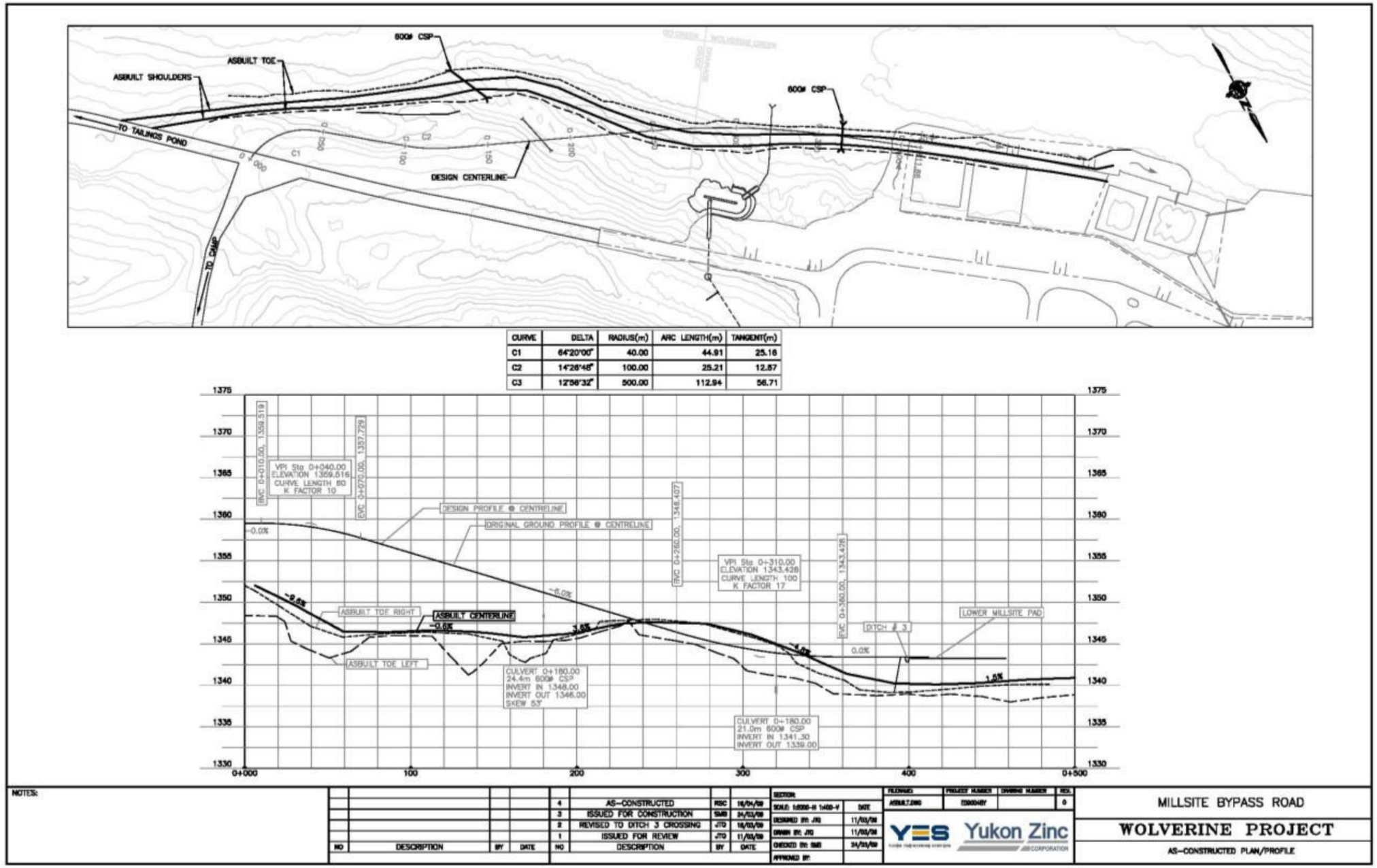


Figure 4. Mill Bypass Road As-built Drawing – Yukon Engineering Services

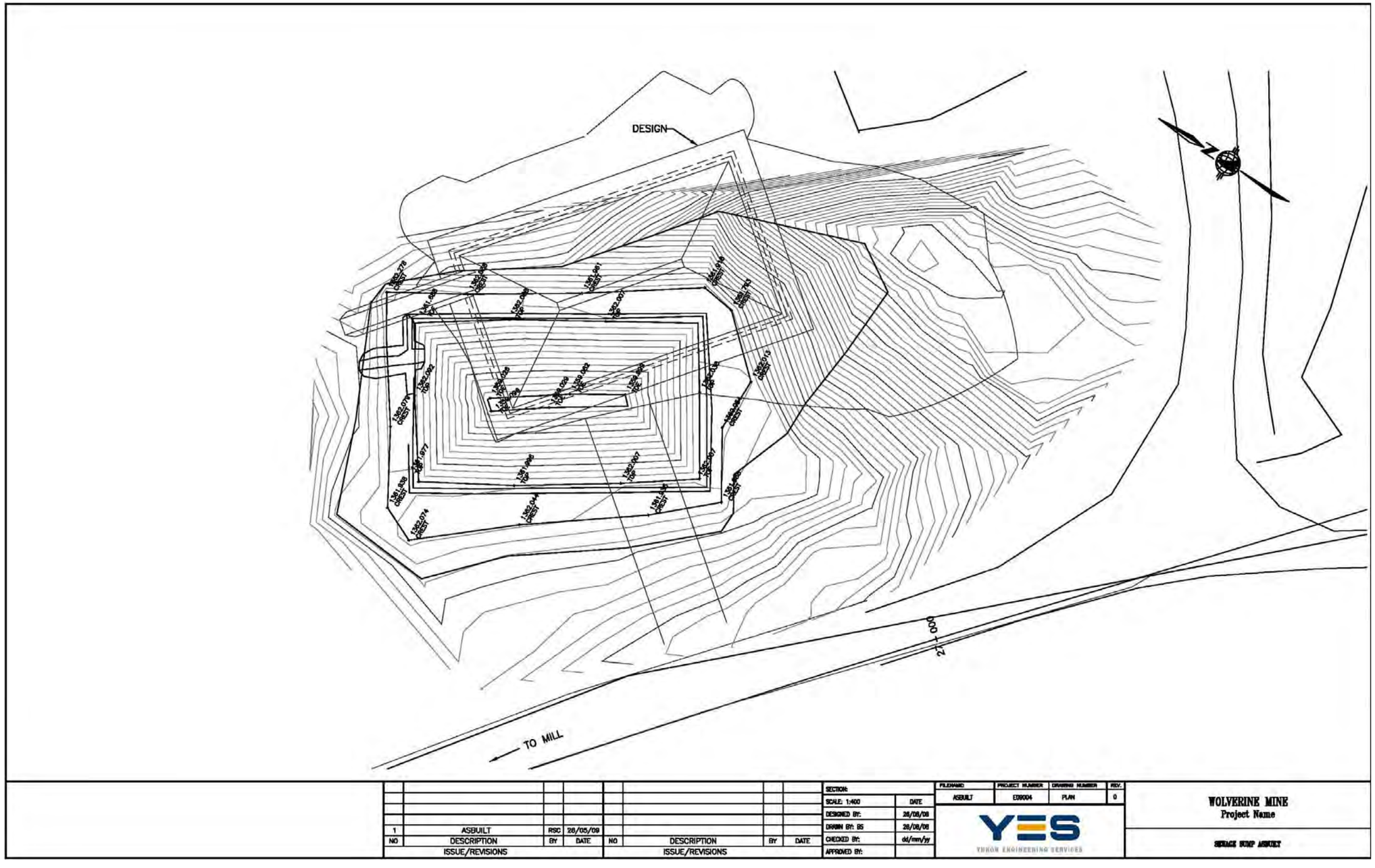


Figure 4. STP sump As-built Drawing – Yukon Engineering Services

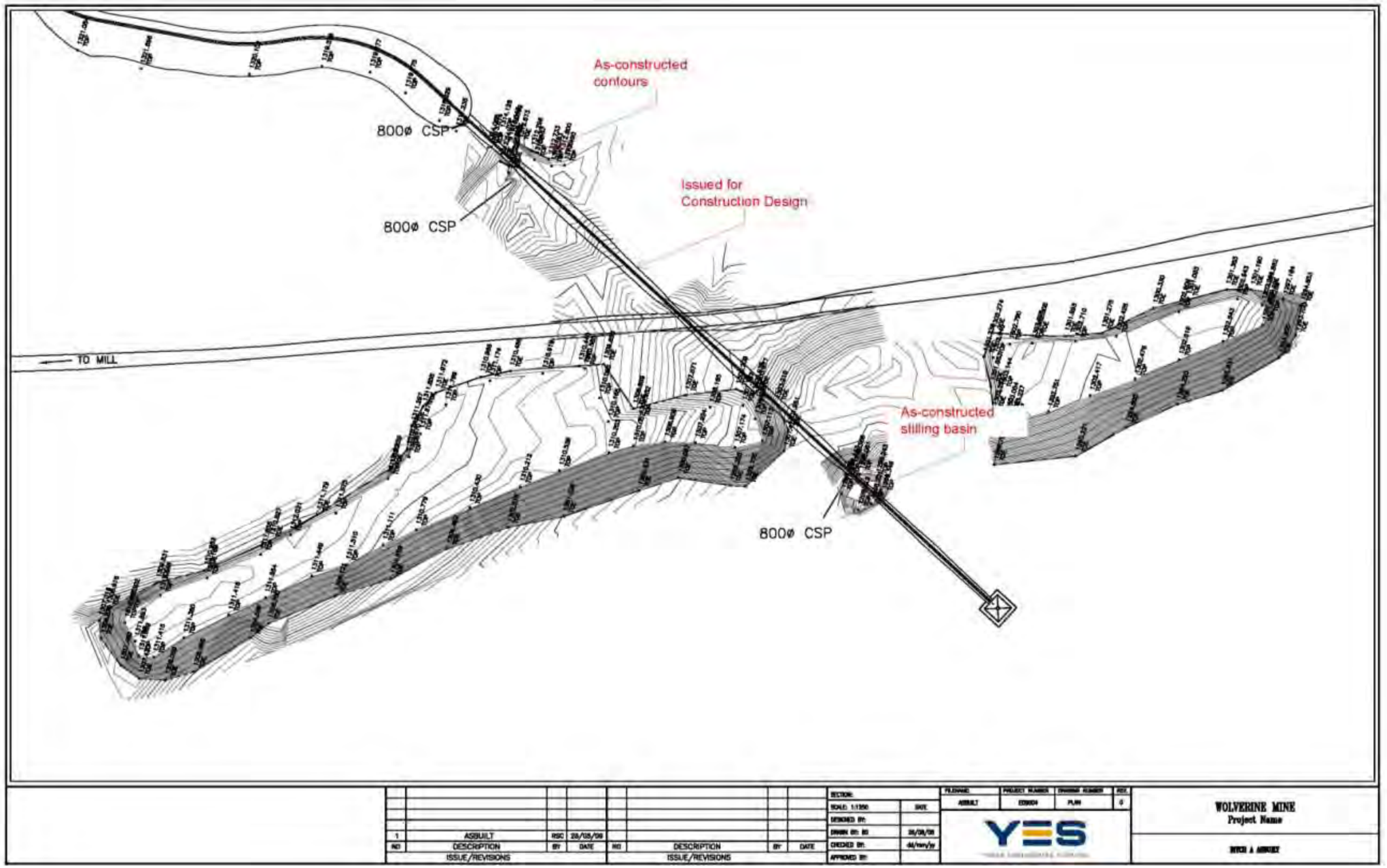


Figure 5. Ditch A As-built Drawing – Yukon Engineering Services

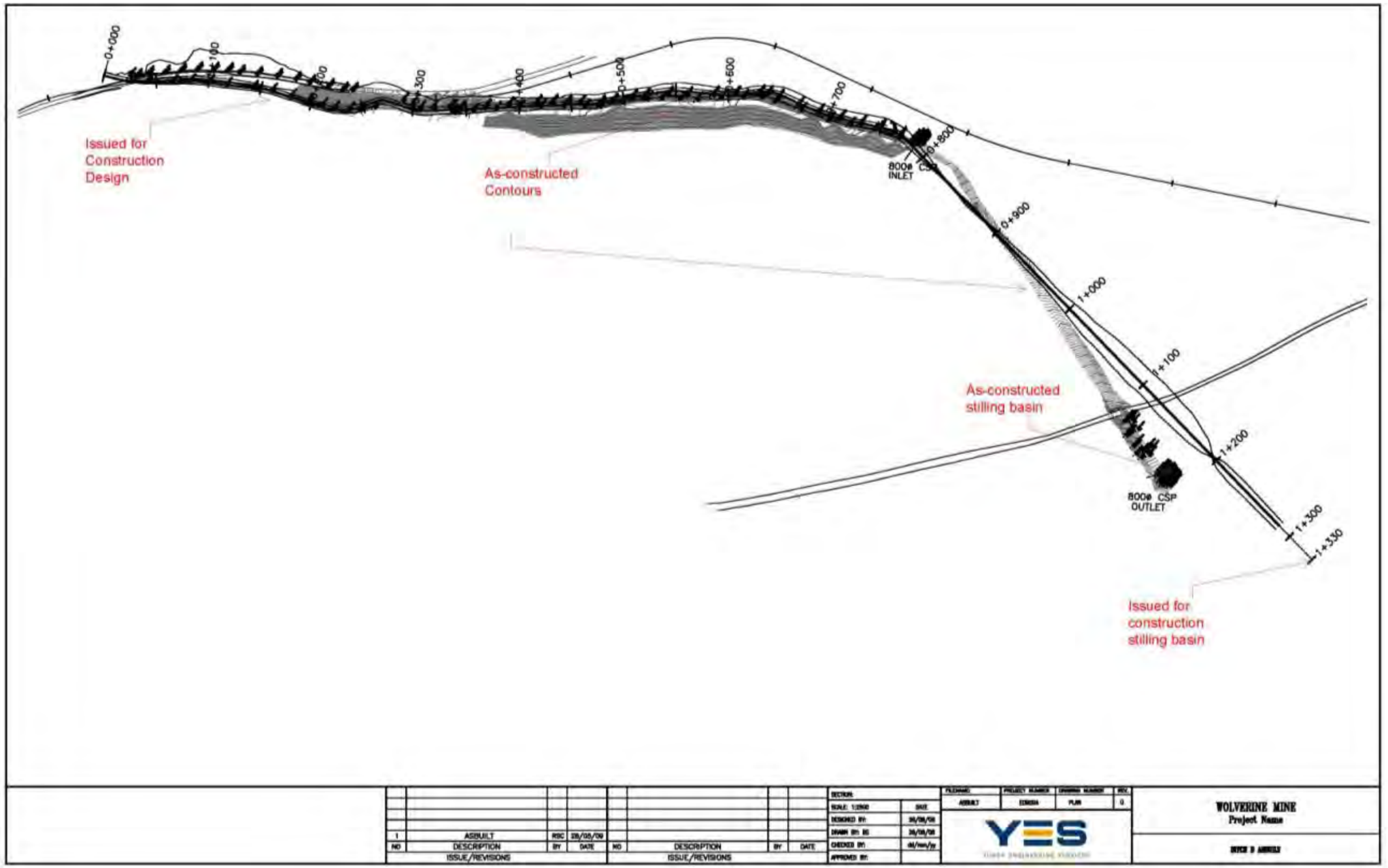


Figure 6. Ditch B As-built Drawing – Yukon Engineering Services

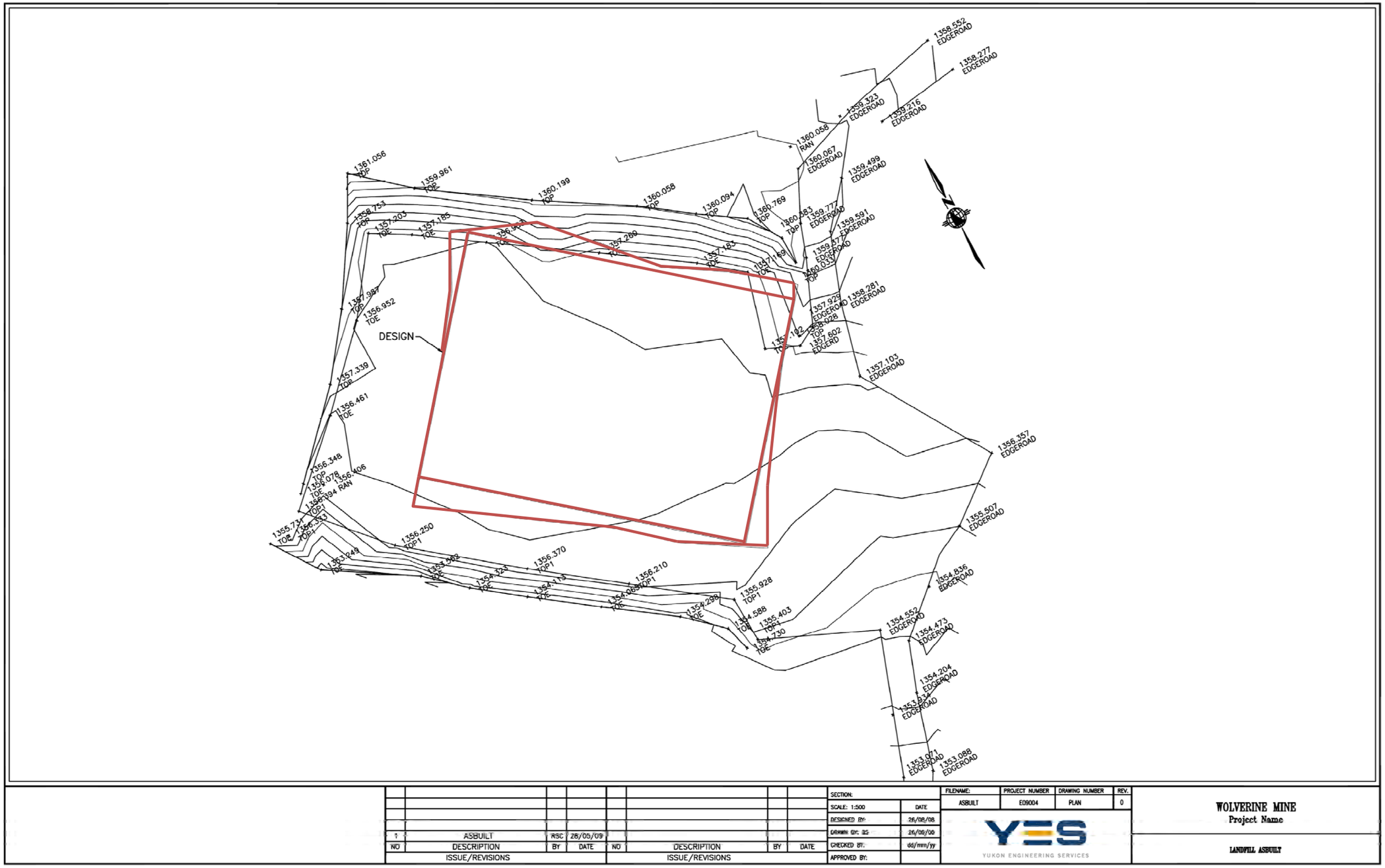


Figure 4. Landfill area As-built Drawing – Yukon Engineering Services

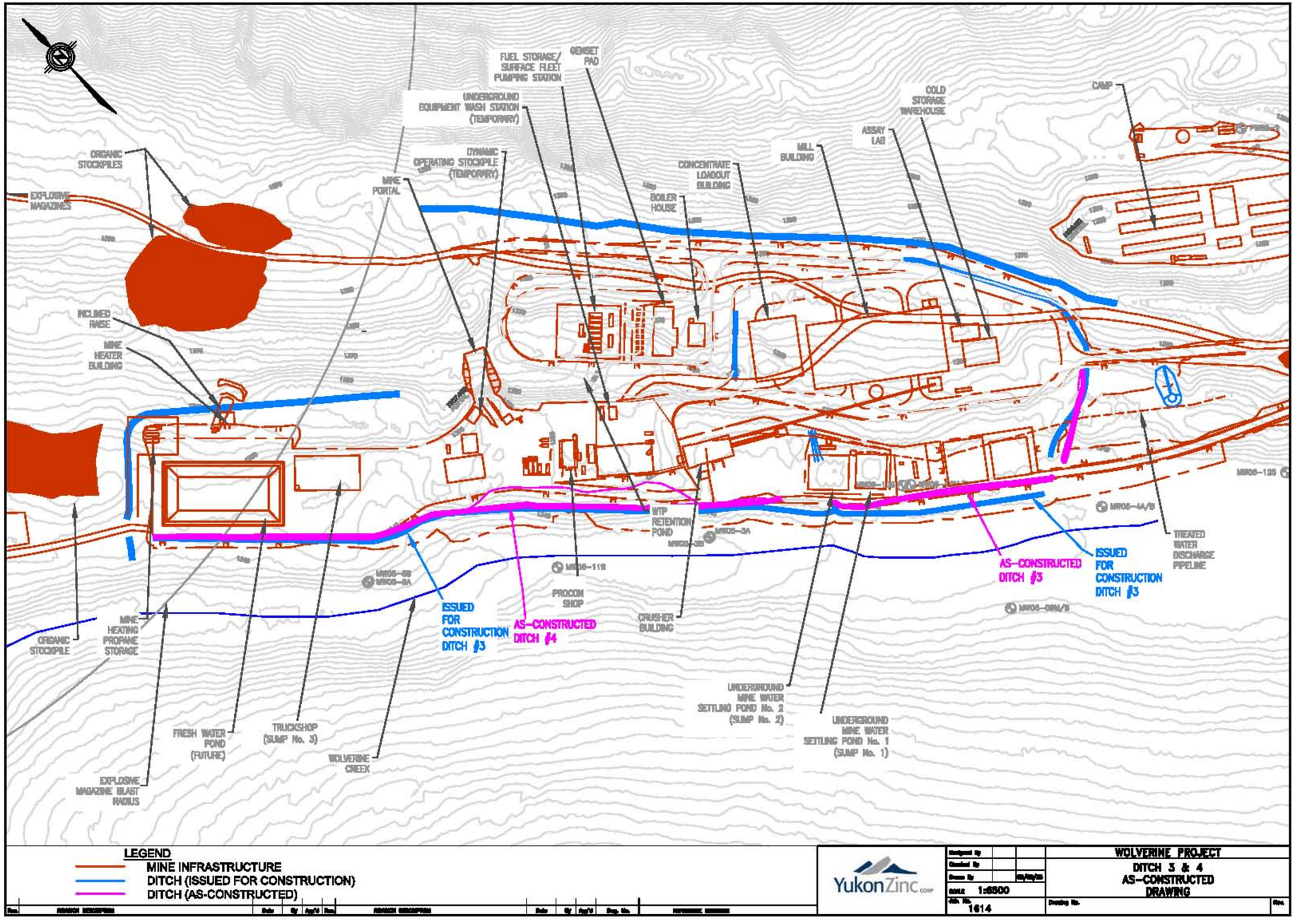


Figure 7. Ditch 3 and 4 As-constructed Drawing

Appendix B: EBA Engineering Consultants Ltd. Annual Inspection Report – July 8, 2009

July 8, 2009 EBA File: W14101095.006

Yukon Zinc Corporation
Suite 701, 475 Howe Street
Vancouver, British Columbia V6C 2B3

Attention: Mr. Chiew Yeo, Manager – Design Engineering

Subject: **Annual Inspections of the On-site Earth Structures**
Wolverine Mine Site, South Eastern Yukon

1.0 INTRODUCTION

As requested by Yukon Zinc Corporation (YZC), EBA Engineering Consultants Ltd. (EBA) has completed the annual inspections of the earth structures located throughout the Wolverine Mine site (shown on Figure 1). YZC identified the following areas as requiring inspection.

1. Industrial Complex – cut and fill slopes.
2. Industrial Complex Surface and Underground Water Treatment Sumps (1, 2, 3, 4 and 5) - liners and slopes.
3. Industrial Complex Diversion Ditches (1 and 6) – cut and fill slopes.
4. Industrial Complex Collection Ditches (2, 3, 4 and 5) – liners, cut and fill slopes.
5. Mine Camp Pad Area including upper generator and water treatment pad, sewage treatment plant pad, and treated effluent pond – liner, cut and fill slopes.
6. Temporary Waste Rock and Ore Storage Facility including seepage collection sump and ore waste stockpiles contained within the facility – cut and fill slopes.
7. Land Treatment Facility (Hydrocarbon Contaminated Material) including runoff collection sump – liners and fill slopes.
8. Tailings Facility Area Diversion Ditches A & B – cut and fill slopes.

2.0 SCOPE OF SERVICES

With reference to s per e-mail correspondence between YZC and EBA from June 10 to 15, 2009, it was understood that all YZC requires at this time is a brief statement about the geotechnical stability including a few photos for each area of interest.

EBA scope of service was as follows:

- Complete a visual inspection of the earth structures associated with each area of interest.

- Complete a photo log for each area of interest.
- Prepare an inspection report with a brief statement about the geotechnical and stability conditions for each area of interest.

3.0 FIELD INSPECTION

The field inspection was completed by Mr. Chad Cowan, P.Eng. of EBA between June 16 to 18, 2009. The following is a brief inspection summary detailing any stability issues including a few photos of each area. EBA was not able to inspect all of the areas listed in Section 1.0 because some of them had yet to be constructed or were under construction.

3.1 INDUSTRIAL COMPLEX

Most of this area is still under construction but a preliminary inspection of the slopes was completed for the Mill, Fuel Storage and Generator locations. The 1:1 (H:V) design cut slopes in the bedrock for these areas are considered stable. Along the cut slope between Ditch #1 and the Mill Pad the original design also called for a 1:1 slope, which is too steep for the material that was encountered during the excavation. In this area a frozen coluvium material was exposed and started to thaw causing failure and sloughing of the slope. YZC has completed temporary repair to reduce any further damage to the affected area. This repair work consisted of excavating the sloughed material, and covering the slope with geotextile and rock. It has been suggested that the long term solution will be to reconstruct an engineered fill with a more gradual slope, from the toe to the crest, along the affected area. YZC was informed and will carry out remedial actions.

During the inspection, fill was still being placed along the south western sides. The fill slopes associated with the fill placement are considered stable and are constructed as per the 2:1 (H:V) design. There are some noticeable erosion channels along the south western side of the Mill fill that were created during the recent heavy rainfalls. Final design incorporates proper grading to divert surface runoff towards designated drainage ditches. Until this final grading occurs the erosion channels should be filled in with coarse grained material.



Photo 1: Looking W at excavation and fill placement at the Mill Site.



Photo 2: Looking NW at excavator repairing downslope of Ditch 1.



Photo 3: Looking SE at cut slope for Fuel Storage and Generator Pads.



Photo 4: Looking down the cut slope at the Fuel Storage and Generator Pads.

3.2 INDUSTRIAL COMPLEX SURFACE AND UNDERGROUND WATER TREATMENT SUMPS (1, 2, 3, 4 AND 5)

The foundations for all five sumps were inspected and EBA determined that they were in a stable condition.

Sumps 1, 2 and 3 were constructed prior to 2009 and are situated within covered enclosures. All three sumps had noticeable settlement of the backfill along the perimeter liner key trench and buried propane lines - in some areas up to 150 mm of settlement. This settlement is an indication that the key trench and buried propane line backfill material was not compacted to specification during placement. There is no immediate attention required to filling these settlement areas but filling of these depressions would increase the perimeter grade elevations and reduce the amount of outside surface runoff from flowing into the sump. YZC was informed of these conditions and will carry out repairs as soon as possible. All three sumps were full of water during the time of the inspection so it was not possible to inspect the condition of the liners, but from what was visible there was no noticeable slumping of the liner slope. I was also told that there is a lot of sediment covering the bottom of each liner which would also make it difficult to inspect.

Sumps 4 and 5 were constructed earlier this spring and presently are not in covered enclosures. During the inspection the surface of the backfill along the perimeter of each sump was soft, which indicates that the backfill material was not compacted during placement. Presently there are no indications of fill deterioration but this area should be monitored and repaired as required. During the inspection Sump 4 was full of water and Sump 5 was empty. Sump 4's liner was not able to be inspected but from what was visible there was no noticeable slumping. A visual inspection of Sump 5's liner confirmed that there were no issues with the recent installation.



Photo 5: Looking NE from the western corner of Sump 1. Notice the settlement along the perimeter.



Photo 6: Looking at the NE corner of Sump 2 where there is noticeable settlement of the backfill over the buried propane line.



Photo 7: Looking at the liner key trench settlement along the perimeter of Sump 3.



Photo 8: Looking at the seepage that is flowing in from beyond the perimeter of Sump 3's enclosure.



Photo 9: Notice the foot prints in the backfill material at Sump 4, which indicates that there was no compaction during placement.



Photo 10: Looking west at Sumps 4 and 5. Sump 5 is empty.

3.3 INDUSTRIAL COMPLEX DIVERSION DITCHES (1 AND 6)

Both Diversion Ditches 1 and 6 were under construction during the inspection.

3.4 INDUSTRIAL COMPLEX COLLECTION DITCHES (2, 3, 4 AND 5)

Only the lower portion of Collection Ditch 2 had been completed and this portion still required welding of the liner seams. Collection Ditches 3 and 4 were complete with the exception of the liner seams requiring welding. Along Ditch 4 there was a noticeable area where a large tension crack started to form along the western downslope between STA 0+070 and STA 0+170. YZC was immediately made aware of this situation and repair work commenced right away. Collection Ditch 5 was still under construction.



Photo 11: Looking East at the lower portion of Collection Ditch 2.



Photo 12: Looking NW at the alignment along Collection Ditch 3.



Photo 13: Looking SE at the alignment along Collection Ditch 4.



Photo 14: Looking SE at the tension crack along the downslope side of Collection Ditch 4.

3.5 MINE CAMP PAD AREA INCLUDING UPPER GENERATOR AND WATER TREATMENT PAD, SEWAGE TREATMENT PLANT PAD AND TREATED EFFLUENT POND

The 2:1 cut and 1.5:1 fill slopes for the camp pad, upper generator and water treatment pad, sewage treatment plant pad, and the treated sewage effluent pond were inspected and all of the slopes were considered stable.

There were some noticeable settlement cracks along the perimeter of the southwest portion of the camp, and upper generator and water treatment pads. It looks as though these areas were constructed during the winter months and during the spring thaw settlement cracks have formed. These areas should be monitored and repaired as required.

The treated effluent pond liner could not be inspected because the pond was full. The visible portion of the liner showed no indications of slumping. There was also noticeable settlement of the backfill along the liner key trench which indicates that the backfill material was not compacted during placement.



Photo 15: Looking SE from the NW corner of the Camp pad along the fill slope.



Photo 16: Looking NW from the SE corner along the back slope of the Camp pad.



Photo 17: Looking NW along the south west portion of the Camp pad at the area where settlement cracks have formed after spring thaw.



Photo 18: Looking at the settlement of the backfill material along the liner key trench of the treated effluent pond.

3.6 TEMPORARY WASTE ROCK AND ORE STORAGE FACILITY

All of the cut and fill slopes were inspected and considered stable. The collection sump was also inspected and at the time was full of runoff water.



Photo 19: Looking SE at the Waste Rock and Ore Stockpile area.



Photo 20: Looking east at the runoff collection sump for the waste rock end of the stockpile area.

3.7 LAND TREATMENT FACILITY (HYDROCARBON CONTAMINATED MATERIAL) INCLUDING RUNOFF COLLECTION SUMP

The berms and the liner were inspected and there was no noticeable deterioration of the berms or damage to the exposed liner. The land treatment facility was 30% to 40% full of hydrocarbon contaminated material and the collection sump was about 75% full.



Photo 21: Looking north at the LTF.



Photo 22: Looking west at the runoff collection sump that is located in the western corner of the LTF.

3.8 TAILINGS FACILITY AREA DIVERSION DITCHES A & B

The Tailings Facility Diversion Ditches A and B were inspected and the fill portions (downslope sides) of both trenches had settlement cracks throughout. It is thought that the construction of the ditches was completed in late Fall - early Winter and the cracks formed in the uncompacted fill during the spring thaw. There is no immediate concern for these settlement cracks but they should be monitored and repaired before the Fall of 2009.

The upslope sides of both ditches were considered stable with the exception of two areas of localized sloughing, one area along the Ditch A and one area along Ditch B. There is no immediate concern but these areas should be monitored and should be repaired prior to Fall 2009. YZC was advised and will carry out remedial actions.

The buried CSP culvert portions of both Ditch A and B were also inspected and there was noticeable settlement depressions along both alignments that indicates that the pipes were installed in the late Fall – early Winter months. There is no immediate concern but the backfill along these alignments should be graded and compacted to reduce future erosion and settlement problems.



Photo 23: Looking south at the settlement cracks in the downslope fill portion of Ditch A.



Photo 24: Looking SE at the settlement cracks in the downslope portion of the Ditch B.



Photo 25: Looking SE at the cut slope of Ditch A. Notice the sloughing of the slope.



Photo 26: Looking SW at the cut slope of Ditch B at an area that is starting to slough.



Photo 27: Looking SE at the buried CSP culvert alignment of Ditch A.



Photo 28: Looking south at the buried CSP culvert alignment of Ditch B.

4.0 CLOSURE

This report and its contents are intended for the sole use of YZC and their agents. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than YZC, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in the General Conditions attached.

Yours truly,
EBA Engineering Consultants Ltd.





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GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

7.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgemental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

8.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

9.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

10.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

11.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

12.0 DRAINAGE SYSTEMS

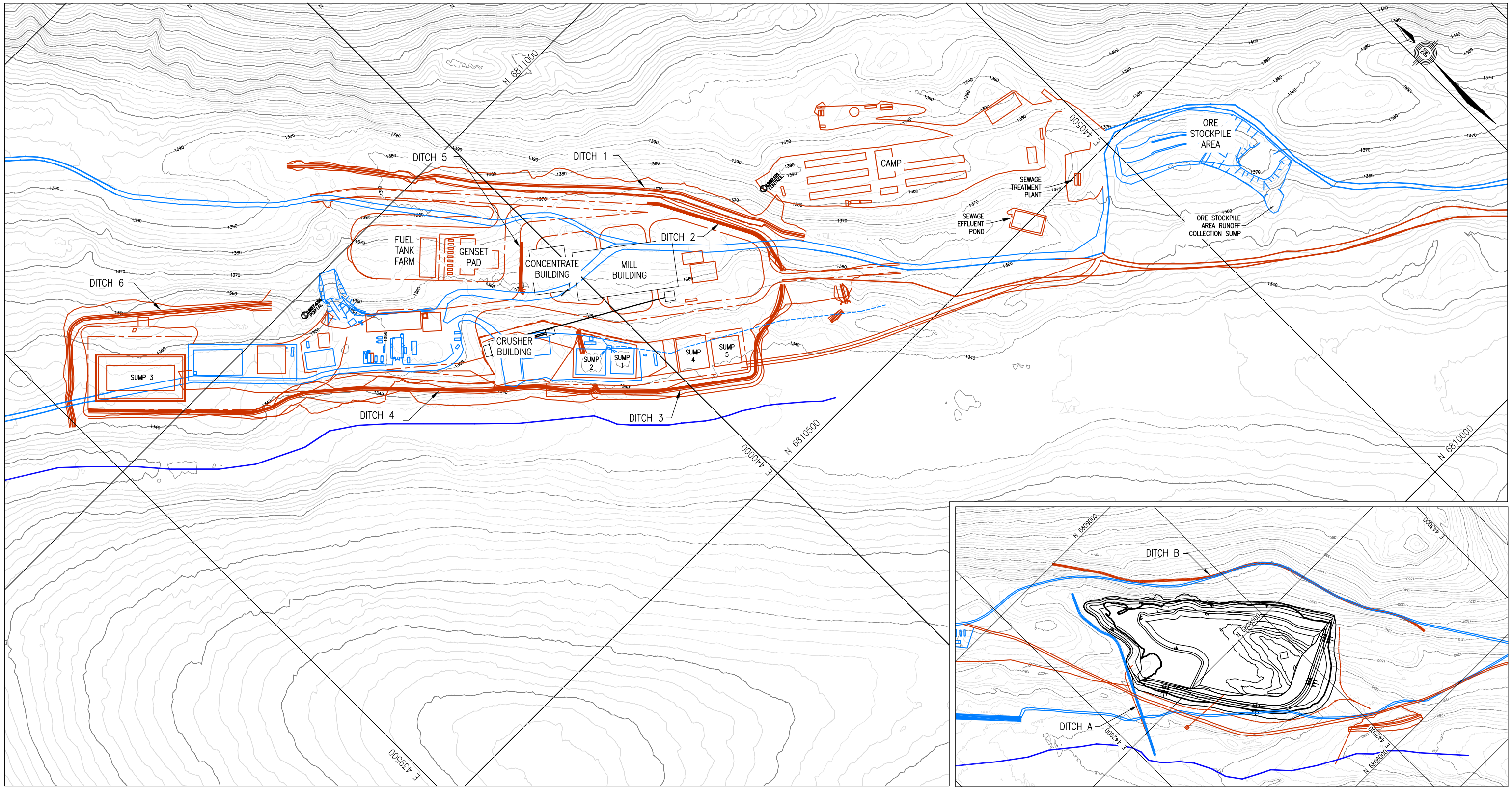
Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

13.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

14.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.



MILL AND CAMP SITES
SCALE 1 : 4,000

TAILINGS AREA
SCALE 1 : 10,000

0 200
Scale: 1: 4 000 (metres)

CLIENT
YukonZinc CORP

Wolverine Mine Stability Assessment
Wolverine Mine, South Eastern Yukon

Site Plan Showing Inspection Locations

EBA Engineering Consultants Ltd.

PROJECT NO.	DWN	CKD	REV
W14101095.006	JSB	CPC	0
OFFICE: WHSE	DATE: July 9, 2009		

Figure 1

C:\Whitehorse\Data\2201drawings\Campbell Hwy\W14101095.006 Wolverine Mine\W14101095006 Figure 1.dwg [FIGURE 1] July 09, 2009 - 4:58:59 pm (BY: JAMES BUYCK)

Appendix C: Water Use Licences QZ01-051 and QZ04-065 2009 Annual Reports

WOLVERINE PROJECT

TYPE A WATER LICENCE QZO4-065

ANNUAL REPORT 2009

Prepared by:

Yukon Zinc Corporation

Vancouver, British Columbia

February 11, 2010

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1 Introduction

This annual report has been prepared to satisfy requirements contained within Yukon Water Board Type A Water Licence QZ04-065 (Licence), and specifically provides information with respect to Licence Conditions 12, 13, 34, 41 & 42 and Schedule A for the year 2009. The conditions are as follows:

Condition 12: Annual reports shall be submitted to the Board by the Licensee. The first report shall be for the period from the effective date of the licence to December 31, 2008. Subsequent reports shall be for each calendar year. Annual reports will be submitted to the Board on or before February 28 of the following year.

Condition 13: Annual reports shall include the information required by this licence and by the Regulation, including but not necessarily limited to:

a) Summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances from baseline conditions or from previous years' data, and

b) a detailed record of any major maintenance work carried out or planned to be carried out that could have an impact on water.

Condition 34: As part of each annual report, the Licensee shall report on the status of the Decommissioning and Reclamation Plan and shall submit any updates to the Plan that have occurred since the previous submission.

Condition 41: Monitoring and inspection of all water retaining structure shall be carried out by a Professional Engineer licenced to practice in the Yukon and in accordance with the monitoring plan submitted as part of the Application. A report on the monitoring and inspection, prepared by the Professional Engineer, shall be submitted as part of each annual report. The report shall document in the inspection locations and methodologies, the results of the inspection, all problems indentified, and remedial measures recommended in the previous year's report shall be appended to the report together with an explanation regarding any recommendation not implemented.

Condition 42: Details of any maintenance, inspection and/or surveillance activities undertaken in the previous year in relation to dam safety shall be included in the annual report.

1.1 2009 A Licence Submissions

In 2009, Yukon Zinc Corporation (YZC) submitted documents to the Yukon Water Board as per Licence requirements. The documents and the corresponding Licence conditions and submission dates are summarized by licence condition in Table 1-1.

Table 1-1 Document Submissions under Licence QZ04-065

A Licence Condition No.	Submission Requirements and Details	Date Submitted
#10	Annual Report - October 2007 through December 2008	17-Feb-09
#14	Monthly Monitoring Report (Dec 08)	26-Jan-09

A Licence Condition No.	Submission Requirements and Details	Date Submitted
#14	Monthly Monitoring Report (Jan 09)	27-Feb-09
#14	Monthly Monitoring Report (Feb 09)	30-Mar-09
#14	Monthly Monitoring Report (March 09)	30-Apr-09
#14	Monthly Monitoring Report (April 09)	28-May-09
#14	Monthly Monitoring Report (May 09)	29-Jun-09
#14	Monthly Monitoring Report (June 09)	31-Jul-09
#14	Monthly Monitoring Report (July 09)	24-Aug-09
#14	Monthly Monitoring Report (Aug 09)	30-Sep-09
#14	Monthly Monitoring Report (Sept 09)	23-Oct-09
#14	Monthly Monitoring Report (Oct 09)	01-Dec-09
#14	Monthly Monitoring Report (Nov 09)	31-Dec-09
#15	Spill Contingency Plan V2009-02	04-Sep-09
#16	RPT: Spill Report March 23 Diesel at Tailings storage facility	02-Apr-09
#16	RPT: Update to March 23 Spill Report	07-Apr-09
#16	RPT: Spill Report Sept 14- portal tank fuel lead, unknown amount	29-Sep-09
#16	RPT: Spill Report Sept 19- unauthorized discharge of effluent to Go Creek	29-Sep-09
#16	RPT: Spill Report Dec 5- Antifreeze spill at gatehouse	07-Dec-09
#31	Minor modification to the design submitted to the Board (decommissioning of PDS & PCS)	02-Feb-09
#31	Minor modification to the design submitted to the Board (for numerous components as detailed in General Site Plan V2008-04)	12-Mar-09
#31	Minor modification to the design submitted to the Board (Sewage treatment plant sump)	23-Mar-09
#31	Minor modification to the design submitted to the Board (Diversion Ditch #1)	25-Mar-09
#31	Minor modification to the design submitted to the Board (Collection Ditches #3 & #4)	01-Apr-09
#31	Minor modification to the design submitted to the Board (Temporary Construction Camp (70 people))	03-Apr-09
#31	Minor modification to the design submitted to the Board (Burying Sump #3 pipeline)	06-Apr-09
#31	Minor modification to the design submitted to the Board (for numerous components as detailed in the Tailings Facility Design and Construction Plan)	14-Apr-09
#31	Minor modification to the design submitted to the Board	28-Apr-09

A Licence Condition No.	Submission Requirements and Details	Date Submitted
	(Temporary Construction Camp increase to 80 people)	
#31	Minor modification to the design submitted to the Board	09-Sep-09
	(Collection Ditches #2 & #5)	
#31	Minor modification to the design submitted to the Board (Tailings and Reclaim pipeline)	23-Nov-09
#31	Minor modification to the design submitted to the Board (Dewatering wells, freshwater supply & freshwater pond)	23-Dec-09
#33	As-constructed report - Sump #3	24-Feb-09
#33	As-constructed report - Mill bypass road	09-Jun-09
#33	As-constructed report - STP sump	29-Jun-09
#33	As-constructed report - Ditch A & B	29-Jun-09
#33	As-constructed report - Ditch #3 & #4	02-Oct-09
#40	Provision of coordinates for monitoring points MW09-8M	21-Sep-09

2 Water Quality Monitoring Program

The water quality monitoring program and results, as per Schedule A of the Licence, for 2009 are summarized below.

2.1 Monitoring Stations and Monitoring Schedule Frequency

The intent of the Monitoring and Surveillance Program (Program) is to monitor and report on water used from Go Creek and water discharged to either Go Creek or Wolverine Creek from activities associated with the quartz mining and milling.

Monitoring station locations, water quality sampling frequency, flow monitoring requirements and parameter sampling requirements are summarized in Table 2-1. Monitoring station locations for surface water quality and flow, and groundwater are provided in Figure 2-1 and Figure 2-2, respectively.

Water quality sample parameters are as follows:

- FP – Field physical parameters (temperature, conductivity, specific conductivity, pH)
- LP – Laboratory physical parameters (temperature, conductivity[1], specific conductivity, pH)
- TSS – Total Suspended Solids
- CN – Total cyanide and WAD cyanide

[1] Accredited laboratories are only able to analyze for specific conductivity (conductivity standardized to a specific temperature), and as such, specific conductivity, and not conductivity, will be measured in the laboratory.

- MA – Major anions (Total Alkalinity, Total Acidity, Bromide, Chloride, Fluoride, Sulphate)
- NP – Nutrient parameters (Ammonia-N, Nitrate-N, Nitrite-N, Dissolved ortho-phosphate)
- TM – ICP Trace Metals Scan (Total Metals) plus Hardness. Metals include Al, Sb, As, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, V, Zn
- DM - ICP Trace Metals Scan (Dissolved Metals). Metals include Al, Sb, As, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, V, Zn
- DOC – Dissolved Organic Carbon
- Ra 226 – Radium 226

Table 2-1 Surveillance Network Monitoring Sampling Requirements

Component and Station No.	Sampling Frequency	Sample Parameters	Flow Monitoring Frequency
Wolverine Creek Watershed – W82, W9, W1, L1, W21, W8	Monthly[1]	FP, LP, TSS, MA, NP, TM, DM, DOC[2]	Continuous/Monthly[3]
Go Creek Watershed – W31, W16, W15, W81, W80, W12	Monthly[4]	FP, LP, TSS, CN[5], MA, NP, TM, DM, DOC[5]	Monthly/Continuous[6]
Money Creek Watershed – W14, W22, W40	Monthly	FP, LP, TSS, MA, NP, TM, DM	Continuous[7]
Road Route – W71, W72, W73	Monthly	FP, LP, TSS, MA, NP, TM, DM	N/A
Tailings Facility – T1, R1, R2	Monthly/Daily[8]	FP, LP, TSS, CN, MA, NP, TM, DM, DOC[9], Ra226[9]	Monthly/Continuous[10]
Groundwater Wells	Quarterly/Monthly[11]	FP, LP, MA, NP, TM[12], DM	Water level – Quarterly/Monthly/Annually[11]

Notes:

1. Sampling requirements for W82 and W9 are weekly when discharging into Wolverine Creek.
2. DOC is not required for W8 and W21.
3. Continuous flow monitoring is required at W82, W9 and W21, and monthly at W8.
4. Daily water quality sampling is required at W80 when discharging from the retention pond.
5. CN and DOC only required at W31 and W16.
6. Monthly flow monitoring is required at W31, W16, W15 and W81, and continuously at W80 and W12.
7. Continuous flow monitoring is only required at W22 in the Money Creek Watershed.
8. Monthly water quality sampling is required at T1, and daily at R1 when discharging from the retention pond.
9. DOC and Ra226 only required at R1
10. T1 - Monthly water level monitoring; R1 - Continuous water level and volume monitoring; R2 - continuous flow monitoring when discharging from the retention pond.
11. Quarterly during construction, monthly during operations, quarterly during temporary closure and annually during permanent closure.
12. All groundwater samples are filtered to remove impurities caused by sampling, and hence will not be analyzed for total metals (TM).

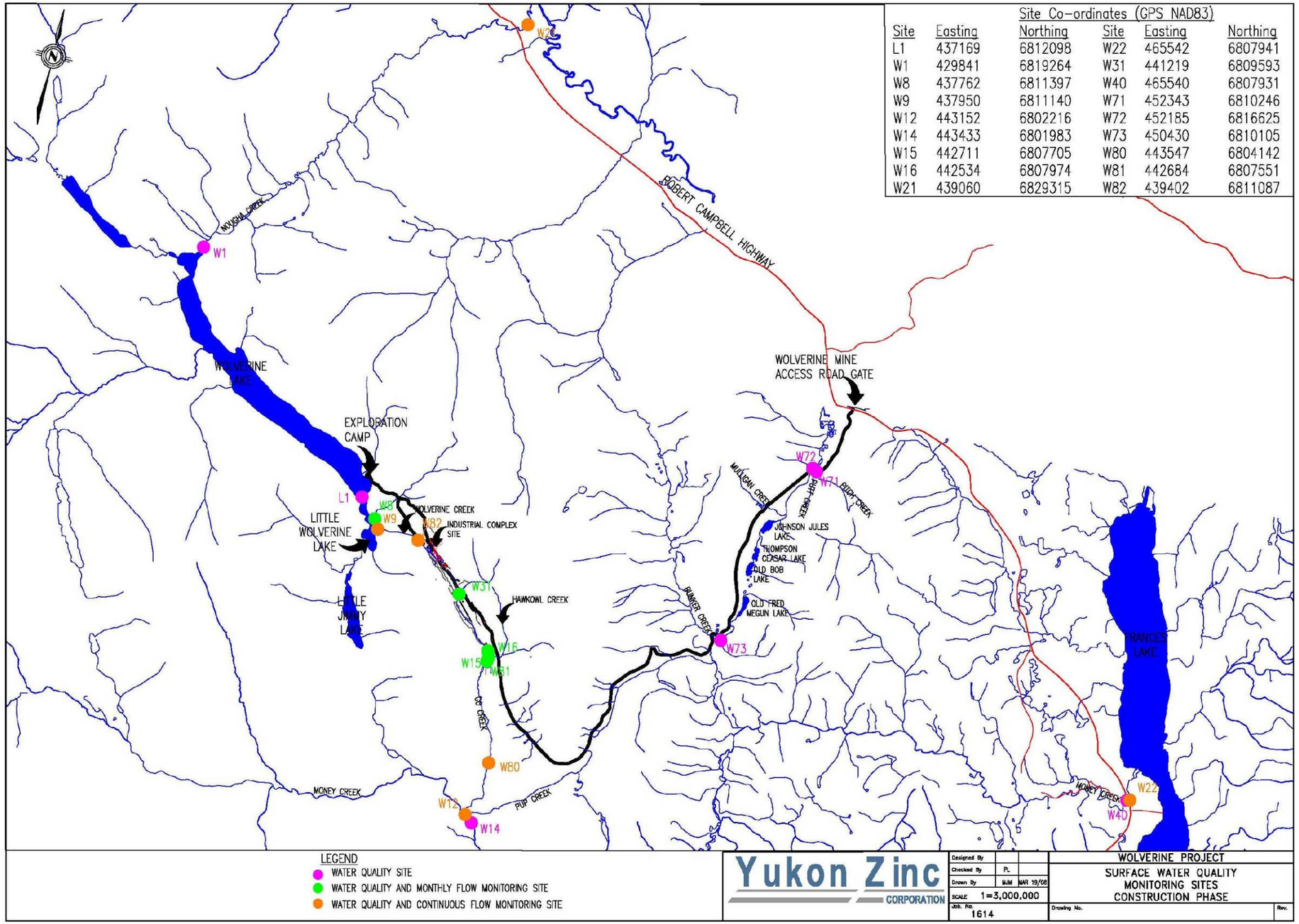


Figure 2-1 Monitoring Stations – Surface water quality, surface flow

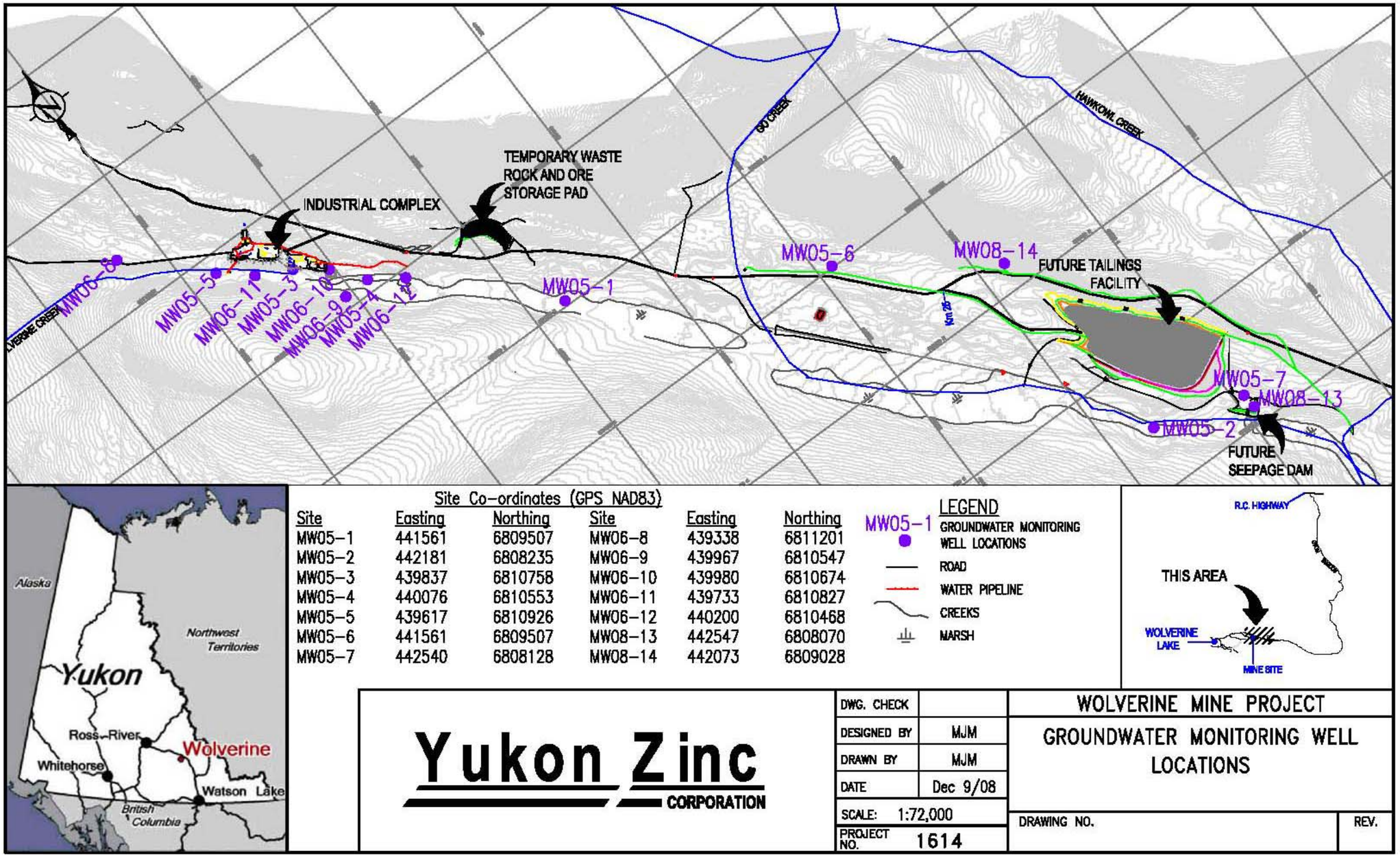


Figure 2-2 Monitoring Stations – Groundwater wells

2.2 Waste Discharges

No discharges were conducted under the Licence; however discharges were conducted under Type B Licence QZ01-051, and will be summarized in the *B-Licence Annual Report 2009* (due April 4, 2010). Pumping of underground effluent to the tailings storage facility did commence in late 2009 once the tailings impoundment construction was complete. Water stored in the facility will provide water for the process plant, which is scheduled to start up in early summer 2010. Water volumes discharged to the facility are summarized in Section 3.

As per the notice of minor modification submitted to the Board December 23rd, 2009, dewatering wells for the purpose of dewatering the underground in advance of mining, were found to not be a feasible option for the Wolverine Project. As such, the freshwater pond (which was to receive water from the dewatering wells) and subsequent discharge to Wolverine Creek is no longer part of the Project. Consequently, the waste discharge standards outlined in Part 27 of the Licence are no longer applicable.

2.3 Monitoring Results

This section summarizes the results of the surface water quality sampling, flow monitoring, and groundwater quality sampling activities for 2009.

2.3.1 Surface Water Monitoring Station Water Quality Results

The surface water quality monitoring sites and dates sampled are presented in Table 2-2. Certain sites were not sampled in the January to May and October to December periods due to lack of safe access with off road vehicles (i.e., snowmobiles or ATVs), or lack of flow (i.e., W31).

Water quality results for surface water are summarized in Tables 2-3, 2-4, 2-5 and 2-6 for the Wolverine Creek, Go Creek and Money Creek watersheds and the road route sites, respectively. The symbol “n/a” indicates that a parameter (i.e. DOC, cyanide + thiocynate) does not require analysis, as summarized in Table 2-1, or is not applicable because it is a field blank. The “-“ symbol indicates a parameter was either not analyzed for by the lab, or measured in the field due to technician error. The suffix “-98” indicates a duplicate, “-99” indicates a field blank taken for QA/QC purposes. The full Maxxam Analytics lab reports are provided in Appendix A.

All sites were sampled as per Table 2-1, with the exception of T1 and R1, as the tailings facility and retention pond were not yet constructed or operational. While the YZC YSI multi-meter probe was in for maintenance service, a rental YSI was used July 8/9, and in October and November, and didn’t measure conductivity or temperature, represented by a “-“ in the below tables.

Analysis and interpretation of the collected data will be conducted as part of the bi-annual data analysis report required for the Quartz Mining Licence QML-0006 Monitoring and Surveillance Plan (to be submitted in early spring 2010). The 2009 data and early 2010 data will comprise the “construction period” and will be compared to baseline data sampled 1995 – 2008 inclusively.

Table 2-2 Surface Water Quality Monitoring Sites and 2009 Dates Sampled

Monitoring Site	L1	W1	W8	W9	W12	W14	W15	W16	W21	W22	W31	W40	W71	W72	W73	W80	W81	W82
January	17-Jan	15-Jan	17-Jan	17-Jan	A	A	A	18-Jan	A	16-Jan	D	A	16-Jan	16-Jan	16-Jan	A	A	18-Jan
February	8-Feb	8-Feb	9-Feb	9-Feb	A	A	28-Feb	28-Feb	11-Feb	11-Feb	D	A	14-Feb	A	A	A	28-Feb	28-Feb
March	28-Mar	21-Mar	D	28-Mar	27-Mar	A	20-Mar	21-Mar	A	22-Mar	D	A	22-Mar	22-Mar	22-Mar	A	20-Mar	21-Mar
April	6-Apr	6-Apr	D	6-Apr	26-Apr	A	25-Apr	10-Apr	11-Apr	11-Apr	D	A	11-Apr	11-Apr	11-Apr	26-Apr	25-Apr	10-Apr
May	A	A	A	A	A	A	16-May	16-May	10-May	10-May	14-May	10-May	10-May	10-May	10-May	A	17-May	14-May
June	15-Jun	15-Jun	15-Jun	15-Jun	14-Jun	14-Jun	17-Jun	8-Jun	7-Jun	7-Jun	17-Jun	7-Jun	19-Jun	19-Jun	8-Jun	14-Jun	17-Jun	17-Jun
July	17-Jul	17-Jul	17-Jul	8-Jul	12-Jul	12-Jul	8-Jul	8-Jul	15-Jul	15-Jul	17-Jul	15-Jul	16-Jul	16-Jul	16-Jul	9-Jul	8-Jul	8-Jul
August	8-Aug	8-Aug	8-Aug	8-Aug	2-Aug	2-Aug	9-Aug	9-Aug	7-Aug	7-Aug	9-Aug	7-Aug	7-Aug	7-Aug	7-Aug	9-Aug	9-Aug	10-Aug
September	5-Sep	2-Sep	4-Sep	3-Sep	4-Sep	3-Sep	5-Sep	5-Sep	4-Sep	4-Sep	6-Sep	4-Sep	4-Sep	4-Sep	3-Sep	3-Sep	5-Sep	6-Sep
October	17-Oct	A	23-Oct	23-Oct	3-Oct	3-Oct	15-Oct	15-Oct	6-Oct	6-Oct	11-Oct	6-Oct	6-Oct	6-Oct	6-Oct	2-Oct	15-Oct	10-Oct
November	A	A	16-Nov	16-Nov	25-Nov	25-Nov	15-Nov	3-Nov	1-Nov	1-Nov	4-Nov	1-Nov	1-Nov	1-Nov	1-Nov	27-Nov	15-Nov	11-Nov
December	21-Dec	A	23-Dec	21-Dec	26-Dec	26-Dec	24-Dec	8-Dec	18-Dec	19-Dec	17-Dec	19-Dec	19-Dec	19-Dec	19-Dec	11-Dec	24-Dec	10-Dec

A = Site not sampled due to lack of safe access

D = Site dry (i.e., all water tied up in storage) or frozen through

Table 2-3 2009 Wolverine Creek Watershed Surface Water Quality Results

Sample location		L1	L1	L1	L1	L1	L1	L1	L1-99	L1	L1	L1	L1-98	W1	W1	W1	W1	W1	W1	W1	W1-98	W1	W8	W8	W8	W8
Sampling Date		17-Jan-09	8-Feb-09	28-Mar-09	6-Apr-09	15-Jun-09	17-Jul-09	8-Aug-09	8-Aug-09	5-Sep-09	17-Oct-09	21-Dec-09	21-Dec-09	15-Jan-09	8-Feb-09	21-Mar-09	6-Apr-09	15-Jun-09	17-Jul-09	8-Aug-09	8-Aug-09	2-Sep-09	17-Jan-09	9-Feb-09	15-Jun-09	17-Jul-09
Lab Report	Units	A902628	A906233	A914684	A916243	A930270	A937394	A942402	A942402	A949310	A959421	A973034	A973034	A902628	A906233	A913452	A916243	A930270	A937394	A942402	A942402	A949310	A902628	A906233	A930270	A937394
Field Physical Parameters																										
Temperature	°C	0.45	0.25	0.35	0.5	11.42	14.42	16.94	n/a	13.56	-	0.67	0.67	0.05	0.46	0.55	0.38	10.47	15.09	16.77	16.77	12.19	0.11	0.09	3.23	4.09
Conductivity	uS/cm	69	52	60	61	62	78	97	n/a	49	-	64	64	112	71	54	73	88	109	125	125	96	109	130	74	97
Specific conductivity	uS/cm3	130	98	114	113	84	98	114	n/a	63	-	34	34	213	133	101	138	122	135	148	148	127	207	248	127	161
pH	pH Units	7.32	6.63	6.56	7.02	7.52	7.5	8.49	n/a	7.75	-	7.01	7.01	7.12	6.89	7.24	7.49	6.94	7.73	8.46	8.46	7.55	7.28	6.84	7.57	6.86
Laboratory Parameters																										
Physical Parameters																										
Temperature	°C	2.7	3.7	6	7	5	1.7	6.7	6.7	2.7	6.7	1.7	1.7	2.7	3.7	7.7	7	5	1.7	6.7	6.7	2.7	2.7	3.7	5	1.7
Conductivity	uS/cm	140	130	140	140	89	110	112	3	122	150	146	142	140	140	150	150	130	140	155	147	155	220	220	140	170
Hardness	mg/L	67.6	66	63.7	65.5	40.2	52.3	55.1	<0.5	56.3	69	69.9	69.8	71.9	67.9	71.7	69	62.2	70.7	76	72.7	74.3	110	106	61.2	84.7
Total Suspended Solids	mg/L	<4	<4	<4	<4	<4	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	4	<4	<4
pH	pH Units	7.9	7.8	7.7	7.7	7.8	7.7	8.0	7.7	7.8	8.0	7.6	7.7	7.9	7.9	7.9	7.9	8.0	8.0	8.0	8.1	7.9	8.0	7.9	8.2	8.0
DOC	mg/L	1.6	2.3	2	2.6	4.6	3	4	<0.5	3.2	2.5	1.8	2.1	3.9	2.3	5	4.6	4.2	4.3	4.5	5.9	4.1	n/a	n/a	n/a	n/a
Major Anions																										
Alkalinity-Total	mg/L	60	58	59	61	37	47	50	2.5	53	64	64	62	63	62	61	62	56	63	66	65	67	96	96	59	76
Acidity-Total	mg/L	0.8	0.7	2.2	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	1.3	<0.5	0.9
Bromide	mg/L	<0.1	<0.1	<0.1	<0.1	0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.4
Chloride	mg/L	1.6	0.6	0.8	1.5	0.7	0.6	1	<0.5	<0.5	0.7	<0.5	0.7	2.1	0.7	<0.5	0.9	0.9	0.5	0.9	0.7	<0.5	0.5	0.6	0.8	<0.5
Fluoride	mg/L	0.08	0.07	0.08	0.09	0.07	0.07	0.07	<0.01	0.07	0.08	0.08	0.12	0.11	0.09	0.1	0.11	0.1	0.1	0.1	0.1	0.1	0.05	0.04	0.03	0.04
Sulphate	mg/L	13	11	10	9.5	8.9	7.7	8.5	<0.5	7.8	10	11	11	13	12	12	12	11	11	12	11	10	20	20	11	12
Nutrient Parameters																										
Ammonial Nitrogen	mg/L	0.044	0.034	0.1	0.028	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.02	0.031	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.086	0.083	0.137	0.297	0.061	0.005	0.041	0.022	0.005	0.002	0.049	0.054	0.015	0.041	0.037	0.04	0.004	0.006	0.008	<0.002	0.012	0.163	0.198	0.07	0.029
Nitrite Nitrogen	mg/L	0.004	0.002	0.005	0.009	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.002	0.003	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Phosphate	mg/L	0.033	0.031	0.026	0.035	0.019	0.01	0.023	<0.005	0.008	<0.005	0.029	0.029	0.01	0.011	0.014	0.005	0.01	<0.005	0.008	0.015	0.009	0.007	0.009	<0.005	0.005
Dissolved Ortho-Phosphate	mg/L	0.011	0.027	0.022	0.029	0.007	0.006	0.01	<0.001	0.001	0.001	0.001	0.001	<0.001	0.003	0.004	0.004	0.002	0.001	0.001	0.004	0.002	0.003	0.002	0.001	0.002
Total Metals																										
Aluminum (Al)	mg/L	0.0087	0.0085	0.0044	0.0145	0.0296	0.0289	0.0177	0.0013	0.0124	0.0044	0.009	0.0051	0.011	0.0067	0.0073	0.0072	0.0132	0.0138	0.0104	0.0097	0.006	0.0141	0.0372	0.0188	0.0142
Antimony (Sb)	mg/L	0.00003	0.00005	0.00006	0.00004	0.00004	0.00005	0.00005	<0.00002	0.00006	0.00005	0.00005	0.00005	0.00005	0.00005	0.00003	0.00004	0.00005	0.00006	0.00006	0.00005	0.00006	0.0001	0.0001	0.00004	0.00005
Arsenic (As)	mg/L	0.00165	0.00148	0.00151	0.00223	0.00105	0.00155	0.00223	<0.00002	0.00203	0.00215	0.0017	0.00172	0.00087	0.00088	0.00085	0.00089	0.00132	0.00189	0.00245	0.00248	0.00224	0.00011	0.00019	0.00011	0.00013
Cadmium (Cd)	mg/L	0.000022	0.000026	0.000034	0.000038	0.000043	0.000056	0.000032	<0.000005	0.000021	0.000027	0.00002	0.000018	0.00001	0.000019	0.000019	0.000016	0.000015	0.000025	0.000018	0.000014	0.000008	0.000057	0.000084	0.000031	0.000074
Calcium (Ca)	mg/L	19.2	18	18.6	19.4	12.2	15.2	16.1	<0.05	16.2	20.4	21.4	21.7	19.9	17.6	18.6	19.1	16.5	18.8	19.7	18.8	18.7	35.3	35.9	20.6	27.1
Chromium (Cr)	mg/L	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	<0.0001	0.0001
Cobalt (Co)	mg/L	0.000022	0.000022	0.000022	0.00006	0.000022	0.000029	0.000027	<0.000005	0.000019	0.000012	0.00004	0.000025	0.000015	0.000017	0.000017	0.000011	0.00002	0.000023	0.000039	0.000021	0.000018	0.000021	0.000062	0.000031	0.000027
Copper (Cu)	mg/L	0.00029	0.00024	0.00036	0.00033	0.00066	0.00069	0.0006	0.00053	0.0006	0.00041	0.0003	0.00028	0.0011	0.00073	0.00063	0.00056	0.00071	0.00077	0.00068	0.00062	0.00057	0.00062	0.00111	0.00132	0.00119
Iron (Fe)	mg/L	0.182	0.184	0.237	0.48	0.069	0.109	0.112	<0.001	0.117	0.055	0.294	0.275	0.037	0.025	0.033	0.032	0.055	0.053	0.047	0.047	0.044	0.035	0.145	0.019	0.016
Lead (Pb)	mg/L	0.000035	0.000021	0.000078	0.000092	0.000024	0.000065	0.000036	0.00002	0.000087	0.000012	0.000021	0.000008	0.000121	0.000082	0.00007	0.000088	0.000021	0.000055	0.000032	0.000009	0.000013	0.0001	0.000207	0.00004	0.000123
Magnesium (Mg)	mg/L	3.79	3.91	4.17	4.13	2.39	3.14	3.4	<0.05	3.49	4.36	4.55	4.57	5.69	4.98	5.04	5.14	5.08	5.72	6.46	6.23	6.1	5.23	5.42	2.34	3.26
Manganese (Mn)	mg/L	0.0537	0.0457	0.0622	0.131	0.0174	0.0242	0.0146	<0.00005	0.0128	0.0409	0.0717	0.064	0.00462	0.00396	0.00438	0.00487	0.0115	0.012	0.0111	0.0108	0.0106	0.00329	0.00962	0.00134	0.00138
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00123	0.001	0.00102	0.001	0.00077	0.00087	0.001	<0.00005	0.00109	0.0011	0.00122	0.00113	0.0011	0.00103	0.00097	0.00101	0.00093	0.00109	0.00107	0.00105	0.00115	0.00054	0.00048	0.00039	0.00053
Nickel (Ni)	mg/L	0.00044	0.00037	0.00043	0.00046	0.00054	0.0007	0.00053	0.00012	0.00065	0.00048	0.0005	0.00051	0.00109	0.00095	0.00102	0.00104	0.00126	0.00124	0.00122	0.0011	0.00106	0.00049	0.00073	0.00053	0.00068
Phosphorus (P)	mg/L	0.035	0.031	0.032	0.06	0.02	0.022	0.03	<0.002	0.026	0.024	0.045	0.037	0.009	0.011	0.008	0.008	0.012	0.019	0.012	0.012	0.014	0.006	0.009	0.004	0.004
Potassium (K)	mg/L	0.89	0.83	0.86	0.9	0.59	0.61	0.64	<0.05	0.61	0.82	1.01	0.98	1.31	1.2	1.21	1.22	0.98	1.03	1.01	0.98	0.99	0.45	0.48	0.29	0.29
Selenium (Se)	mg/L	0.00039	0.00045	0.00039	0.00038	0.00034	0.00045	0.00046	<0.00004	0.00051	0.00047	0.00043	0.00041	0.00038	0.00047	0.0004	0.00039	0.00037	0.00041	0.00041	0.0004	0.00041	0.00129	0.00154	0.00051	0.00068
Silicon (Si)	mg/L	4.25	3.7	3.99	4.01	2.49	2.4	2.17	<0.1	2.19	3.11	4.22	4.22	2.83	2.96	2.66	2.89	2.05	2.22	1.76	1.78	1.81	3.23	3.56	2.23	2.7
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.01	1.01	1.08	1.06	0.68	0.92	0.87	0.37	0.88	1.06	1.27	1.25	1.52	1.36	1.2	1.2	1.05	1.11	1.15	1.12	1.1	1.15	1.34	0.85	1.12
Strontium (Sr)	mg/L	0.0498	0.0452	0.0475	0.0476	0.029	0.0397	0.0426	0.00026	0.0419	0.0509	0.0535	0.0542	0.061	0.0557	0.0551	0.0571	0.0514	0.0597	0.0632	0.0624	0.0625	0.0751	0.0811	0.0408	0.0553
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.004	0.0041	0.0044	0.0056	0.005	0.0049	0.0029	0.0004	0.0034	0.0038	0.0039	0.0034	0.0039	0.0027	0.016	0.0031	0.0024	0.003	0.0014	0.0013	0.0009	0.0045	0.0063	0.0039	0.0063
Dissolved Metals																										
Aluminum (Al)	mg/L	0.0064	0.0029	0.0028	0.0039	0.0238	0.0143	0.0129	0.0009	0.0073	0.0021	0.0028	0.0026	0.0044	0.0086	0.0054	0.0043	0.0128	0.0127	0.0088	0.008	0.0042	0.0071	0.0044	0.0109	0.0067
Antimony (Sb)	mg/L	0.00005	0.00005	0.00007	0.00004	0.00004	0.00005	0.00005	<0.00002	0.00005	0.00006	0.00004	0.00004	0.00004	0.00004	0.00003	0.00004	0.00006	0.00006	0.00005	0.00005	0.00006	0.0001	0.00009	0.00004	0.00005
Arsenic (As)	mg/L	0.00137	0.00125	0.00123	0.00126	0.00091	0.00136	0.00214	<0.00002	0.00179	0.00175	0.00128	0.0013	0.0008	0.00087	0.00084	0.00086	0.00117	0.0018	0.00237	0.00232	0.00212	0.00011	0.00014	0.0001	0.00014
Cadmium (Cd)	mg/L	0.000018	0.000026	0.000025	0.000029	0.000023	0.000024	0.000019	<0.000005	0.000017	0.000016	0.000015	0.000012	0.000011	0.000017	0.000017	0.000019	0.000012	0.000115	0.000023	0.00001	0.00001	0.00006	0.000049	0.000019	0.000043
Calcium (Ca)	mg/L	19.9	19.4	19	19.6	11.7	15.5	16.4	0.06	16.6	21	20.8	20.8	19.7	18.8	19.7	18.9	17.8	18.6	19.7	18.8	19.5	35.7	34.5	20.3	28.2
Chromium (Cr)	mg/L	<0.0001	0.0011	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	0.0012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000022	0.000018	0.000031	0.000033	0.000014	0.000014	0.000024	<0.000005	0.000014	<0.000005	0.000021	0.000023	0.000011	0.000009	0.000012	0.000008	0.000019	0.000031	0.00002	0.00002	0.000023	0.000018	0.000014	0.000018	0.000012
Copper (Cu)	mg/L	0.00198	0.00041	0.00029	0.0003	0.00082	0.00071	0.00056	0.00036	0.00051	0.0003	0.00023	0.00024	0.00069	0.00069	0.00051	0.00058	0.00083	0.00093	0.00065	0.00064	0.0006	0.00065	0.00053	0.00144	0.00099
Iron (Fe)	mg/L	0.118	0.111	0.147	0.17	0.042	0.031	0.067	<0.001	0.07	0.01	0.131	0.119	0.013	0.017	0.015	0.02	0.037	0.026	0.024	0.025	0.023	0.015	0.009	0.005	0.005
Lead (Pb)	mg/L	0.00025	0.000093	0.000061	0.000108	0.000029	0.000025	0.000031	0.00003	0.000018	<0.000005	<0.000005	<0.000005	0.000089	0.000076	0.000083	0.000133	0.000053	0.000111	0.000066	0.000015	0.000012	0.000072	0.00002	0.00001	0.000007
Magnesium (Mg)	mg/L	4.33	4.3	4.16	4.24	2.44	3.31	3.4	<0.05	3.63	4.5	4.39	4.36	5.53	5.1	5.45	5.26	5.47	5.86	6.53	6.24	6.2	5.2	4.83	2.35	3.49
Manganese (Mn)	mg/L	0.0516	0.0417	0.0614	0.0706	0.00867	0.00497	0.00835	0.00008	0.00527	0.00268	0.0548	0.0552	0.00395	0.00383	0.00462	0.00465	0.00648	0.00346	0.00435	0.00429	0.00314	0.00252	0.00121	0.00027	0.00082
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00114	0.00107	0.00099	0.00108	0.00077	0.00088	0.00099	<0.00005	0.00107	0.00107	0.00108	0.00106	0.00115	0.00112	0.00102	0.00106	0.00105	0.00111	0.00107	0.00108	0.00116	0.00059	0.00055	0.0004	0.0005
Nickel (Ni)	mg/L	0.00045	0.00039	0.00046	0.00057	0.00042	0.00057	0.0005	0.00021	0.00047	0.00046	0.00045	0.00045	0.00109	0.00103	0.00109	0.00102	0.00149	0.00131	0.0011	0.00121	0.00117	0.00047	0.00044	0.00053	0.00054
Phosphorus (P)	mg/L	0.023	0.023	0.024	0.025	0.015	0.013	0.024	<0.002	0.02	0.014	0.025	0.022	0.009	0.008	0.006	0.006	0.012	0.01	0.009	0.009	0.01	0.005	0.003	0.004	<0.002
Potassium (K)	mg/L	0.95	0.9	0.9	0.92	0.58	0.62	0.65	<0.05	0.63	0.84	0.96	0.95	1.33	1.27	1.3	1.21	1.11	1.06	1.03	0.99	1.06	0.46	0.45	0.29	0.3
Selenium (Se)	mg/L	0.00037	0.00039	0.00037	0.0004	0.00035	0.00046	0.00045	<0.00004	0.00047	0.00044	0.00039	0.00035	0.00038	0.00037	0.00042	0.00038	0.00033	0.00041	0.00038	0.00038	0.00037	0.00124	0.00142	0.00054	0.00071
Silicon (Si)	mg/L	3.44	4.07	4.01	3.36	2.35	2.24	2.29	<0.1	2.03	3.01	4.29	4.03	2.76	2.53	2.84	2.49	2.68	2.17	1.83	1.65	1.83	3.06	2.88	1.97	2.8
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.18	1.28	1.13	1.19	0.7	0.87	0.89	0.41	0.91	1.1	1.19	1.18	1.5	1.35	1.31	1.27	1.08	1.44	1.18	1.13	1.12	1.17	1.03	0.85	1.06
Strontium (Sr)	mg/L	0.0512	0.0506	0.0488	0.0503	0.0292	0.0401	0.0424	0.00034	0.0442	0.0538	0.0515	0.051	0.0629	0.0603	0.0576	0.0584	0.0578	0.0608	0.0635	0.0642	0.0652	0.078	0.0773	0.0416	0.0582
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0056	0.0044	0.0048	0.0074	0.0041	0.0021	0.002	0.0018	0.0014	0.0024	0.0031	0.003	0.0034	0.0028	0.128	0.003	0.0034	0.0036	0.002	0.0014	0.0008	0.0071	0.0052	0.0039	0.0039

Sample location		W8	W8	W8	W8	W8	W9	W9	W9	W9	W9	W9	W9	W9	W9	W9	W9	W21	W21	W21	W21	W21	W21	W21	W21	W21	W21
Sampling Date		**8-Aug-09**	**4-Sep-09**	**23-Oct-09**	**16-Nov-09**	**23-Dec-09**	**17-Jan-09**	**9-Feb-09**	**28-Mar-09**	**6-Apr-09**	**15-Jun-09**	**8-Jul-09**	**8-Aug-09**	**3-Sep-09**	**23-Oct-09**	**16-Nov-09**	**21-Dec-09**	**11-Feb-09**	**11-Apr-09**	**10-May-09**	**7-Jun-09**	**15-Jul-09**	**7-Aug-09**	**4-Sep-09**	**6-Oct-09**	**1-Nov-09**	**18-Dec-09**
Lab Report	**Units**	**A942402**	**A949310**	**A961093**	**A965984**	**A973517**	**A902628**	**A906233**	**A914684**	**A916243**	**A930270**	**A935359**	**A942402**	**A949310**	**A961093**	**A965984**	**A973034**	**A907297**	**A917065**	**A922441**	**A928455**	**L793547**	**A941870**	**A949310**	**A956923**	**A962842**	**A973034**
Field Physical Parameters																											
Temperature	°C	5.14	4.16	-	-	0.03	0.04	0.1	0.04	0.01	3.97	4.91	3.75	3.3	note 2	note 1	0.02	0.05	0.02	1.44	8.32	11.73	13.64	7.8	2.8	note 1	0.03
Conductivity	uS/cm	123	91	-	-	120	122	151	63	418	123	-	147	146	note 2	note 1	275	89	113	81	91	129	152	119	104	note 1	210
Specific conductivity	uS/cm3	197	152	193	179	65	234	287	120	799	205	232	244	225	198	247	144	171	216	148	134	172	195	177	181	217	110
pH	pH Units	7.2	6.94	7.69	6.27	7.44	7.41	7.39	7.57	7.81	7.68	7.75	6.58	6.75	8.11	6.91	7.7	6.44	7.59	7.61	7.55	7.64	7.59	7.3	5.87	7.67	7.86
Laboratory Parameters																											
Physical Parameters																											
Temperature	°C	6.7	2.7	1	1	2	2.7	3.7	6	7	5	7	6.7	2.7	1	1	1.7	2.3	2.7	5.7	10.3	3	3	2.7	1.7	5	1.7
Conductivity	uS/cm	190	183	204	209	219	290	290	310	900	220	240	263	276	297	288	306	220	230	160	140	186	201	215	216	227	223
Hardness	mg/L	93.7	89.9	101	109	107	145	147	143	475	104	127	134	136	151	157	177	117	116	78.5	64.8	94.9	95.9	108	108	112	114
Total Suspended Solids	mg/L	<4	<4	<4	<4	<4	<4	<4	11	7	<4	4	<4	<4	<4	<4	<4	<4	<4	14	7	<3.0	<4	<4	<4	<4	<4
pH	pH Units	7.7	7.9	8.0	8.1	8.0	8.1	8.2	8.1	8.1	8.0	8.1	8.1	8.1	8.2	8.3	8.0	8.0	8.1	7.9	8.0	8.2	8.2	8.0	8.0	8.1	7.9
DOC	mg/L	n/a	n/a	n/a	n/a	n/a	1.1	1.2	1.7	6.3	3.6	2.5	1.8	3.9	2	2	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Major Anions																											
Alkalinity-Total	mg/L	82	78	85	90	93	120	120	120	380	86	96	110	110	120	120	120	92	99	68	59	82.2	89	95	95	100	99
Acidity-Total	mg/L	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	7.2	<0.5	3.1	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	2.9	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.25	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	0.8	<0.5	0.7	<0.5	1.4	0.9	0.7	<0.5	2.6	0.8	0.7	1	<0.5	0.7	0.6	0.5	200	<0.5	1.2	1.1	<2.5	0.8	<0.5	<0.5	0.8	<0.5
Fluoride	mg/L	0.04	0.04	0.04	0.05	0.05	0.1	0.09	0.11	0.31	0.12	0.15	0.1	0.12	0.11	0.11	0.11	0.13	0.13	0.07	0.09	<0.10	0.1	0.11	0.12	0.11	0.08
Sulphate	mg/L	16	15	19	19	19	36	36	44	110	24	26	29	30	30	33	33	34	23	8.8	13	14.1	17	16	17	19	20
Nutrient Parameters																											
Ammonial Nitrogen	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.013	<0.005	0.055	0.11	<0.005	<0.005	0.031	<0.005	0.013	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.026	0.029	0.098	0.11	0.184	0.275	0.287	0.347	0.944	0.176	0.201	0.1	0.117	0.162	0.171	0.238	0.088	0.052	0.044	0.028	<0.025	0.02	0.009	0.002	0.016	0.1
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	0.002	0.0053	<0.002	<0.002	0.002	<0.002	0.002
Total Phosphate	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	0.008	0.008	0.01	0.01	0.006	0.008	0.008	0.005	0.005	0.007	0.02	0.017	0.039	0.01	0.0084	0.008	0.007	<0.005	0.007	0.007
Dissolved Ortho-Phosphate	mg/L	<0.001	<0.001	0.001	0.001	0.001	0.003	0.004	0.001	0.003	0.001	0.001	0.002	0.001	0.002	0.001	0.002	0.004	0.012	0.009	0.002	0.0047	0.002	0.002	0.002	0.001	0.001
Total Metals																											
Aluminum (Al)	mg/L	0.0066	0.0179	0.0035	0.004	0.0051	0.0069	0.0227	0.0422	0.065	0.0377	0.0645	0.009	0.0167	0.0032	0.0036	0.029	0.0136	0.0105	0.0667	0.0363	0.0344	0.011	0.0088	0.0075	0.0026	0.0066
Antimony (Sb)	mg/L	0.00006	0.00006	0.00006	0.00005	0.00008	0.00014	0.00017	0.00029	0.0008	0.00018	0.00019	0.00016	0.00017	0.00015	0.00014	0.00024	0.00012	0.00006	0.00011	0.00007	<0.00010	0.00011	0.00009	0.00008	0.00008	0.00009
Arsenic (As)	mg/L	0.00012	0.00015	0.00013	0.00011	0.00013	0.00021	0.00026	0.0003	0.00082	0.00021	0.00027	0.00021	0.00024	0.00022	0.00022	0.00029	0.00144	0.00144	0.00181	0.00118	0.00149	0.00177	0.00162	0.00142	0.00096	0.00105
Cadmium (Cd)	mg/L	0.000052	0.000042	0.000047	0.000078	0.000037	0.00123	0.00135	0.00136	0.00316	0.00138	0.00176	0.00158	0.00173	0.00127	0.00129	0.0015	0.000044	0.00002	0.000053	0.000025	0.000019	0.000019	0.00001	0.000012	0.000012	0.000009
Calcium (Ca)	mg/L	31.9	27.6	31.9	31.8	36.6	42.5	43	41.1	137	31.8	38.8	40.3	37.9	42.8	42.9	46.6	28.8	29.5	19.8	17.2	23.9	25.4	25.4	28	27.3	30.8
Chromium (Cr)	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	0.0011	0.0004	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0013	<0.0001	0.0003	<0.0001	<0.00050	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000018	0.000025	0.000016	0.000012	0.000019	0.00001	0.000035	0.000056	0.000104	0.000048	0.000105	0.000023	0.000046	0.00001	0.000006	0.000033	0.000043	0.000026	0.000171	0.000075	<0.00010	0.000038	0.000032	0.000031	0.000016	0.000028
Copper (Cu)	mg/L	0.00076	0.00089	0.00055	0.00053	0.00057	0.00055	0.00078	0.00139	0.00298	0.00182	0.00191	0.00093	0.00128	0.00057	0.00054	0.00081	0.00141	0.00063	0.00152	0.00075	0.00095	0.00078	0.00062	0.00061	0.00057	0.00075
Iron (Fe)	mg/L	0.017	0.044	0.011	0.024	0.029	0.01	0.053	0.072	0.051	0.077	0.16	0.031	0.071	0.007	0.01	0.048	0.099	0.108	0.32	0.137	0.123	0.077	0.09	0.09	0.053	0.063
Lead (Pb)	mg/L	0.00004	0.00006	0.000006	0.00001	0.000121	0.000106	0.000196	0.00047	0.000592	0.000141	0.000356	0.000066	0.00011	0.00001	0.000012	0.000121	0.000385	0.00009	0.000239	0.000101	0.000069	0.000057	0.000041	0.000024	0.000006	0.000022
Magnesium (Mg)	mg/L	3.91	3.45	4.23	4.42	5.02	9.98	9.87	9.83	32.4	6.08	7.26	8.4	8.34	9.58	10.3	10.8	9.84	10.2	7.07	5.3	8.16	7.9	8.82	9.37	9.14	10.6
Manganese (Mn)	mg/L	0.00174	0.00255	0.00135	0.00189	0.00265	0.00218	0.00451	0.00862	0.00938	0.00685	0.0191	0.00344	0.00778	0.00058	0.00069	0.00291	0.00934	0.0101	0.0632	0.0236	0.0157	0.0147	0.011	0.0162	0.00383	0.00629
Mercury (Hg)	mg/L	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	<0.000010	<0.00001	0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00054	0.00054	0.00059	0.00064	0.00073	0.00102	0.00101	0.00108	0.00259	0.00061	0.00062	0.00081	0.00082	0.00091	0.00097	0.00132	0.00132	0.0013	0.00106	0.00091	0.00114	0.00121	0.00131	0.00123	0.00126	0.00137
Nickel (Ni)	mg/L	0.00071	0.00064	0.00066	0.00067	0.00048	0.00257	0.00274	0.00281	0.00765	0.00474	0.00581	0.00409	0.00458	0.00322	0.00293	0.00316	0.00198	0.00147	0.00336	0.00168	0.00198	0.00148	0.00158	0.00158	0.00155	0.00172
Phosphorus (P)	mg/L	<0.002	0.004	<0.002	<0.002	0.005	0.007	0.008	0.015	0.008	0.01	0.024	0.007	0.011	0.004	0.005	0.032		0.017	0.035	0.017	<0.30	0.014	0.013	0.012	0.007	0.014
Potassium (K)	mg/L	0.35	0.32	0.36	0.4	0.8	1.09	1.17	1.3	5.29	0.87	1	0.98	0.96	1.04	1.04	1.27	1.23	1.16	1.08	0.99	<2.0	0.9	0.87	1.01	0.96	1.24
Selenium (Se)	mg/L	0.00075	0.00064	0.00079	0.00095	0.00108	0.00366	0.00432	0.00519	0.0148	0.00296	0.00282	0.00311	0.00397	0.00383	0.00386	0.00419	0.0005	0.00046	0.0005	0.00035	0.00064	0.00035	0.00036	0.00037	0.00047	0.00047
Silicon (Si)	mg/L	3.01	3	3.04	3.46	3.34	3.11	3.27	3.68	11	2.85	3.58	3.36	4.22	3.43	3.51	3.48	3.07	3.36	2.99	2.91	2.7	2.56	2.39	2.87	3.26	3.6
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000010	0.000025	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.08	1.02	1.1	1.13	1.21	1.04	1.11	0.91	3.37	0.75	0.9	0.86	0.84	0.86	0.9	1.06	1.91	1.63	0.91	1	<2.0	1.18	1.28	1.35	1.38	1.78
Strontium (Sr)	mg/L	0.0665	0.058	0.0657	0.0662	0.0754	0.126	0.129	0.125	0.411	0.0902	0.113	0.12	0.113	0.123	0.121	0.139	0.0969	0.105	0.0701	0.0595	0.093	0.0918	0.0953	0.0963	0.1	0.109
Thallium (Tl)	mg/L	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000003	0.000002	0.000003	0.000009	0.000004	0.000005	0.000005	0.000004	0.000002	0.000003	0.000003	<0.000002	<0.000002	0.000004	<0.000002	<0.00010	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0163	0.0045	0.0038	0.0054	0.0042	0.0996	0.104	0.112	0.258	0.148	0.181	0.137	0.147	0.113	0.105	0.124	0.005	0.0034	0.0082	0.002	<0.0040	0.0015	0.0013	0.0013	0.0008	0.0018
Dissolved Metals																											
Aluminum (Al)	mg/L	0.0058	0.0071	0.0035	0.0028	0.0022	0.0081	0.0026	0.0037	0.0084	0.0071	0.0154	0.0046	0.0047	0.0035	0.0017	0.0022	0.0086	0.002	0.0209	0.0108	0.0046	0.0046	0.0027	0.002	0.0018	0.0018
Antimony (Sb)	mg/L	0.00005	0.00006	0.00007	0.00005	0.00008	0.00015	0.00017	0.00021	0.00074	0.00018	0.00019	0.00016	0.00017	0.00016	0.00013	0.00016	0.00015	0.00006	0.00012	0.00007	<0.00010	0.00008	0.00009	0.00008	0.00007	0.00007
Arsenic (As)	mg/L	0.00012	0.00013	0.00011	0.00013	0.00011	0.00021	0.00027	0.00024	0.00078	0.00017	0.00017	0.00021	0.0002	0.00022	0.00024	0.00026	0.00115	0.00115	0.00123	0.00087	0.00149	0.00156	0.00153	0.00127	0.00094	0.00091
Cadmium (Cd)	mg/L	0.000056	0.000039	0.000042	0.000053	0.000039	0.0012	0.00124	0.00112	0.00309	0.00121	0.00147	0.00149	0.00154	0.00139	0.00131	0.00144	0.000031	0.000012	0.00004	<0.000005	<0.000017	0.000015	0.00001	0.000012	0.00001	0.000006
Calcium (Ca)	mg/L	31.2	29.9	33.4	35.7	34.8	41.9	43.3	42.3	139	30.5	38.1	40.1	40.4	44.3	45.6	51.3	30.4	29.6	20.2	18.6	24.5	26.3	27.5	27.8	28.5	29.2
Chromium (Cr)	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.001	0.0011	0.0002	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0013	<0.0001	0.0001	0.0003	<0.00050	0.0001	<0.0001	0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000014	0.000018	0.000018	0.000018	0.000013	0.00001	0.000009	0.000017	0.000077	0.00002	0.000016	0.000009	0.000011	0.000009	0.000006	0.000006	0.000041	0.000008	0.000071	0.000044	<0.00010	0.000015	0.00002	0.00001	0.000008	0.000013
Copper (Cu)	mg/L	0.00075	0.00087	0.00057	0.00056	0.00051	0.00054	0.00052	0.0006	0.00271	0.0016	0.00133	0.00086	0.00085	0.00055	0.00049	0.00046	0.00129	0.00053	0.00149	0.00164	0.00072	0.00068	0.00062	0.00049	0.00058	0.00063
Iron (Fe)	mg/L	0.011	0.012	0.011	0.017	0.011	0.004	0.003	0.003	0.024	0.01	0.014	0.006	0.008	0.002	0.005	0.003	0.047	0.034	0.114	0.497	0.04	0.034	0.052	0.041	0.032	0.032
Lead (Pb)	mg/L	0.000013	0.00002	<0.000005	<0.000005	0.000022	0.000078	0.000074	0.000075	0.000203	0.000032	0.000049	0.000017	0.000026	<0.000005	<0.000005	<0.000005	0.000897	0.000051	0.00016	0.000049	<0.000050	0.000017	0.000005	0.000012	<0.000005	<0.000005
Magnesium (Mg)	mg/L	3.82	3.7	4.29	4.85	4.86	9.73	9.51	10	33.7	6.17	7.13	8.32	8.53	9.81	10.6	11.8	9.91	9.85	7.28	5.64	8.2	8.66	9.59	9.4	10	10
Manganese (Mn)	mg/L	0.0015	0.00124	0.00139	0.00169	0.00228	0.0016	0.00017	0.00237	0.0074	0.00025	0.00183	0.00023	0.00027	0.00008	<0.00005	0.00025	0.00319	0.00161	0.0263	0.00781	0.00443	0.00335	0.00232	0.00211	0.00246	0.0012
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	<0.00010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00057	0.00056	0.00062	0.00067	0.00073	0.00107	0.00108	0.00107	0.00374	0.00065	0.0007	0.00084	0.00083	0.00095	0.00102	0.00115	0.00147	0.00132	0.0012	0.00111	0.00112	0.00121	0.0013	0.00122	0.00124	0.00128
Nickel (Ni)	mg/L	0.00064	0.00072	0.00071	0.00067	0.00045	0.00258	0.00247	0.0024	0.00792	0.00464	0.00471	0.00383	0.00445	0.00326	0.0031	0.00305	0.016	0.0013	0.00348	0.00232	0.00166	0.00161	0.00149	0.00157	0.00152	0.00142
Phosphorus (P)	mg/L	0.002	<0.002	<0.002	0.002	<0.002	0.007	0.006	0.008	0.005	0.006	0.011	0.006	0.007	0.005	0.006	0.008		0.011	0.014	0.009	<0.30	0.007	0.007	0.008	0.005	0.01
Potassium (K)	mg/L	0.33	0.34	0.39	0.43	1.13	1.08	1.1	1.39	5.39	0.87	0.98	0.98	1.02	1.11	1.09	1.31	1.26	1.16	1.21	1.11	<2.0	0.94	0.97	0.99	1.01	1.17
Selenium (Se)	mg/L	0.00071	0.00063	0.00082	0.00087	0.00095	0.0036	0.00441	0.00429	0.0147	0.00313	0.00289	0.00298	0.00321	0.00358	0.00357	0.00451	0.0005	0.00042	0.00045	0.00035	<0.00050	0.00035	0.00038	0.00037	0.00044	0.00049
Silicon (Si)	mg/L	2.95	2.91	3.2	3.26	3.1	2.92	3.08	3.34	9.53	2.7	3.17	3.43	3.67	3.48	3.31	3.9	3.54	3.04	2.27	2.82	2.69	2.29	2.42	2.89	3.57	3.84
Silver (Ag)	mg/L	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000005	<0.000005	<0.000005	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.06	1.12	1.16	1.23	1.19	1.05	0.99	0.92	3.5	0.77	0.97	0.85	0.86	0.89	0.93	1.01	2.52	1.52	0.98	1.13	<2.0	1.33	1.39	1.36	1.56	1.65
Strontium (Sr)	mg/L	0.0665	0.063	0.0691	0.0713	0.0726	0.127	0.133	0.127	0.417	0.0899	0.113	0.118	0.12	0.133	0.126	0.147	0.101	0.106	0.0738	0.0597	0.0946	0.0969	0.1	0.0976	0.101	0.102
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	0.000009	0.000003	0.000005	0.000004	0.000005	0.000003	0.000003	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.00010	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0041	0.005	0.0041	0.0046	0.0044	0.0988	0.0959	0.0862	0.251	0.143	0.144	0.129	0.142	0.115	0.106	0.116	0.0071	0.0016	0.0085	0.0021	<0.0010	0.0015	0.0007	0.0006	0.0007	0.001

Sample location		W82	W82	W82	W82	W82	W82	W82	W82	W82	W82-99	W82	W82-99	W82	W82
Sampling Date		18-Jan-09	28-Feb-09	21-Mar-09	10-Apr-09	14-May-09	17-Jun-09	8-Jul-09	10-Aug-09	6-Sep-09	6-Sep-09	10-Oct-09	10-Oct-09	11-Nov-09	10-Dec-09
Lab Report	Units	A902628	A910072	A913452	A917065	A923809	A930976	A935359	A942402	A949299	A949299	A959421	A959421	L840320	A971785
Field Physical Parameters															
Temperature	°C	0.06	0.06	0.02	0.08	2.72	4.47	6.14	8.52	7.28	7.28	0.25	n/a	-	0.31
Conductivity	uS/cm	93	77	16	104	66	115	-	158	129	129	125	n/a	-	160
Specific conductivity	uS/cm3	178	147	31	199	118	189	-	232	194	194	237	n/a	200	87
pH	pH Units	7.38	7.48	7.08	7.42	6.43	6.71	6.99	7.38	7.93	7.93	7.15	n/a	7.43	9.05
Laboratory Parameters															
Physical Parameters															
Temperature	°C	2.7	5	7.7	2.7	6	2.3	7	6.7	2.7	2.7	6.7	6.7	2	2.3
Conductivity	uS/cm	220	220	220	230	160	200	210	220	231	8	260	3	236	249
Hardness	mg/L	105	108	109	106	74.1	97.3	108	108	110	<0.5	126	<0.5	127	118
Total Suspended Solids	mg/L	10	87	10	5	15	6	<4	<4	<4	<4	<4	<4	8.5	14
pH	pH Units	8.0	8.0	8.0	8.0	7.8	8.0	8.0	7.7	7.9	6.7	8.2	6.6	8.0	7.9
DOC	mg/L	1.1	2.3	1.6	0.5	4.9	2.2	2.2	2.5	2	<0.5	1.5	<0.5	1.17	0.6
Major Anions															
Alkalinity-Total	mg/L	82	83	81	84	58	79	82	84	85	2.9	91	1.9	88	91
Acidity-Total	mg/L	0.7	<0.5	1.5	0.7	<0.5	<0.5	1.6	0.7	1	<0.5	<0.5	<0.5	4.2	<0.5
Bromide	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.050	<0.4
Chloride	mg/L	1.1	2.2	<0.5	<0.5	1.2	0.7	<0.5	0.9	<0.5	<0.5	0.5	<0.5	<0.50	0.6
Fluoride	mg/L	0.13	0.13	0.15	0.16	0.11	0.12	0.11	0.14	0.17	<0.01	0.16	<0.01	0.112	0.17
Sulphate	mg/L	28	27	30	26	21	21	19	26	29	<0.5	32	<0.5	31.9	31
Nutrient Parameters															
Ammonial Nitrogen	mg/L	0.012	0.057	0.023	0.011	0.024	0.014	<0.005	<0.005	<0.005	<0.005	0.024	0.026	0.014	0.011
Nitrate Nitrogen	mg/L	0.283	0.277	0.262	0.244	0.142	0.621	0.275	0.173	0.253	0.027	0.277	0.037	0.276	0.354
Nitrite Nitrogen	mg/L	0.003	0.003	<0.002	0.002	<0.002	0.209	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.0010	0.009
Total Phosphate	mg/L	0.01	0.026	0.023	0.017	0.054	0.009	0.009	0.032	0.006	<0.005	<0.005	<0.005	0.0384	0.007
Dissolved Ortho-Phosphate	mg/L	0.005	0.012	0.008	0.014	0.028	0.001	0.001	0.009	0.002	<0.001	0.001	0.001	0.005	0.001
Total Metals															
Aluminum (Al)	mg/L	0.035	0.505	0.0133	0.0694	0.119	0.0588	0.0473	0.0428	0.0601	0.0009	0.0357	0.0011	0.135	0.0518
Antimony (Sb)	mg/L	0.00024	0.00044	0.00022	0.0003	0.00022	0.00021	0.0002	0.00022	0.00018	<0.00002	0.0002	<0.00002	0.00022	0.00027
Arsenic (As)	mg/L	0.00018	0.00273	0.00012	0.00021	0.00027	0.00015	0.00018	0.00021	0.00019	<0.00002	0.00015	<0.00002	0.00029	0.00023
Cadmium (Cd)	mg/L	0.00255	0.0108	0.0018	0.00237	0.00175	0.0013	0.00169	0.00276	0.00261	<0.000005	0.00349	<0.000005	0.00284	0.00357
Calcium (Ca)	mg/L	35.9	36.5	34.2	35.2	23.8	33.2	37.1	35.7	34.4	0.07	42.1	0.07	41.4	37.8
Chromium (Cr)	mg/L	<0.0001	0.0013	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00050	<0.0001
Cobalt (Co)	mg/L	0.00059	0.00305	0.00037	0.000538	0.000488	0.00021	0.000256	0.000425	0.00103	<0.000005	0.000882	<0.000005	0.00106	0.00105
Copper (Cu)	mg/L	0.00363	0.0214	0.00171	0.00493	0.00333	0.00286	0.00213	0.00265	0.00582	0.00034	0.00426	0.00031	0.00492	0.00508
Iron (Fe)	mg/L	0.281	2.96	0.134	0.391	0.575	0.186	0.253	0.445	0.363	0.001	0.235	<0.001	0.656	0.316
Lead (Pb)	mg/L	0.000125	0.00293	0.000083	0.000676	0.000584	0.000375	0.000202	0.000142	0.000202	0.000023	0.000064	0.000039	0.000425	0.000153
Magnesium (Mg)	mg/L	3.67	4.25	4.31	4.46	3.58	3.5	3.65	4.4	4.34	<0.05	5.09	<0.05	4.72	5.01
Manganese (Mn)	mg/L	0.15	0.675	0.112	0.153	0.128	0.0516	0.0713	0.15	0.203	0.0001	0.215	<0.00005	0.219	0.194
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000010	<0.00001
Molybdenum (Mo)	mg/L	0.00045	0.00027	0.00047	0.00041	0.00038	0.00047	0.00041	0.00041	0.00053	<0.00005	0.00042	<0.00005	0.000441	0.00046
Nickel (Ni)	mg/L	0.0135	0.0338	0.0116	0.013	0.0085	0.00959	0.0117	0.0174	0.0253	0.00013	0.022	0.0001	0.0193	0.023
Phosphorus (P)	mg/L	0.027	0.172	0.019	0.033	0.052	0.02	0.024	0.031	0.026	<0.002	0.013	<0.002	<0.30	0.029
Potassium (K)	mg/L	0.96	1.03	0.98	1.19	1.19	1.04	1.12	1	1.05	<0.05	1.28	<0.05	<2.0	1.09
Selenium (Se)	mg/L	0.00199	0.00209	0.00231	0.00257	0.00219	0.00236	0.00224	0.00199	0.00211	<0.00004	0.00232	<0.00004	0.0022	0.00266
Silicon (Si)	mg/L	3.69	3.59	3.54	3.62	3.23	3.03	3.22	3.46	3.43	<0.1	3.61	<0.1	3.9	3.57
Silver (Ag)	mg/L	<0.000005	0.000009	<0.000005	<0.000005	0.000007	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000010	<0.000005
Sodium (Na)	mg/L	0.97	0.99	0.84	1	0.85	2.28	1.04	0.93	1.1	0.37	1.25	0.39	<2.0	0.98
Strontium (Sr)	mg/L	0.0966	0.107	0.0904	0.0967	0.0699	0.112	0.115	0.112	0.108	0.00023	0.117	0.00039	0.112	0.113
Thallium (Tl)	mg/L	<0.000002	0.000007	<0.000002	0.000004	0.000004	0.000011	0.000011	0.000008	0.000006	<0.000002	<0.000002	<0.000002	<0.00010	0.000003
Vanadium (V)	mg/L	<0.0002	0.0014	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0010	<0.0002
Zinc (Zn)	mg/L	0.192	0.487	0.185	0.22	0.135	0.132	0.162	0.236	0.269	0.0005	0.305	0.0006	0.257	0.314
Dissolved Metals															
Aluminum (Al)	mg/L	0.0103	0.0104	0.0074	0.0075	0.0213	0.0125	0.0106	0.0127	0.0164	0.0006	0.0135	0.0006	0.0069	0.0123
Antimony (Sb)	mg/L	0.00022	0.00024	0.00024	0.00026	0.00021	0.00022	0.00018	0.00022	0.00018	<0.00002	0.00022	<0.00002	0.00019	0.00026
Arsenic (As)	mg/L	0.00008	0.00012	0.00007	0.00009	0.00019	0.00013	0.00011	0.00013	0.00011	<0.00002	0.00011	<0.00002	<0.00010	0.00011
Cadmium (Cd)	mg/L	0.00152	0.000837	0.000824	0.000789	0.00127	0.000947	0.00103	0.00161	0.00159	<0.000005	0.00216	<0.000005	0.000806	0.00162
Calcium (Ca)	mg/L	35.2	35.6	36.1	35.8	23.9	32.2	37.1	35.9	36.9	0.06	41.1	0.07	42.7	38.9
Chromium (Cr)	mg/L	0.001	0.0011	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00050	<0.0001
Cobalt (Co)	mg/L	0.000327	0.000126	0.00031	0.000279	0.000262	0.000152	0.000117	0.000315	0.000926	<0.000005	0.0011	<0.000005	0.00066	0.000844
Copper (Cu)	mg/L	0.00137	0.00056	0.00067	0.00088	0.0018	0.00163	0.00106	0.00105	0.0015	0.00036	0.0016	0.0003	0.00063	0.0014
Iron (Fe)	mg/L	0.02	0.003	0.014	0.012	0.293	0.062	0.079	0.163	0.084	<0.001	0.098	<0.001	<0.030	0.026
Lead (Pb)	mg/L	0.000093	0.000101	0.000073	0.000112	0.000151	0.000089	0.000815	0.000041	0.000025	0.000022	0.000014	0.000019	<0.000050	<0.000005
Magnesium (Mg)	mg/L	4.27	4.63	4.6	4.41	3.52	3.41	3.66	4.42	4.44	<0.05	4.76	<0.05	4.82	5.11
Manganese (Mn)	mg/L	0.0904	0.0501	0.105	0.102	0.102	0.0394	0.0425	0.13	0.192	<0.00005	0.221	<0.00005	0.147	0.165
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000010	<0.00001
Molybdenum (Mo)	mg/L	0.0004	0.00044	0.00046	0.00048	0.0004	0.00048	0.00039	0.00046	0.00048	<0.00005	0.00045	<0.00005	0.00041	0.00046
Nickel (Ni)	mg/L	0.0116	0.00869	0.0124	0.0111	0.00778	0.00982	0.0106	0.0172	0.0246	0.00011	0.0211	0.00012	0.0161	0.0215
Phosphorus (P)	mg/L	0.009	0.003	0.008	0.01	0.032	0.012	0.013	0.017	0.008	<0.002	0.011	<0.002	<0.30	0.008
Potassium (K)	mg/L	1.01	1.09	1.04	1.21	1.19	0.98	1.1	1.01	1.13	<0.05	1.24	<0.05	<2.0	1.13
Selenium (Se)	mg/L	0.00195	0.002	0.00225	0.0025	0.00202	0.00229	0.0022	0.00196	0.00198	<0.00004	0.00219	<0.00004	0.00218	0.00253
Silicon (Si)	mg/L	3.34	3.54	3.43	3.75	3.01	2.96	3.07	3.55	3.5	<0.1	3.45	<0.1	3.84	3.45
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000010	<0.000005
Sodium (Na)	mg/L	1.06	1.12	0.91	0.97	0.83	2.22	1.04	0.95	0.93	0.38	1.21	0.38	<2.0	1.01
Strontium (Sr)	mg/L	0.0985	0.102	0.0985	0.097	0.0711	0.11	0.114	0.112	0.114	0.00025	0.121	0.00041	0.107	0.117
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	0.000009	0.000009	0.000007	0.000004	<0.000002	0.000003	<0.000002	<0.00010	0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0010	<0.0002
Zinc (Zn)	mg/L	0.16	0.129	0.176	0.161	0.119	0.13	0.14	0.197	0.253	0.0003	0.278	0.0003	0.221	0.274

Table 2-4 2009 Go Creek Watershed Surface Water Quality Results

Sample location		W12	W12-98	W12	W12	W12	W12	W12	W12	W12	W12-98	W12	W12-98	W15	W15	W15	W15	W15	W15	W15	W15	W15	W15
Sampling Date		27-Mar-09	27-Mar-09	26-Apr-09	14-Jun-09	12-Jul-09	2-Aug-09	4-Sep-09	3-Oct-09	25-Nov-09	25-Nov-09	26-Dec-09	26-Dec-09	28-Feb-09	20-Mar-09	25-Apr-09	16-May-09	17-Jun-09	8-Jul-09	9-Aug-09	5-Sep-09	15-Oct-09	15-Nov-09	24-Dec-09
Lab Report	Units	A914684	A914684	A919550	A930270	A936094	A940905	A949310	A956923	A969041	A969041	A973517	A973517	A910072	A913452	A919550	A923809	A930976	A935359	A942402	A949299	A959421	A965984	A973517
Field Physical Parameters																								
Temperature	°C	0.1	0.1	0.15	6.74	10.26	9.62	6.6	0.08	0.08	0.08	0.05	0.05	0.05	0.07	0.12	1.22	3.02	4.32	5.82	5.23	0.1	note 1	0.04
Conductivity	uS/cm	75	75	84	70	101	96	67	71	71	71	70	70	65	54	31	38	46	-	80	56	58	note 1	55
Specific conductivity	uS/cm3	143	143	160	108	140	136	102	136	136	136	37	37	125	104	59	70	79	107	126	90	109	100	29
pH	pH Units	7.32	7.32	7.7	7.43	6.63	7.23	7.24	7.57	7.57	7.57	7.35	7.35	7.4	6.83	7.12	7.35	7.2	6.96	6.57	7.55	6.55	7.3	7.46
Laboratory Parameters																								
Physical Parameters																								
Temperature	°C	6	6	9.3	5	1.7	6	2.7	1.7	5.3	5.3	2	2	5	7.7	9.3	6	2.3	7	6.7	2.7	6.7	1	2
Conductivity	uS/cm	170	170	170	120	150	170	163	161	169	170	164	170	130	130	130	120	93	110	122	124	-	124	125
Hardness	mg/L	74.1	76.9	84.3	49.4	71.2	84.3	74	77.6	83.5	82	83.1	81.1	59.5	64	59.4	56.8	45.1	52.6	56.2	55.7	50.5	58.6	58.6
Total Suspended Solids	mg/L	34	<4	<4	5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
pH	pH Units	7.9	8.0	8.1	7.9	8.0	8.2	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9	7.7	8.1	7.6	7.8	8.0	8.0	7.9
Major Anions																								
Alkalinity-Total	mg/L	70	69	70	47	64	71	66	67	70	71	71	70	53	53	53	52	40	49	53	53	52	53	53
Acidity-Total	mg/L	<0.5	<0.5	0.9	<0.5	3	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	1.3	1.2	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L	<0.1	<0.1	<0.1	0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.5	6.9	<0.5	<0.5	1.1	0.9	<0.5	0.6	<0.5	0.5	0.9	<0.5
Fluoride	mg/L	0.05	0.05	0.06	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.02	0.03	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03
Sulphate	mg/L	17	17	17	14	12	15	13	15	17	17	17	16	9.7	8.6	9.1	9	7.2	7.3	8.1	9.7	7.9	9.1	9.8
Nutrient Parameters																								
Ammonial Nitrogen	mg/L	0.035	0.023	0.026	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	0.01	<0.005	0.05	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.154	0.136	0.156	0.021	<0.002	<0.002	0.037	0.004	0.076	0.073	0.098	0.102	0.184	0.188	0.205	0.147	0.193	0.035	0.028	0.01	0.047	0.08	0.137
Nitrite Nitrogen	mg/L	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Phosphate	mg/L	<0.005	<0.005	0.007	0.006	0.01	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.009	0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Ortho-Phosphate	mg/L	0.001	0.002	0.001	0.001	0.002	0.001	0.001	0.001	0.002	<0.001	0.001	0.002	0.001	0.001	0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001	0.002	0.001
Total Metals																								
Aluminum (Al)	mg/L	0.0048	0.0054	0.006	0.0349	0.0145	0.0117	0.0115	0.0103	0.0042	0.0042	0.0057	0.0062	0.0028	0.0036	0.0117	0.0184	0.0118	0.0094	0.0073	0.0094	0.0042	0.0037	0.0035
Antimony (Sb)	mg/L	0.0001	0.00006	0.00007	0.00004	0.00005	0.00004	0.00005	0.00003	0.00004	0.00004	0.00005	0.00004	<0.00002	<0.00002	<0.00002	0.00003	0.00002	0.00002	<0.00002	0.00003	<0.00002	<0.00002	<0.00002
Arsenic (As)	mg/L	0.00018	0.00018	0.00021	0.00023	0.00026	0.00034	0.00027	0.00025	0.00015	0.00017	0.00016	0.00016	0.00008	0.0001	0.00013	0.00014	0.00008	0.00012	0.00011	0.00013	0.00008	0.00009	0.00009
Cadmium (Cd)	mg/L	0.000017	0.000023	0.000019	0.000022	0.00003	0.000023	0.000018	0.000015	0.00001	0.000008	0.00001	0.000014	<0.000005	0.000008	0.000006	0.000011	0.000006	0.000007	0.000007	0.000013	<0.000005	<0.000005	<0.000005
Calcium (Ca)	mg/L	22	22.8	25.4	15.5	22.3	26.2	21.6	23.7	23.8	23.7	26	25.6	20.2	20.2	21.2	20.4	16.4	19	20.7	18.4	18.1	19.9	21.9
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	0.0001	<0.0001	0.0002	<0.0001	<0.0001	0.0001	0.0001	0.0002	0.0001	<0.0001
Cobalt (Co)	mg/L	0.00001	0.000017	0.000019	0.000067	0.000042	0.000034	0.000029	0.000036	0.000026	0.000021	0.000022	0.000021	0.000012	0.000013	0.000018	0.000081	0.00003	0.000023	0.000015	0.000028	0.000015	0.000006	0.000012
Copper (Cu)	mg/L	0.00038	0.00036	0.00045	0.00119	0.00078	0.00108	0.00058	0.00054	0.00038	0.00042	0.00042	0.00042	0.00041	0.00031	0.00037	0.00136	0.00094	0.0007	0.0005	0.00126	0.00036	0.00032	0.00029
Iron (Fe)	mg/L	0.053	0.052	0.052	0.079	0.065	0.078	0.07	0.091	0.042	0.045	0.053	0.049	0.002	0.005	0.014	0.016	0.006	0.007	0.007	0.007	0.006	0.004	0.003
Lead (Pb)	mg/L	0.000072	0.000175	0.000068	0.000118	0.000041	0.000088	0.000035	0.000026	0.000007	0.000008	0.000017	0.000034	0.000083	0.000104	0.000095	0.000182	0.000021	0.000009	0.00001	0.000104	0.000026	<0.000005	<0.000005
Magnesium (Mg)	mg/L	4.69	4.84	5.04	2.62	3.79	4.6	3.76	4.09	4.52	4.49	5.02	4.99	1.64	1.48	1.6	1.46	1.03	1.24	1.44	1.28	1.27	1.43	1.53
Manganese (Mn)	mg/L	0.00855	0.00891	0.00678	0.0132	0.014	0.0137	0.0139	0.019	0.0136	0.0133	0.0163	0.016	0.00008	0.00014	0.00061	0.001	0.00054	0.00041	0.00051	0.0015	0.00041	0.00008	0.0002
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00051	0.00047	0.00064	0.00031	0.00039	0.0005	0.00044	0.00041	0.00042	0.00041	0.00046	0.00046	0.00028	0.00039	0.00038	0.00027	0.0002	0.00017	0.00022	0.00043	0.00022	0.00025	0.00027
Nickel (Ni)	mg/L	0.0002	0.00022	0.00024	0.00043	0.00026	0.00061	0.00026	0.00026	0.00022	0.00023	0.00024	0.00027	0.0001	0.0001	0.00012	0.00737	0.00018	0.00013	0.00017	0.00169	0.00013	0.00012	0.00009
Phosphorus (P)	mg/L	0.004	0.005	0.007	0.008	0.005	0.007	0.005	0.006	<0.002	0.002	0.005	0.008	<0.002	0.004	0.003	0.004	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002
Potassium (K)	mg/L	0.54	0.56	0.71	0.4	0.47	0.62	0.51	0.56	0.54	0.55	0.62	0.62	0.42	0.47	0.48	0.66	0.32	0.3	0.34	0.35	0.32	0.37	0.42
Selenium (Se)	mg/L	0.00127	0.00117	0.00113	0.00087	0.00084	0.00072	0.00065	0.00077	0.00096	0.00101	0.0011	0.00105	0.00035	0.00039	0.00042	0.00043	0.00022	0.0003	0.00028	0.00027	0.0003	0.00028	0.00034
Silicon (Si)	mg/L	3.66	3.49	3.99	2.54	3.04	3.44	3.35	3.33	3.48	3.71	3.88	3.72	3.06	3.18	3.58	3.03	2.3	3.02	2.91	2.79	2.59	3.11	3.29
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.03	1.05	1.16	0.7	0.99	1.12	1.02	1.04	1.04	1.05	1.17	1.15	1.12	1.01	1.03	1.01	0.76	0.85	0.93	1.16	0.84	0.98	1.03
Strontium (Sr)	mg/L	0.0479	0.0494	0.0515	0.03	0.0426	0.051	0.0439	0.0453	0.05	0.0501	0.0521	0.0523	0.0367	0.0324	0.0343	0.0319	0.0241	0.0294	0.0339	0.0311	0.0295	0.0315	0.0341
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0013	0.0027	0.0033	0.0017	0.0007	0.0065	0.0011	0.0006	0.0006	0.0003	0.0006	0.0016	0.0034	0.0042	0.0038	0.0091	0.0017	0.0017	0.0021	0.0066	0.0023	0.0018	0.0012
Dissolved Metals																								
Aluminum (Al)	mg/L	0.0022	0.0017	0.0021	0.011	0.0095	0.0057	0.0047	0.0029	0.0017	0.0019	0.0019	0.0016	0.0021	0.0021	0.0027	0.0113	0.0099	0.0083	0.0044	0.0049	0.0023	0.0026	0.0021
Antimony (Sb)	mg/L	0.00006	0.00005	0.00006	0.00004	0.00006	0.00005	0.00004	0.00005	0.00004	0.00004	0.00005	0.00004	<0.00002	<0.00002	0.00002	0.00002	0.00002	0.00002	<0.00002	0.00003	0.00002	<0.00002	<0.00002
Arsenic (As)	mg/L	0.00016	0.00015	0.00016	0.00019	0.00026	0.00026	0.00027	0.00021	0.00014	0.00014	0.00014	0.00014	0.00009	0.00012	0.00011	0.00014	0.0001	0.00012	0.00008	0.0001	0.00009	0.00007	0.00008
Cadmium (Cd)	mg/L	0.00002	0.000019	0.000018	0.000013	0.000016	0.000015	0.000008	<0.000005	0.00001	0.000007	0.000006	<0.000005	<0.000005	<0.000005	0.00001	0.000013	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000009	<0.000005
Calcium (Ca)	mg/L	24.1	24.1	25.7	15.5	24.1	23.9	23.1	24.1	25.7	25.3	25	24.4	21	22.8	22.5	19.4	15.8	19.3	20.2	20.1	21.1	21	21
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000007	0.000006	0.000012	0.000039	0.000026	0.000022	0.000021	0.000018	0.000016	0.00001	0.000011	0.000018	0.00001	0.000014	0.000011	0.000022	0.000026	0.00002	0.000013	0.00002	0.000011	0.000009	0.000013
Copper (Cu)	mg/L	0.0004	0.0005	0.00029	0.00097	0.00099	0.00151	0.00057	0.00036	0.00036	0.00034	0.00033	0.00032	0.00037	0.00028	0.0003	0.00083	0.00091	0.00078	0.00049	0.00052	0.00029	0.0003	0.00026
Iron (Fe)	mg/L	0.019	0.015	0.023	0.03	0.049	0.05	0.095	0.054	0.017	0.017	0.015	0.021	0.001	0.002	0.005	0.009	0.004	0.004	0.002	0.003	0.001	0.003	0.001
Lead (Pb)	mg/L	0.000058	0.000096	0.00005	0.000015	0.0001	0.000019	0.000009	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000067	0.000044	0.000102	0.000087	0.00001	0.000056	<0.000005	0.00002	<0.000005	<0.000005	<0.000005
Magnesium (Mg)	mg/L	5.12	5.05	5.11	2.75	4.15	4.59	3.96	4.25	4.68	4.56	5.01	4.88	1.74	1.7	1.66	1.37	1.04	1.3	1.42	1.36	1.45	1.49	1.49
Manganese (Mn)	mg/L	0.00431	0.00406	0.00274	0.00546	0.0104	0.0072	0.00694	0.00848	0.00825	0.00783	0.00657	0.00626	<0.00005	<0.00005	0.00019	0.00049	0.0002	0.00058	0.00022	0.00033	0.00013	<0.00005	0.00006
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00049	0.00048	0.00054	0.00031	0.00042	0.00051	0.00045	0.00039	0.00044	0.00043	0.00044	0.00042	0.00028	0.00029	0.00031	0.00023	0.0003	0.00018	0.00024	0.00025	0.00024	0.00027	0.00027
Nickel (Ni)	mg/L	0.00019	0.00022	0.00018	0.00033	0.00033	0.00027	0.00029	0.00022	0.00019	0.00023	0.00023	0.00021	0.0001	0.0001	0.00011	0.00019	0.00019	0.00012	0.00014	0.00016	0.0001	0.00012	0.00008
Phosphorus (P)	mg/L	0.003	0.002	0.002	0.004	0.003	0.006	0.002	<0.002	0.003	0.003	<0.002	0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.011	<0.002	<0.002	<0.002	0.002	<0.002
Potassium (K)	mg/L	0.62	0.61	0.69	0.42	0.52	0.56	0.55	0.57	0.58	0.59	0.6	0.58	0.44	0.49	0.52	0.63	0.31	0.32	0.34	0.35	0.37	0.38	0.4
Selenium (Se)	mg/L	0.00118	0.00117	0.00116	0.00084	0.00086	0.00078	0.0006	0.00077	0.00101	0.00099	0.00103	0.00101	0.00034	0.00045	0.0004	0.0003	0.00023	0.00027	0.00026	0.00025	0.0003	0.00029	0.00033
Silicon (Si)	mg/L	3.78	3.7	3.88	2.42	3.4	2.98	3.23	3.38	3.68	3.56	3.64	3.7	2.97	3.28	3.47	2.88	2.29	2.58	2.86	2.95	2.84	3.06	3.33
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.14	1.12	1.12	0.72	1.16	1.12	1.06	1.1	1.1	1.1	1.15	1.11	1.2	1.12	1.1	0.91	0.78	0.89	0.92	0.88	0.95	1	1
Strontium (Sr)	mg/L	0.0522	0.0522	0.0512	0.0324	0.0477	0.0507	0.0461	0.0474	0.0492	0.0493	0.0516	0.0506	0.0367	0.0369	0.0339	0.0309	0.0241	0.0295	0.0351	0.0331	0.0338	0.0321	0.0332
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0003	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0018	0.0017	0.0023	0.0007	0.0016	0.0013	0.0004	0.0004	0.0007	0.0007	0.0005	0.0006	0.0037	0.003	0.0037	0.0033	0.0013	0.0021	0.0018	0.0017	0.002	0.002	0.0015

Sample location		W16	W16	W16	W16	W16	W16	W16	W16	W16	W16	W16	W16	W31	W31	W31	W31	W31	W31	W31	W31
Sampling Date		**18-Jan-09**	**28-Feb-09**	**21-Mar-09**	**10-Apr-09**	**16-May-09**	**8-Jun-09**	**8-Jul-09**	**9-Aug-09**	**5-Sep-09**	**15-Oct-09**	**3-Nov-09**	**8-Dec-09**	**14-May-09**	**17-Jun-09**	**17-Jul-09**	**9-Aug-09**	**6-Sep-09**	**11-Oct-09**	**4-Nov-09**	**17-Dec-09**
Lab Report	**Units**	**A902628**	**A910072**	**A913452**	**A917065**	**A923809**	**A928455**	**A935359**	**A942402**	**A949299**	**A959421**	**A964560**	**A971785**	**A923809**	**A930976**	**A937394**	**A942402**	**A949299**	**A959421**	**A964560**	**A973034**
Field Physical Parameters																					
Temperature	°C	0.93	0.06	0.61	0.87	1.62	7.66	7.4	6.08	6.28	0.1	-	0.07	0.03	4.27	4.94	7.37	5.95	0.65	-	0.05
Conductivity	uS/cm	71	56	51	68	50	55	-	78	75	74	-	75	53	54	81	82	78	73	-	62
Specific conductivity	uS/cm3	132	108	95	126	91	83	146	122	117	143	148	39	102	90	131	123	122	137	125	33
pH	pH Units	7.19	7.38	7.01	7.07	6.93	7.24	7.42	6.56	7.64	6.92	7.52	9.35	7.66	7.44	6.8	7.24	7.18	7.11	7.98	6.06
Laboratory Parameters																					
Physical Parameters																					
Temperature	°C	2.7	5	7.7	2.7	6	10.3	7	6.7	2.7	6.7	7.7	2.3	6	2.3	1.7	6.7	2.7	6.7	7.7	1.7
Conductivity	uS/cm	140	150	150	150	130	85	150	152	161	158	157	152	140	100	140	153	149	148	153	158
Hardness	mg/L	68.8	72.7	72.6	72.9	61.3	39.5	76.4	75.9	74.9	70.5	76.1	72.2	62.9	48.8	67.6	73.3	70	69.9	76.5	80.6
Total Suspended Solids	mg/L	<4	<4	<4	<4	10	12	5	<4	9	<4	<4	4	<4	<4	<4	<4	<4	<4	<4	<4
pH	pH Units	8.0	8.0	7.9	7.9	7.8	7.8	8.0	7.8	7.9	8.0	7.8	7.9	7.9	8.0	7.9	7.9	7.9	8.1	7.9	7.9
DOC	mg/L	0.8	<0.5	1.1	<0.5	3.4	4.1	3.8	1.3	2.1	<0.5	-	0.8	2.8	2.4	1.4	1.7	1.5	0.6	0.9	1.1
Cyanide + Thiocyanate	mg/L	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005
Major Anions																					
Alkalinity-Total	mg/L	64	66	66	67	57	38	65	70	69	66	68	68	62	47	64	72	69	67	71	73
Acidity-Total	mg/L	<0.5	<0.5	<0.5	0.9	<0.5	0.8	1.1	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	0.9	3.7	<0.5	<0.5	1	0.6	<0.5	1.1	<0.5	0.6	2.5	<0.5	1	0.6	<0.5	0.6	<0.5	<0.5	4.3	<0.5
Fluoride	mg/L	0.03	0.03	0.03	0.04	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Sulphate	mg/L	11	10	9.6	11	9.4	7.1	28	8.3	11	10	9.8	10	7.2	12	7.9	8	8	6.1	8.8	9.6
Nutrient Parameters																					
Ammonial Nitrogen	mg/L	0.098	0.009	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.008	<0.005
Nitrate Nitrogen	mg/L	0.098	0.122	0.133	0.104	0.085	0.02	3	0.15	0.045	0.106	0.109	0.23	0.116	0.027	0.009	0.002	0.025	0.038	0.092	0.122
Nitrite Nitrogen	mg/L	0.002	0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.008	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002
Total Phosphate	mg/L	0.008	0.005	0.006	0.01	0.027	0.009	0.006	0.008	<0.005	<0.005	0.006	0.006	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007
Dissolved Ortho-Phosphate	mg/L	0.006	0.001	0.002	0.002	0.014	0.001	0.002	0.001	0.002	<0.001	0.002	0.002	<0.001	0.002	0.001	0.001	<0.001	<0.001	0.002	<0.001
Total Metals																					
Aluminum (Al)	mg/L	0.0067	0.0015	0.004	0.0046	0.225	0.109	0.0776	0.0455	0.11	0.0073	0.0079	0.0138	0.0152	0.0387	0.0128	0.0107	0.012	0.0058	0.0068	0.0098
Antimony (Sb)	mg/L	0.00002	<0.00002	0.00003	0.00002	0.00005	0.00004	0.00006	0.00005	0.00006	0.00004	0.00004	0.00005	<0.00002	0.00003	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00008
Arsenic (As)	mg/L	0.00013	0.00009	0.00011	0.00011	0.00024	0.00015	0.00018	0.00018	0.00021	0.00011	0.00015	0.00014	0.00018	0.00014	0.00015	0.00014	0.00012	0.00012	0.00015	0.00012
Cadmium (Cd)	mg/L	0.000096	0.000088	0.000103	0.000107	0.000098	0.000041	0.00053	0.000099	0.000086	0.00012	0.0001	0.000117	0.000011	0.000061	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium (Ca)	mg/L	23	23.6	23.6	25	20.6	13.2	25.3	25.5	23.5	23.7	24.1	22.6	22.8	17.9	22.8	27.1	24.1	25.5	25.4	28.6
Chromium (Cr)	mg/L	<0.0001	0.0012	<0.0001	0.0001	0.0004	<0.0001	<0.0001	0.0002	0.0003	0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000026	0.000023	0.000024	0.000027	0.00024	0.000105	0.000108	0.000079	0.000194	0.000039	0.00004	0.000051	0.000046	0.00006	0.000021	0.000019	0.000025	0.000014	0.000018	0.000025
Copper (Cu)	mg/L	0.00048	0.00053	0.00041	0.00056	0.00229	0.00208	0.00181	0.00086	0.00166	0.00046	0.00047	0.00063	0.00168	0.00252	0.00141	0.00099	0.00087	0.00074	0.00065	0.00077
Iron (Fe)	mg/L	0.044	0.022	0.041	0.053	0.281	0.144	0.116	0.108	0.2	0.036	0.047	0.062	0.008	0.019	0.006	0.002	0.004	0.002	0.003	0.012
Lead (Pb)	mg/L	0.000006	0.000077	0.000055	0.000058	0.000262	0.000107	0.000108	0.00004	0.000173	0.000007	<0.000005	0.000026	0.000125	0.000132	0.000043	0.000011	0.000015	0.000006	<0.000005	0.000031
Magnesium (Mg)	mg/L	2.32	2.52	2.38	2.53	2.36	1.61	3.21	3.06	3.04	2.77	2.8	2.54	1.43	1	1.35	1.62	1.45	1.52	1.59	1.83
Manganese (Mn)	mg/L	0.0172	0.0178	0.0203	0.0225	0.0273	0.00894	0.0195	0.0225	0.0243	0.0141	0.0161	0.0195	0.00171	0.0015	0.00021	0.00009	0.00022	0.00006	<0.00005	0.0007
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.0004	0.00039	0.00053	0.00039	0.0003	0.00028	0.00058	0.00045	0.0004	0.00038	0.00044	0.0004	0.00032	0.00035	0.00038	0.00035	0.00036	0.00036	0.00044	0.00044
Nickel (Ni)	mg/L	0.00014	0.00017	0.00014	0.00013	0.00085	0.00049	0.00059	0.0004	0.00058	0.00017	0.00017	0.00019	0.00021	0.00035	0.00004	0.00009	0.00008	0.00008	0.00009	0.0001
Phosphorus (P)	mg/L	0.01	0.006	0.011	0.009	0.018	0.013	0.076	0.008	0.011	0.003	0.006	0.013	<0.002	0.011	0.003	<0.002	0.003	<0.002	<0.002	0.003
Potassium (K)	mg/L	0.45	0.45	0.49	0.48	0.87	0.44	0.55	0.54	0.55	0.49	0.48	0.46	0.52	0.44	0.36	0.43	0.4	0.4	0.39	0.45
Selenium (Se)	mg/L	0.00059	0.00045	0.00056	0.00055	0.00053	0.00039	0.00056	0.00051	0.00057	0.0006	0.00059	0.00059	0.00029	0.0002	0.00024	0.0002	0.00022	0.00031	0.00033	0.00037
Silicon (Si)	mg/L	3.88	3	3.34	3.36	3.18	2.32	3.29	3.28	3.39	3.07	3.47	3.02	2.96	2.55	2.74	2.94	2.97	2.7	3.03	3.01
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.05	1.18	1.06	1.11	1.03	0.64	1.48	1.25	1.4	1.21	1.16	1.14	0.98	0.96	0.97	1.1	1.07	1.12	1.09	1.25
Strontium (Sr)	mg/L	0.0324	0.0378	0.0333	0.0352	0.0348	0.0252	0.0504	0.0462	0.0458	0.0408	0.0392	0.0362	0.0148	0.0133	0.0161	0.0184	0.0165	0.0167	0.017	0.019
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0005	0.0003	0.0002	0.0004	<0.0002	<0.0002	<0.0002	0.0004	0.0004	0.0005	0.0004	0.0003	0.0003	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0045	0.0049	0.0056	0.0052	0.0067	0.0095	0.0119	0.0051	0.0049	0.0047	0.0045	0.005	0.0091	0.0058	0.0011	0.0008	0.0005	<0.0001	0.0001	0.0011
Dissolved Metals																					
Aluminum (Al)	mg/L	0.0075	0.0012	0.0016	0.0015	0.0735	0.0258	0.01	0.0054	0.0045	0.0029	0.0027	0.0022	0.0144	0.0241	0.0167	0.0107	0.0153	0.0046	0.0056	0.0047
Antimony (Sb)	mg/L	0.00005	0.00003	0.00003	0.00002	0.00007	0.00003	0.00005	0.00005	0.00006	0.00005	0.00004	0.00004	<0.00002	<0.00002	0.00003	0.00002	0.00003	<0.00002	<0.00002	0.00003
Arsenic (As)	mg/L	0.0001	0.00009	0.00009	0.0001	0.0002	0.00011	0.00011	0.00016	0.00013	0.0001	0.00011	0.00011	0.00017	0.00013	0.0002	0.00011	0.00014	0.00009	0.00014	0.00012
Cadmium (Cd)	mg/L	0.000079	0.000077	0.000097	0.000089	0.000058	0.000024	0.000089	0.00009	0.00008	0.000084	0.000101	0.000074	0.000006	<0.000005	0.000028	0.000009	<0.000005	<0.000005	<0.000005	<0.000005
Calcium (Ca)	mg/L	23.5	24.6	24.9	25.5	21.1	13.8	25.2	25.4	24.8	25	25.5	24.5	23.8	17.4	24.6	26.7	25.5	19.6	27.7	29.3
Chromium (Cr)	mg/L	0.0001	0.0011	0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000022	0.000022	0.000022	0.000018	0.000086	0.00004	0.000047	0.000056	0.000041	0.000023	0.000035	0.000028	0.000045	0.000028	0.000039	0.00002	0.000027	0.00001	0.000019	0.000019
Copper (Cu)	mg/L	0.00051	0.0004	0.00036	0.00034	0.00146	0.0016	0.00079	0.00066	0.00054	0.00038	0.00043	0.00038	0.00164	0.00186	0.00187	0.001	0.00116	0.00046	0.00068	0.00067
Iron (Fe)	mg/L	0.013	0.002	0.013	0.016	0.113	0.064	0.031	0.039	0.034	0.013	0.016	0.01	0.01	0.005	0.005	0.002	0.008	<0.001	0.002	0.004
Lead (Pb)	mg/L	0.000084	0.000068	0.000162	0.000057	0.000121	0.000037	0.000215	0.000066	0.000008	<0.000005	<0.000005	<0.000005	0.000087	0.000009	0.000129	0.000005	0.000078	<0.000005	0.000006	0.000006
Magnesium (Mg)	mg/L	2.47	2.72	2.54	2.45	2.49	1.63	3.14	3.06	3.14	2.91	3.02	2.7	1.47	0.98	1.47	1.62	1.52	1.2	1.74	1.81
Manganese (Mn)	mg/L	0.0146	0.0173	0.0194	0.0191	0.015	0.00398	0.0105	0.0196	0.0162	0.0127	0.0138	0.0147	0.00167	0.00013	0.0007	0.00014	0.0014	<0.00005	<0.00005	0.00052
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00041	0.00038	0.00041	0.0004	0.00037	0.00031	0.00038	0.00044	0.00043	0.00041	0.0004	0.00043	0.00034	0.00038	0.00044	0.00036	0.00036	0.00027	0.00035	0.00038
Nickel (Ni)	mg/L	0.00013	0.00014	0.00014	0.00011	0.00038	0.00042	0.0002	0.00038	0.00025	0.00016	0.00018	0.00018	0.00013	0.00013	0.00045	0.00011	0.00019	0.00003	0.00006	0.0001
Phosphorus (P)	mg/L	0.008	0.006	0.007	0.007	0.01	0.005	0.01	0.004	0.002	0.003	0.009	0.005	0.003	0.003	0.009	<0.002	0.006	<0.002	0.003	0.003
Potassium (K)	mg/L	0.46	0.48	0.49	0.49	0.87	0.43	0.47	0.52	0.57	0.51	0.65	0.49	0.56	0.39	0.46	0.42	0.44	0.32	0.43	0.51
Selenium (Se)	mg/L	0.00051	0.0005	0.00054	0.00054	0.00048	0.00039	0.00057	0.0005	0.00056	0.00056	0.00054	0.00055	0.00035	0.0002	0.00025	0.00021	0.00021	0.00022	0.0003	0.00037
Silicon (Si)	mg/L	3.18	3.32	3.2	3.43	3.24	2.1	3.12	3.29	3.54	3.08	3.28	2.88	3.13	2.46	2.69	2.93	3.04	2.04	2.87	3.18
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000012	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.11	1.28	1.12	1.06	1.07	0.68	1.39	1.37	1.44	1.25	1.28	1.17	1.01	0.85	1.22	1.16	1.16	0.87	1.2	1.28
Strontium (Sr)	mg/L	0.034	0.037	0.0352	0.0362	0.037	0.0257	0.0497	0.0491	0.0489	0.0427	0.0405	0.0399	0.0156	0.0126	0.0171	0.0189	0.0183	0.0135	0.0175	0.021
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0004	0.0003	0.0004	0.0005	<0.0002	0.0002	<0.0002
Zinc (Zn)	mg/L	0.0058	0.0045	0.0061	0.0044	0.005	0.0117	0.0045	0.006	0.0033	0.0046	0.0049	0.0044	0.0095	0.0006	0.004	0.0019	0.0016	<0.0001	0.0004	0.0027

Sample location		W80	W80	W80	W80	W80	W80-98	W80	W80	W80	W81	W81	W81	W81	W81	W81	W81	W81	W81	W81	W81
Sampling Date		**26-Apr-09**	**14-Jun-09**	**9-Jul-09**	**9-Aug-09**	**5-Sep-09**	**3-Sep-09**	**2-Oct-09**	**27-Nov-09**	**11-Dec-09**	**28-Feb-09**	**20-Mar-09**	**25-Apr-09**	**17-May-09**	**17-Jun-09**	**8-Jul-09**	**9-Aug-09**	**5-Sep-09**	**15-Oct-09**	**15-Nov-09**	**24-Dec-09**
Lab Report	**Units**	**A919550**	**A930270**	**A935359**	**A942402**	**A949310**	**A949299**	**A956923**	**A969041**	**A971785**	**A910072**	**A913452**	**A919550**	**A923809**	**A930976**	**A935359**	**A942402**	**A949299**	**A959421**	**A965984**	**A973517**
Field Physical Parameters																					
Temperature	°C	0.24	7.57	8.09	8.79	6.59	6.59	2.54	0.05	0.04	0.05	0.07	0.17	0.39	3.98	5.62	6.64	5.23	0.1	note 1	0.02
Conductivity	uS/cm	72	74	-	92	61	61	79	72	114	61	56	56	118	35		60	56	68	note 1	61
Specific conductivity	uS/cm3	139	111	146	134	94	94	139	138	60	118	107	107	222	58	123	94	90	130	113	32
pH	pH Units	7.53	7.46	7.56	7.02	7.15	7.15	7.15	7.08	9.74	7.32	6.52	6.94	6.83	7.12	7.3	6.65	7.55	6.83	7.21	7.21
Laboratory Parameters																					
Physical Parameters																					
Temperature	°C	9.3	5	7	6.7	2.7	2.7	1.7	5.3	2.3	5	7.7	9.3	6	2.3	7	6.7	2.7	6.7	1	2
Conductivity	uS/cm	180	120	150	163	157	157	162	173	170	140	140	150	120	110	120	136	137		140	141
Hardness	mg/L	86.8	55.1	76.7	81.3	73.8	72.5	77.2	85	80.4	67.2	71.7	67.4	55.5	50.7	63.6	64.2	64	62.6	67.7	67.1
Total Suspended Solids	mg/L	<4	8	<4	<4	<4	<4	<4	<4	4	<4	<4	<4	5	<4	<4	<4	<4	<4	<4	<4
pH	pH Units	8.0	7.9	8.0	7.9	7.9	7.8	8.0	8.1	7.8	8.0	7.9	8.0	7.8	7.8	7.8	7.6	7.6	8.1	8.0	7.8
Major Anions																					
Alkalinity-Total	mg/L	71	46	61	71	67	67	67	71	69	61	61	61	53	46	53	61	56	64	62	62
Acidity-Total	mg/L	1.4	<0.5	0.5	<0.5	1.2	0.8	<0.5	<0.5	<0.5	<0.5	3.2	1.3	<0.5	<0.5	1.3	<0.5	0.7	<0.5	<0.5	<0.5
Bromide	mg/L	<0.1	0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	<0.5	0.6	0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	11	<0.5	<0.5	0.9	0.6	<0.5	0.7	<0.5	2.1	1.2	<0.5
Fluoride	mg/L	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Sulphate	mg/L	16	14	13	14	12	13	15	17	17	10	9.1	9.6	8.8	9.5	7.9	8.3	9.8	9.2	10	10
Nutrient Parameters																					
Ammonial Nitrogen	mg/L	0.008	<0.005	<0.005	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.011	0.008	<0.005	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	0.018
Nitrate Nitrogen	mg/L	0.133	0.027	<0.002	0.028	0.007	<0.002	0.012	0.057	0.196	0.146	0.154	0.161	0.116	0.036	0.041	0.036	0.02	0.063	0.099	0.137
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.008	0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Total Phosphate	mg/L	0.007	0.005	<0.005	0.009	<0.005	0.006	<0.005	0.006	<0.005	<0.005	0.008	<0.005	0.013	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Ortho-Phosphate	mg/L	0.002	0.001	0.002	0.001	0.001	0.002	<0.001	<0.001	0.001	0.002	0.001	0.001	0.005	0.002	0.004	0.001	<0.001	<0.001	0.002	<0.001
Total Metals																					
Aluminum (Al)	mg/L	0.0091	0.0353	0.0263	0.0188	0.0082	0.0091	0.0095	0.012	0.0042	0.0027	0.0031	0.0056	0.0799	0.0284	0.0194	0.0103	0.0073	0.0058	0.004	0.0083
Antimony (Sb)	mg/L	0.00005	0.00004	0.00004	0.00005	0.00004	0.00005	0.00003	0.00003	0.00005	<0.00002	<0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	<0.00002	0.00003
Arsenic (As)	mg/L	0.00025	0.00023	0.00023	0.00034	0.00027	0.00028	0.00021	0.00021	0.0002	0.0001	0.00009	0.0001	0.00018	0.00012	0.00012	0.00015	0.00013	0.00012	0.0001	0.00011
Cadmium (Cd)	mg/L	0.000018	0.000022	0.000121	0.000022	0.000019	0.000012	0.000022	0.000012	0.000014	0.000017	0.000024	0.000014	0.000026	0.000022	0.000021	0.000016	0.000016	0.000019	0.000016	0.000014
Calcium (Ca)	mg/L	26.1	17.3	24.1	25.6	22.1	21.8	24.1	23.6	24.2	22.3	22.7	23.4	19.1	17.6	22	22.2	20	21.5	21.8	23.5
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000057	0.000057	0.000065	0.000055	0.00004	0.000033	0.000048	0.000055	0.000042	0.000012	0.000012	0.000014	0.000084	0.000047	0.000043	0.000028	0.00002	0.000017	0.000016	0.000023
Copper (Cu)	mg/L	0.00045	0.00125	0.00109	0.00075	0.00056	0.00073	0.00066	0.00048	0.00038	0.0008	0.00031	0.00032	0.00155	0.0013	0.00084	0.00059	0.0005	0.00035	0.00035	0.00038
Iron (Fe)	mg/L	0.124	0.086	0.103	0.132	0.087	0.087	0.095	0.126	0.071	0.008	0.01	0.014	0.109	0.037	0.035	0.018	0.013	0.014	0.008	0.02
Lead (Pb)	mg/L	0.00016	0.000086	0.000092	0.000058	0.000018	0.000027	0.000031	0.000031	0.000014	0.000142	0.000056	0.000056	0.00016	0.000062	0.00002	0.000009	<0.000005	0.000005	0.000011	0.000008
Magnesium (Mg)	mg/L	5.26	2.88	4.03	4.24	3.71	3.71	4.15	4.35	4.7	2.22	2.13	2.19	1.91	1.66	2.11	2.24	1.92	2.19	2.26	2.27
Manganese (Mn)	mg/L	0.0579	0.0144	0.0204	0.036	0.0255	0.0249	0.0321	0.0484	0.0369	0.00337	0.00414	0.00363	0.0092	0.00505	0.00736	0.00405	0.00356	0.00652	0.00173	0.00797
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00057	0.00032	0.00036	0.00046	0.00044	0.00042	0.00041	0.0004	0.00049	0.00034	0.00031	0.00039	0.00029	0.00029	0.00026	0.00034	0.0003	0.00031	0.00031	0.00035
Nickel (Ni)	mg/L	0.00024	0.00038	0.00037	0.00039	0.00025	0.00031	0.00033	0.00029	0.00019	0.00013	0.0001	0.00009	0.00032	0.00025	0.00019	0.00019	0.00012	0.00014	0.00016	0.00013
Phosphorus (P)	mg/L	0.007	0.012	0.013	0.006	0.006	0.008	0.009	0.007	0.005	0.003	0.004	0.004	0.007	0.005	0.002	0.002	0.004	<0.002	<0.002	0.004
Potassium (K)	mg/L	0.68	0.46	0.5	0.55	0.5	0.5	0.57	0.53	0.58	0.47	0.46	0.51	0.69	0.39	0.38	0.41	0.4	0.43	0.42	0.47
Selenium (Se)	mg/L	0.00113	0.00079	0.00082	0.00064	0.00059	0.00062	0.0007	0.00104	0.00105	0.00041	0.00046	0.00046	0.00041	0.00034	0.00038	0.00036	0.00033	0.00042	0.0004	0.00038
Silicon (Si)	mg/L	3.97	2.76	3.28	3.7	3.26	3.29	3.1	3.61	3.13	3.2	3.32	3.59	3.23	2.52	3.08	3	3.02	2.89	3.29	3.19
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.14	0.74	1.03	1.08	1.01	1.06	1.07	1.04	1.09	1.19	1.02	1.04	0.94	0.88	1.09	1.06	1.05	1.09	1.11	1.1
Strontium (Sr)	mg/L	0.0514	0.0331	0.0453	0.0495	0.0448	0.043	0.0456	0.0504	0.05	0.0384	0.0331	0.0363	0.0318	0.0311	0.0383	0.04	0.0354	0.0375	0.0361	0.0389
Thallium (Tl)	mg/L	<0.000002	<0.000002	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.002	0.0011	0.0024	0.0008	0.0004	0.001	0.0037	0.0009	0.0008	0.0036	0.0024	0.0023	0.0031	0.0017	0.0019	0.0015	0.0013	0.0018	0.0015	0.0025
Dissolved Metals																					
Aluminum (Al)	mg/L	0.0028	0.0108	0.0106	0.0059	0.0071	0.0048	0.0029	0.0021	0.0022	0.002	0.0023	0.0022	0.044	0.0109	0.0069	0.0048	0.0041	0.0024	0.0022	0.0022
Antimony (Sb)	mg/L	0.00005	0.00005	0.00006	0.00006	0.00005	0.00005	0.00004	0.00005	0.00005	0.00003	0.00002	0.00003	0.00006	0.00003	0.00003	0.00003	0.00004	0.00003	0.00002	0.00003
Arsenic (As)	mg/L	0.00023	0.00021	0.00022	0.00035	0.00026	0.00024	0.0002	0.00015	0.00018	0.0001	0.0001	0.00011	0.00014	0.00013	0.00011	0.00013	0.00012	0.00011	0.00011	0.00009
Cadmium (Cd)	mg/L	0.000017	0.000006	0.00113	0.000018	0.000015	0.000014	0.000008	0.000007	0.000006	0.000012	0.000019	0.00002	0.000023	0.000013	0.000021	0.000017	0.000014	0.000013	0.000009	0.000012
Calcium (Ca)	mg/L	26.3	16.8	24.1	25.5	23.1	22.8	24.1	26.2	24.5	23	24.8	24.5	20.2	17.8	21.3	22.1	22.2	23	23.1	23.1
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0011	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000045	0.000034	0.000045	0.000044	0.000024	0.000036	0.000036	0.000037	0.000034	0.000013	0.000009	0.000011	0.000046	0.000021	0.000023	0.000019	0.000017	0.000017	0.000006	0.000011
Copper (Cu)	mg/L	0.00029	0.00105	0.00097	0.00066	0.00071	0.00061	0.00038	0.00035	0.00038	0.00075	0.00039	0.00028	0.00115	0.00093	0.00065	0.00058	0.00051	0.00033	0.00046	0.0003
Iron (Fe)	mg/L	0.038	0.035	0.057	0.072	0.067	0.067	0.066	0.038	0.041	0.002	0.009	0.005	0.048	0.012	0.012	0.007	0.006	0.005	0.005	0.004
Lead (Pb)	mg/L	0.000057	0.00001	0.000034	0.000017	0.000017	0.000021	<0.000005	<0.000005	<0.000005	0.000096	0.000128	0.000043	0.000112	0.000006	0.000007	0.000005	0.000005	<0.000005	<0.000005	<0.000005
Magnesium (Mg)	mg/L	5.29	2.79	4.06	4.26	3.9	3.81	4.15	4.74	4.67	2.37	2.38	2.3	1.94	1.65	2.08	2.22	2.1	2.32	2.4	2.28
Manganese (Mn)	mg/L	0.054	0.00896	0.0179	0.0307	0.0235	0.0235	0.0262	0.0367	0.0361	0.00275	0.00356	0.00225	0.00521	0.00377	0.00534	0.00302	0.0028	0.00527	0.00114	0.00457
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00058	0.00034	0.00039	0.00046	0.00045	0.00046	0.00039	0.00045	0.00046	0.00035	0.00035	0.00041	0.00027	0.00031	0.00024	0.00035	0.00033	0.00031	0.00035	0.00032
Nickel (Ni)	mg/L	0.00022	0.00037	0.00034	0.00033	0.00028	0.00025	0.00021	0.00024	0.0002	0.00014	0.00011	0.00012	0.00026	0.00022	0.00017	0.0002	0.00016	0.00012	0.00015	0.00012
Phosphorus (P)	mg/L	0.004	<0.002	0.005	0.004	0.005	0.004	0.002	0.003	0.003	0.002	0.005	0.003	0.007	<0.002	0.002	0.003	<0.002	<0.002	0.002	0.003
Potassium (K)	mg/L	0.7	0.46	0.5	0.56	0.53	0.54	0.55	0.59	0.6	0.5	0.52	0.55	0.75	0.39	0.38	0.42	0.45	0.46	0.46	0.46
Selenium (Se)	mg/L	0.00095	0.00087	0.00082	0.0006	0.00058	0.00059	0.00078	0.00099	0.00105	0.00042	0.00055	0.00046	0.00037	0.00037	0.00037	0.00033	0.00032	0.00038	0.00038	0.00039
Silicon (Si)	mg/L	3.22	2.65	3.23	3.62	3.28	3.45	3.34	3.6	3.14	3.29	3.74	3.52	3.15	2.54	2.89	3.02	3.09	2.86	3.29	3.32
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.14	0.74	1.07	1.16	1.07	1.04	1.08	1.12	1.11	1.27	1.15	1.11	1.01	0.89	1.08	1.17	1.1	1.14	1.16	1.12
Strontium (Sr)	mg/L	0.0515	0.0321	0.045	0.0489	0.0466	0.0471	0.0454	0.0508	0.0523	0.0381	0.0384	0.0372	0.0337	0.0308	0.0378	0.0407	0.0388	0.0407	0.0374	0.0382
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0018	0.0006	0.0015	0.0026	0.0008	0.0009	0.0008	0.0014	0.0011	0.0038	0.0037	0.0021	0.0229	0.0014	0.0017	0.0044	0.0019	0.0022	0.0016	0.0014

Table 2-5 2009 Money Creek Watershed Surface Water Quality Results

Sample location		W14	W14	W14	W14	W14	W14	W14	W22	W22	W22	W22	W22	W22	W22	W22	W22	W22	W22	W22
Sampling Date		**14-Jun-09**	**12-Jul-09**	**2-Aug-09**	**3-Sep-09**	**3-Oct-09**	**25-Nov-09**	**26-Dec-09**	**16-Jan-09**	**11-Feb-09**	**22-Mar-09**	**11-Apr-09**	**10-May-09**	**7-Jun-09**	**15-Jul-09**	**7-Aug-09**	**4-Sep-09**	**6-Oct-09**	**1-Nov-09**	**19-Dec-09**
Lab Report	**Units**	**A930270**	**A936094**	**A940905**	**A949310**	**A956923**	**A969041**	**A973517**	**A902628**	**A907297**	**A913452**	**A917065**	**A922441**	**A928455**	**L793547**	**A941870**	**A949310**	**A956923**	**A962842**	**A973034**
Field Physical Parameters																				
Temperature	°C	7.19	13.07	10.3	7.4	3.09	0.01	0.04	0.06	0.06	0.05	0.02	0.1	9.31	10.11	11.39	6.4	1.71	-	0.05
Conductivity	uS/cm	94	84	86	67	59	63	126	110	110	131	142	37	67	118	170	113	96	-	259
Specific conductivity	uS/cm3	62	109	121	101	101	121	66	212	209	250	272	71	95	164	230	175	173	256	136
pH	pH Units	7.06	6.58	7.49	7.2	6.57	7.42	7.42	6.84	7.08	7.58	7.94	7.55	7.31	7.31	7.2	7.25	6.01	7.17	7.7
Laboratory Parameters																				
Physical Parameters																				
Temperature	°C	5	1.7	6	2.7	1.7	5.3	2	2.7	2.3	7.7	2.7	5.7	10.3	3	3	2.7	1.7	5	1.7
Conductivity	uS/cm	99	110	140	126	121	152	149	280	290	300	300	99	100	194	230	220	211	264	281
Hardness	mg/L	42.7	49.9	68.3	57.5	56.8	71.6	69.2	141	150	147	157	50.1	47.5	97.5	122	106	99	133	145
Total Suspended Solids	mg/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	6	<4	92	23	<3.0	<4	<4	<4	<4	<4
pH	pH Units	7.9	7.9	8.1	7.7	7.8	7.9	7.9	8.2	8.2	8.2	8.2	7.7	7.9	8.2	8.1	8.0	8.1	8.2	8.0
Major Anions																				
Alkalinity-Total	mg/L	39	43	61	50	44	60	59	120	120	120	130	41	39	79.5	99	89	85	110	120
Acidity-Total	mg/L	<0.5	1.9	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	0.6	3.1	<0.5	0.5	<0.5	<0.5	<0.5
Bromide	mg/L	0.1	<0.4	<4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	0.6	0.6	<0.5	<0.5	<0.5	<0.5	1.6	0.9	1.4	<0.5	<0.5	<0.5	0.7	<2.5	0.6	<0.5	<0.5	0.6	<0.5
Fluoride	mg/L	0.05	0.08	0.06	0.07	0.07	0.06	0.08	0.07	0.09	0.08	0.09	0.04	0.05	<0.10	0.07	0.07	0.07	0.08	0.07
Sulphate	mg/L	12	10	12	13	15	15	16	33	1.3	35	29	6.1	12	20.7	26	23	23	28	29
Nutrient Parameters																				
Ammonial Nitrogen	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.017	<0.005	0.005	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.049	0.006	<0.002	0.149	0.01	0.035	0.112	0.119	0.167	0.181	0.153	0.023	0.032	<0.025	0.012	0.011	0.013	0.083	0.157
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	0.0136	<0.002	<0.002	0.003	<0.002	<0.002
Total Phosphate	mg/L	0.005	0.005	<0.005	0.007	<0.005	<0.005	<0.005	0.006	0.015	0.007	0.005	0.166	0.01	<0.0020	<0.005	<0.005	<0.005	<0.005	0.007
Dissolved Ortho-Phosphate	mg/L	0.002	0.003	0.001	0.001	0.001	<0.001	<0.001	0.005	<0.001	0.003	0.002	0.035	0.001	<0.0010	0.001	<0.001	<0.001	0.001	<0.001
Total Metals																				
Aluminum (Al)	mg/L	0.0342	0.0249	0.0116	0.0146	0.0147	0.0064	0.008	0.0066	0.006	0.0081	0.0407	0.299	0.0884	0.0216	0.0063	0.0049	0.0043	0.0033	0.0036
Antimony (Sb)	mg/L	0.00003	0.00002	0.00002	0.00002	<0.00002	0.00002	0.00002	0.00008	0.00009	0.00009	0.00009	0.00008	0.00006	<0.00010	0.00008	0.00006	0.00005	0.00007	0.00007
Arsenic (As)	mg/L	0.00016	0.00023	0.0003	0.00019	0.00014	0.00015	0.00014	0.00019	0.00023	0.00023	0.00023	0.00085	0.00028	0.00022	0.00022	0.0002	0.00017	0.0002	0.0002
Cadmium (Cd)	mg/L	0.00002	0.000013	0.00002	0.000008	<0.000005	0.000007	0.000005	0.000019	0.000021	0.000028	0.000028	0.00021	0.000053	0.000039	0.000029	0.000015	0.000012	0.000022	0.000007
Calcium (Ca)	mg/L	12.8	14	20.3	14.8	15.2	19.1	20.4	40	34.6	39.6	41	13.2	13	25	32.5	25.7	26.4	33.9	38.8
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0012	0.0003	0.0003	0.0009	<0.0001	<0.00050	0.0002	0.0001	<0.0001	0.0002	0.0002
Cobalt (Co)	mg/L	0.000046	0.000036	0.000027	0.000018	0.000022	0.000018	0.00002	0.000012	0.000015	0.000019	0.000027	0.000944	0.000217	<0.00010	0.000019	0.000016	0.000012	0.000015	0.00002
Copper (Cu)	mg/L	0.00094	0.00056	0.00092	0.00039	0.00033	0.00029	0.00028	0.00037	0.00055	0.00057	0.00073	0.00397	0.00156	0.00104	0.00097	0.00045	0.00039	0.00035	0.0003
Iron (Fe)	mg/L	0.069	0.071	0.06	0.069	0.065	0.038	0.036	0.005	0.014	0.017	0.038	0.763	0.2	0.036	0.013	0.018	0.021	0.01	0.011
Lead (Pb)	mg/L	0.000059	0.000051	0.000052	0.000023	0.000015	0.000011	0.000022	0.00007	0.000216	0.000182	0.000317	0.00105	0.00034	0.000076	0.000036	0.000012	<0.000005	<0.000005	0.000009
Magnesium (Mg)	mg/L	2.63	3.63	4.29	3.97	4.15	4.31	5.04	11.8	11.7	12.7	13.3	4.15	3.66	7.9	9.94	8.27	8.19	10.4	12.6
Manganese (Mn)	mg/L	0.0105	0.00997	0.00766	0.00718	0.00671	0.00637	0.00591	0.00044	0.00139	0.00137	0.00262	0.183	0.0404	0.00557	0.00203	0.0017	0.00194	0.00132	0.00147
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00027	0.00041	0.00049	0.00038	0.00036	0.0004	0.00043	0.00084	0.0008	0.00082	0.00085	0.00035	0.00036	0.000637	0.00087	0.00063	0.00058	0.00073	0.00075
Nickel (Ni)	mg/L	0.00047	0.00059	0.00052	0.00048	0.0005	0.00036	0.00044	0.00069	0.00097	0.00066	0.00089	0.00447	0.00147	0.00113	0.00103	0.00073	0.00083	0.00068	0.00068
Phosphorus (P)	mg/L	0.005	0.022	0.007	0.002	0.004	<0.002	0.003	0.003		0.005	0.03	0.105	0.027	<0.30	0.003	0.002	0.002	<0.002	0.003
Potassium (K)	mg/L	0.5	0.7	0.74	0.71	0.74	0.63	0.85	0.86	0.81	1	1.04	1.32	0.62	<2.0	0.88	0.71	0.73	0.8	0.9
Selenium (Se)	mg/L	0.00046	0.00021	0.00041	0.00019	0.00018	0.00056	0.00049	0.00093	0.0009	0.001	0.00099	0.00038	0.00027	0.00083	0.00062	0.00052	0.00051	0.00072	0.00087
Silicon (Si)	mg/L	2.64	3.06	3.59	3.53	3.72	3.88	4.56	5.05	3.74	4.88	4.72	2.78	2.96	3.51	3.34	3.75	3.93	4.28	4.9
Silver (Ag)	mg/L	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000007	<0.000005	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	0.76	1.02	1.2	1.12	1.15	1.14	1.41	1.89	2.07	2.17	2.21	0.79	0.79	<2.0	1.66	1.45	1.44	1.73	2.11
Strontium (Sr)	mg/L	0.0279	0.0384	0.0469	0.0426	0.0422	0.048	0.0518	0.172	0.158	0.169	0.178	0.0564	0.0489	0.109	0.141	0.11	0.102	0.148	0.168
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000002	0.000015	0.000011	<0.00010	0.000003	<0.000002	<0.000002	<0.000002	0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	0.0004	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0011	0.002	0.0019	0.0011	0.002	0.0003	0.0016	0.0033	0.0028	0.0048	0.0061	0.0121	0.0025	<0.0070	0.0028	0.001	0.0008	0.0011	0.0012
Dissolved Metals																				
Aluminum (Al)	mg/L	0.0197	0.0122	0.006	0.0095	0.0089	0.0034	0.0036	0.0089	0.0124	0.0023	0.0029	0.0398	0.0213	0.0063	0.0045	0.0033	0.0027	0.0021	0.0015
Antimony (Sb)	mg/L	0.00003	0.00002	0.00003	0.00002	0.00002	0.00003	0.00002	0.00007	0.00021	0.00007	0.00006	0.00007	0.00004	<0.00010	0.00008	0.00007	0.00006	0.00006	0.00008
Arsenic (As)	mg/L	0.00017	0.00019	0.00025	0.00018	0.00013	0.00012	0.00014	0.00018	0.00021	0.00021	0.00021	0.00027	0.00019	0.00022	0.00022	0.0002	0.00015	0.00016	0.00018
Cadmium (Cd)	mg/L	0.000007	0.000009	0.000007	<0.000005	<0.000005	0.000007	<0.000005	0.000026	0.000029	0.000022	0.000018	0.000052	<0.000005	0.000023	0.000022	0.00002	0.000008	0.000022	0.000011
Calcium (Ca)	mg/L	13.1	14.4	19.5	16.1	15.6	21.2	19.6	36.6	39.2	38.2	39.7	12.2	13.3	25.7	31.9	27.7	26.2	35.2	37.9
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0014	0.0002	0.0002	<0.0001	<0.0001	<0.00050	0.0002	0.0001	0.0002	0.0002	0.0002
Cobalt (Co)	mg/L	0.000026	0.000017	0.000017	0.000014	0.000012	0.000015	0.000011	0.000026	0.000023	0.000014	0.00001	0.000071	0.00003	<0.00010	0.000012	0.000009	0.000012	0.000015	0.000007
Copper (Cu)	mg/L	0.00084	0.00039	0.00052	0.00045	0.00027	0.00025	0.00024	0.00036	0.00092	0.00045	0.00024	0.00154	0.00104	0.00063	0.00048	0.00046	0.0003	0.00037	0.00028
Iron (Fe)	mg/L	0.031	0.043	0.042	0.048	0.05	0.02	0.015	0.021	0.019	0.006	0.006	0.112	0.033	<0.030	0.007	0.013	0.014	0.005	0.004
Lead (Pb)	mg/L	0.000028	0.000006	0.000007	0.00003	<0.000005	<0.000005	<0.000005	0.000033	0.00144	0.000179	0.000069	0.000093	0.00002	<0.000050	0.00001	<0.000005	<0.000005	<0.000005	<0.000005
Magnesium (Mg)	mg/L	2.62	3.77	4.44	4.21	4.3	4.54	4.93	12.1	12.7	12.6	12.8	3.93	3.78	8.08	9.55	8.84	8.17	11.1	12.2
Manganese (Mn)	mg/L	0.00528	0.00502	0.00445	0.00438	0.00501	0.00454	0.00392	0.00456	0.00094	0.00053	0.00042	0.00944	0.00265	0.00161	0.00104	0.00082	0.001	0.00097	0.00024
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00028	0.00033	0.00051	0.0004	0.0003	0.00039	0.00042	0.00072	0.0011	0.00077	0.00087	0.00042	0.00037	0.00062	0.00078	0.00066	0.00054	0.00071	0.00076
Nickel (Ni)	mg/L	0.0005	0.00056	0.00041	0.00062	0.00058	0.0004	0.00041	0.00079	0.00186	0.00057	0.00057	0.0017	0.00097	0.0008	0.00076	0.00078	0.00075	0.00072	0.00062
Phosphorus (P)	mg/L	0.003	0.003	0.004	0.002	<0.002	0.002	0.003	0.011		0.004	0.005	0.018	0.005	<0.30	<0.002	<0.002	<0.002	<0.002	<0.002
Potassium (K)	mg/L	0.5	0.7	0.69	0.79	0.76	0.71	0.8	0.86	1	0.91	0.95	1.69	0.65	<2.0	0.85	0.78	0.72	0.8	0.9
Selenium (Se)	mg/L	0.00049	0.00021	0.00047	0.00018	0.00018	0.00068	0.00046	0.00089	0.00094	0.00095	0.00095	0.00036	0.00026	0.0006	0.00061	0.00053	0.00049	0.00078	0.0008
Silicon (Si)	mg/L	2.63	3.18	3.29	3.38	3.81	4.78	4.39	4.49	4.35	4.34	4.72	2.22	2.81	3.62	3.63	3.72	3.82	4.87	4.88
Silver (Ag)	mg/L	0.000011	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	0.76	1.06	1.2	1.24	1.18	1.22	1.4	2.02	2.34	2.07	2.03	0.79	0.86	<2.0	1.59	1.55	1.46	1.9	2.03
Strontium (Sr)	mg/L	0.029	0.0408	0.0471	0.0456	0.0446	0.0475	0.0499	0.158	0.167	0.168	0.178	0.0508	0.047	0.112	0.137	0.117	0.104	0.144	0.165
Thallium (Tl)	mg/L	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000003	<0.000002	<0.000002	0.000006	0.000005	<0.00010	0.000003	<0.000002	<0.000002	<0.000002	0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0018	0.0004	0.0004	0.001	0.0003	0.0011	0.0004	0.003	0.0068	0.0051	0.0024	0.0037	0.0007	0.0011	0.0018	0.001	0.0008	0.001	0.0023

Sample location		W40	W40	W40	W40	W40	W40	W40	W40
Sampling Date		10-May-09	7-Jun-09	15-Jul-09	7-Aug-09	4-Sep-09	6-Oct-09	1-Nov-09	19-Dec-09
Lab Report	Units	A922441	A928455	L793547	A941870	A949310	A956923	A962842	A973034
Field Physical Parameters									
Temperature	°C	0.08	9.41	10.08	11.52	6.5	1.84	-	0.06
Conductivity	uS/cm	38	68	121	171	109	99	-	235
Specific conductivity	uS/cm3	72	96	168	231	169	176	239	123
pH	pH Units	7.48	7.46	7.42	7.39	7.03	6.48	7.38	7.64
Laboratory Parameters									
Physical Parameters									
Temperature	°C	5.7	10.3	3	3	2.7	1.7	5	1.7
Conductivity	uS/cm	99	100	194	237	223	211	266	281
Hardness	mg/L	52	46.3	97.4	118	111	101	135	142
Total Suspended Solids	mg/L	110	22	<3.0	<4	<4	<4	<4	<4
pH	pH Units	7.7	7.9	8.2	8.2	8.0	8.1	8.2	8.0
Major Anions									
Alkalinity-Total	mg/L	41	39	79.1	100	88	85	110	120
Acidity-Total	mg/L	<0.5	0.7	2.9	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L	<0.1	<0.1	<0.25	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	0.9	0.7	<2.5	0.7	<0.5	<0.5	0.7	<0.5
Fluoride	mg/L	0.04	0.05	<0.10	0.08	0.07	0.07	0.08	0.07
Sulphate	mg/L	4.5	12	20.8	27	22	23	30	29
Nutrient Parameters									
Ammonial Nitrogen	mg/L	0.008	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.03	0.038	<0.025	0.021	0.011	0.014	0.086	0.155
Nitrite Nitrogen	mg/L	0.003	<0.002	0.0159	<0.002	<0.002	0.003	<0.002	<0.002
Total Phosphate	mg/L	0.192	0.01	<0.0020	<0.005	<0.005	<0.005	<0.005	0.007
Dissolved Ortho-Phosphate	mg/L	0.022	0.002	<0.0010	0.001	0.001	<0.001	0.002	0.001
Total Metals									
Aluminum (Al)	mg/L	0.36	0.0783	0.0177	0.0055	0.0076	0.0058	0.0031	0.0039
Antimony (Sb)	mg/L	0.00009	0.00005	<0.00010	0.00007	0.00006	0.00005	0.00006	0.00007
Arsenic (As)	mg/L	0.00092	0.00024	0.0002	0.00023	0.0002	0.00018	0.00017	0.00017
Cadmium (Cd)	mg/L	0.00023	0.000053	0.000024	0.000031	0.000017	0.000012	0.000023	0.000012
Calcium (Ca)	mg/L	13.8	12.7	24.6	31.5	25	27.1	32.2	38.5
Chromium (Cr)	mg/L	0.0008	<0.0001	<0.00050	0.0002	0.0001	<0.0001	0.0002	0.0002
Cobalt (Co)	mg/L	0.0013	0.00017	<0.00010	0.000021	0.000021	0.00002	0.000015	0.000021
Copper (Cu)	mg/L	0.00449	0.00142	0.00074	0.00058	0.0005	0.0004	0.00035	0.00034
Iron (Fe)	mg/L	1.11	0.173	<0.030	0.012	0.029	0.023	0.01	0.012
Lead (Pb)	mg/L	0.00135	0.000312	<0.000050	0.000031	0.000027	0.000008	<0.000005	0.000014
Magnesium (Mg)	mg/L	4.29	3.54	7.78	9.64	8.04	8.25	9.87	12.7
Manganese (Mn)	mg/L	0.224	0.0297	0.00307	0.00191	0.00295	0.002	0.00149	0.00174
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00039	0.00031	0.000609	0.00081	0.00063	0.00058	0.00073	0.00074
Nickel (Ni)	mg/L	0.00532	0.00131	0.00095	0.00088	0.00074	0.00075	0.00064	0.00075
Phosphorus (P)	mg/L	0.138	0.027	<0.30	<0.002	0.003	0.003	<0.002	<0.002
Potassium (K)	mg/L	1.24	0.57	<2.0	0.83	0.7	0.74	0.74	0.9
Selenium (Se)	mg/L	0.00046	0.00027	0.00082	0.0006	0.00054	0.00048	0.00073	0.00085
Silicon (Si)	mg/L	3.32	2.95	3.48	3.28	3.8	3.93	4.23	4.87
Silver (Ag)	mg/L	0.000005	<0.000005	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	0.78	0.76	<2.0	1.57	1.41	1.46	1.64	2.12
Strontium (Sr)	mg/L	0.0577	0.0475	0.108	0.133	0.107	0.103	0.142	0.168
Thallium (Tl)	mg/L	0.000022	0.000011	<0.00010	0.000003	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	0.0013	0.0003	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0127	0.0024	<0.0050	0.0025	0.0014	0.0009	0.001	0.0012
Dissolved Metals									
Aluminum (Al)	mg/L	0.042	0.0204	0.0122	0.0041	0.0036	0.0061	0.0023	0.0021
Antimony (Sb)	mg/L	0.00008	0.00004	<0.00010	0.00008	0.00007	0.00006	0.00006	0.00008
Arsenic (As)	mg/L	0.00025	0.00015	0.00024	0.0002	0.0002	0.00019	0.00018	0.00018
Cadmium (Cd)	mg/L	0.000089	0.000005	0.000036	0.000025	0.000025	0.000009	0.000014	0.00001
Calcium (Ca)	mg/L	12.8	13.3	25.8	31.5	29.1	26.9	35.4	37.1
Chromium (Cr)	mg/L	0.0002	<0.0001	<0.00050	0.0002	0.0001	0.0002	0.0002	0.0002
Cobalt (Co)	mg/L	0.000081	0.000024	<0.00010	0.000014	0.000016	0.000014	0.000011	0.000008
Copper (Cu)	mg/L	0.00269	0.00093	0.00099	0.00052	0.00048	0.00032	0.00035	0.00044
Iron (Fe)	mg/L	0.114	0.031	<0.030	0.007	0.013	0.017	0.005	0.004
Lead (Pb)	mg/L	0.000295	0.000013	0.000096	0.000008	<0.000005	0.000011	<0.000005	0.000013
Magnesium (Mg)	mg/L	3.91	3.73	8.02	9.62	9.24	8.36	11.3	12
Manganese (Mn)	mg/L	0.00975	0.00282	0.00305	0.00095	0.0009	0.00114	0.00095	0.00033
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00041	0.00036	0.000696	0.00078	0.00067	0.00056	0.00074	0.00079
Nickel (Ni)	mg/L	0.00304	0.00102	0.00106	0.00081	0.00086	0.0008	0.00071	0.00069
Phosphorus (P)	mg/L	0.009	0.003	<0.30	0.002	<0.002	<0.002	<0.002	0.007
Potassium (K)	mg/L	1.48	0.64	<2.0	0.84	0.83	0.75	0.83	0.96
Selenium (Se)	mg/L	0.00032	0.00025	0.00059	0.00062	0.00048	0.0005	0.00079	0.00083
Silicon (Si)	mg/L	2.26	2.78	3.6	3.53	3.69	4.06	5.02	4.92
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	0.92	0.84	<2.0	1.61	1.61	1.52	1.94	2.06
Strontium (Sr)	mg/L	0.0509	0.0459	0.115	0.137	0.118	0.105	0.145	0.16
Thallium (Tl)	mg/L	0.000006	0.000004	<0.00010	0.000003	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0104	0.0007	0.0079	0.001	0.001	0.0034	0.0011	0.0019

Table 2-6 2009 Road Route Surface Water Quality Results

Sample location		W71	W71	W71	W71	W71	W 71	W71	W71	W71	W71	W71	W71	W72	W72	W72	W72	W 72	W72
Sampling Date		**16-Jan-09**	**14-Feb-09**	**22-Mar-09**	**11-Apr-09**	**10-May-09**	**19-Jun-09**	**16-Jul-09**	**7-Aug-09**	**4-Sep-09**	**6-Oct-09**	**1-Nov-09**	**19-Dec-09**	**16-Jan-09**	**22-Mar-09**	**11-Apr-09**	**10-May-09**	**19-Jun-09**	**16-Jul-09**
Lab Report	**Units**	**A902628**	**A907297**	**A913452**	**A917065**	**A922441**	**A931188**	**A937394**	**A941870**	**A949310**	**A956923**	**A962842**	**A973034**	**A902628**	**A913452**	**A917065**	**A922441**	**A931188**	**A937394**
Field Physical Parameters																			
Temperature	°C	0.04	0.04	0.01	0.01	0.08	1.62	2.88	3.22	2.08	0.57	note 1	0.04	0.12	0.04	0.05	0.2	6.12	7.92
Conductivity	uS/cm	7	387	360	400	153	247	342	373	176	303	note 1	688	183	213	233	44	99	203
Specific conductivity	uS/cm3	14	740	688	764	292	447	592	639	313	569	691	360	347	408	446	83	155	302
pH	pH Units	6.74	6.57	7.05	7.29	7.64	7.7	6.73	7.19	6.79	6.3	7.65	6.82	7.15	7.36	7.52	7.67	7.61	6.92
Laboratory Parameters																			
Physical Parameters																			
Temperature	°C	2.7	2.3	7.7	2.7	5.7	10	1.7	3	2.7	1.7	5	1.7	2.7	7.7	2.7	5.7	10	1.7
Conductivity	uS/cm	770	790	820	810	380	470	620	670	637	643	705	754	490	490	480	110	240	330
Hardness	mg/L	435	481	479	464	208	244	355	407	362	367	414	418	269	267	264	60.3	111	162
Total Suspended Solids	mg/L	<4	<4	<4	<4	10	110	63	150	270	53	12	<4	11	4	<4	14	5	12
pH	pH Units	8.0	8.0	7.9	8.0	8.1	8.3	8.4	8.2	8.3	8.4	8.2	8.0	8.2	8.1	8.2	7.7	8.1	8.2
Major Anions																			
Alkalinity-Total	mg/L	310	320	320	330	150	200	250	260	250	260	290	310	210	210	210	47	98	130
Acidity-Total	mg/L	6.9	11.5	20.6	7.5	<0.5	1	0.9	1.4	<0.5	3.9	<0.5	<0.5	1.7	6.5	2.6	<0.5	<0.5	<0.5
Bromide	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4
Chloride	mg/L	1.1	0.9	0.7	<0.5	1.2	1.2	0.7	0.7	<0.5	<0.5	1.1	0.6	2.5	<0.5	<0.5	1.5	1.2	1
Fluoride	mg/L	0.65	0.67	0.63	0.66	0.36	0.51	0.6	0.61	0.62	0.66	0.7	0.68	0.2	0.2	0.21	0.05	0.14	0.16
Sulphate	mg/L	120	1.1	130	140	48	54	110	110	96	110	100	110	67	50	56	<0.5	25	38
Nutrient Parameters																			
Ammonial Nitrogen	mg/L	<0.005	<0.005	0.009	<0.005	0.011	0.013	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	0.024	0.064	0.036	0.014	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.01	0.031	0.03	0.014	0.022	0.03	0.012	0.02	0.026	0.015	0.042	0.07	0.035	0.074	0.073	0.04	0.129	0.053
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.002	0.003	<0.002	0.003	<0.002	<0.002
Total Phosphate	mg/L	0.024	0.017	0.015	0.013	0.039	0.128	0.01	0.01	0.009	<0.005	0.01	0.021	0.015	0.026	0.017	0.048	0.036	0.01
Dissolved Ortho-Phosphate	mg/L	0.011	0.006	0.011	0.011	0.012	0.012	0.006	0.002	0.001	0.001	0.001	0.001	0.008	0.012	0.014	0.014	0.011	0.005
Total Metals																			
Aluminum (Al)	mg/L	0.0069	0.0042	0.0066	0.011	0.0538	0.229	0.05	0.358	0.556	0.15	0.0179	0.0114	0.0142	0.0136	0.0488	0.126	0.0312	0.0777
Antimony (Sb)	mg/L	0.00072	0.00073	0.00058	0.00059	0.00039	0.00061	0.00086	0.00079	0.00077	0.00064	0.00073	0.00065	0.00021	0.00011	0.00012	0.00017	0.00023	0.00035
Arsenic (As)	mg/L	0.00034	0.00035	0.00032	0.0003	0.00037	0.00087	0.00061	0.00129	0.00152	0.00079	0.00045	0.00031	0.00209	0.0021	0.00209	0.00168	0.00094	0.00197
Cadmium (Cd)	mg/L	0.00203	0.00248	0.00314	0.00344	0.00173	0.00376	0.00276	0.00435	0.00409	0.00388	0.0042	0.00544	0.000502	0.00027	0.000296	0.000417	0.000215	0.000813
Calcium (Ca)	mg/L	119	117	127	125	56.7	64.4	79.3	110	96.1	97.3	103	120	68.9	63.1	66	15.6	28.9	41.9
Chromium (Cr)	mg/L	<0.0001	0.0012	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0004	0.0008	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	0.0002
Cobalt (Co)	mg/L	0.000019	0.000029	0.000032	0.000034	0.000238	0.000809	0.00051	0.00145	0.00202	0.000716	0.000427	0.000045	0.000165	0.000132	0.000149	0.000265	0.000071	0.000299
Copper (Cu)	mg/L	0.00051	0.0006	0.00044	0.00042	0.00169	0.00297	0.00078	0.00338	0.00599	0.00158	0.0006	0.00059	0.0006	0.00044	0.00049	0.00263	0.00123	0.00218
Iron (Fe)	mg/L	0.012	0.018	0.023	0.025	0.149	0.75	0.089	1.21	1.7	0.594	0.134	0.052	0.11	0.18	0.208	0.483	0.096	0.37
Lead (Pb)	mg/L	0.000045	0.000201	0.000089	0.00007	0.000272	0.00149	0.000191	0.00213	0.00332	0.000647	0.000092	0.00004	0.000086	0.000137	0.00014	0.000364	0.000108	0.000426
Magnesium (Mg)	mg/L	31.7	34.2	36.3	37.2	16	20.1	24.6	32.2	28.9	28.6	28.3	34.7	22.3	22.6	24.1	5.2	9.42	13.4
Manganese (Mn)	mg/L	0.00451	0.00469	0.00745	0.0234	0.028	0.0755	0.0522	0.148	0.177	0.0832	0.0581	0.0122	0.275	0.216	0.204	0.133	0.0207	0.084
Mercury (Hg)	mg/L	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00524	0.00468	0.00404	0.00403	0.00268	0.00361	0.00417	0.00455	0.00373	0.00463	0.00539	0.00466	0.00511	0.00389	0.00381	0.00088	0.00167	0.00225
Nickel (Ni)	mg/L	0.0293	0.0334	0.0318	0.0346	0.0249	0.0291	0.0269	0.0413	0.0407	0.0357	0.0368	0.0391	0.00425	0.00263	0.00298	0.00519	0.0035	0.00756
Phosphorus (P)	mg/L	0.036		0.019	0.015	0.039	0.115	0.015	0.161	0.266	0.072	0.026	0.021	0.023	0.025	0.025	0.045	0.014	0.04
Potassium (K)	mg/L	0.82	0.86	0.93	0.93	0.71	0.53	0.57	0.81	0.76	0.73	0.73	0.88	0.98	0.88	0.94	0.95	0.4	0.52
Selenium (Se)	mg/L	0.00673	0.00575	0.00417	0.00356	0.00282	0.00882	0.0088	0.0056	0.00615	0.00539	0.00552	0.0062	0.00232	0.00124	0.00161	0.00058	0.0017	0.0022
Silicon (Si)	mg/L	5.02	3.61	4.43	4.4	2.79	3.62	3.96	4.15	5.03	4.73	4.1	4.7	6.06	4.81	5	2.05	3.01	3.46
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	0.000005	0.000008	<0.000005	0.000008	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000007	<0.000005	<0.000005
Sodium (Na)	mg/L	0.93	1.2	0.94	0.96	0.53	0.74	0.78	0.9	0.93	0.83	0.8	0.95	2.38	2.31	2.45	0.48	0.95	1.33
Strontium (Sr)	mg/L	0.304	0.312	0.322	0.332	0.139	0.18	0.223	0.293	0.262	0.248	0.275	0.315	0.328	0.307	0.306	0.0625	0.129	0.185
Thallium (Tl)	mg/L	<0.000002	0.000003	0.000002	0.000002	0.000004	0.000014	0.000005	0.00002	0.000033	0.000012	0.000007	0.000007	<0.000002	<0.000002	<0.000002	0.000004	<0.000002	0.000005
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	0.0012	0.0002	0.0013	0.0021	0.0005	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	0.0003	0.0007
Zinc (Zn)	mg/L	0.732	0.805	0.842	0.887	0.395	0.5	0.362	0.614	0.583	0.566	0.666	0.89	0.0445	0.0263	0.0323	0.0452	0.0326	0.0821
Dissolved Metals																			
Aluminum (Al)	mg/L	0.0156	0.0023	0.0011	0.0014	0.01	0.007	0.0107	0.0039	0.0037	0.0038	0.0018	0.0012	0.0042	0.0012	0.0016	0.0293	0.0081	0.0056
Antimony (Sb)	mg/L	0.00063	0.00066	0.00059	0.00059	0.00037	0.00056	0.00079	0.00074	0.00069	0.00063	0.0007	0.00062	0.00019	0.0001	0.00012	0.00014	0.00023	0.00029
Arsenic (As)	mg/L	0.0003	0.00034	0.00031	0.00032	0.00027	0.00034	0.00052	0.00044	0.00048	0.00039	0.0003	0.00028	0.00159	0.00153	0.00143	0.00102	0.00086	0.00119
Cadmium (Cd)	mg/L	0.00194	0.00267	0.00318	0.00346	0.0011	0.00246	0.00284	0.00317	0.00304	0.00343	0.00404	0.00511	0.000305	0.000096	0.000132	0.000181	0.000212	0.0002
Calcium (Ca)	mg/L	119	130	129	127	53.4	62.9	94	104	96	97.8	113	114	67.7	67.1	65.3	16.5	30.2	42
Chromium (Cr)	mg/L	<0.0001	0.0011	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000017	0.000027	0.000021	0.000021	0.000079	0.000157	0.000551	0.000673	0.00056	0.000486	0.000438	0.000019	0.000159	0.00012	0.000098	0.000125	0.00004	0.000131
Copper (Cu)	mg/L	0.00063	0.00056	0.00039	0.00034	0.00118	0.00076	0.00122	0.00046	0.00064	0.00071	0.0005	0.00054	0.00045	0.00024	0.00025	0.00182	0.00122	0.0008
Iron (Fe)	mg/L	0.007	0.009	0.007	0.008	0.043	0.033	0.024	0.009	0.024	0.064	0.021	0.01	0.011	0.015	0.017	0.201	0.041	0.045
Lead (Pb)	mg/L	0.000277	0.000109	0.000051	0.000047	0.000092	0.000031	0.000202	0.000013	0.000015	0.000015	<0.000005	0.000006	0.000036	0.000064	0.000048	0.000096	0.000046	0.000026
Magnesium (Mg)	mg/L	33.7	37.8	37.9	37	15.3	20.1	29.2	31.9	29.7	29.7	32.2	32.7	24.2	24.2	23	5.35	9.92	14
Manganese (Mn)	mg/L	0.00419	0.00409	0.00607	0.0223	0.0176	0.0133	0.0587	0.0786	0.0724	0.0615	0.0553	0.00956	0.253	0.214	0.186	0.0832	0.0126	0.0494
Mercury (Hg)	mg/L	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00476	0.00491	0.00412	0.00408	0.00279	0.00461	0.00545	0.00588	0.00549	0.00535	0.00556	0.00449	0.00468	0.00403	0.00376	0.00086	0.00167	0.00257
Nickel (Ni)	mg/L	0.0303	0.0388	0.0334	0.0343	0.0219	0.0232	0.0331	0.0353	0.0336	0.0348	0.039	0.0363	0.00419	0.00258	0.00249	0.00374	0.00364	0.00459
Phosphorus (P)	mg/L	0.02		0.014	0.012	0.018	0.016	0.012	0.009	0.012	0.013	0.013	0.018	0.014	0.009	0.01	0.019	0.01	0.01
Potassium (K)	mg/L	0.84	1.01	0.95	0.96	0.68	0.52	0.85	0.74	0.72	0.72	0.77	0.85	1.03	0.94	0.93	1.06	0.43	0.54
Selenium (Se)	mg/L	0.00589	0.00578	0.00414	0.00346	0.00264	0.00872	0.00762	0.00565	0.0058	0.00513	0.00563	0.00577	0.00209	0.00121	0.00161	0.00049	0.00161	0.00217
Silicon (Si)	mg/L	4.1	4.25	4.36	4.43	2.31	3.3	3.83	3.86	4.35	4.33	4.89	4.65	5.18	4.94	5.14	1.88	2.83	3.16
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	0.96	1.26	0.98	0.92	0.49	0.8	1.17	0.9	0.89	0.86	0.96	0.89	2.7	2.52	2.29	0.49	1.01	1.44
Strontium (Sr)	mg/L	0.308	0.348	0.339	0.343	0.14	0.182	0.25	0.28	0.256	0.263	0.284	0.297	0.328	0.317	0.317	0.0625	0.132	0.196
Thallium (Tl)	mg/L	<0.000002	0.000003	<0.000002	0.000002	0.000002	0.000005	0.000008	0.000005	0.000007	0.000007	0.000008	0.000005	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.741	0.803	0.872	0.855	0.341	0.384	0.455	0.468	0.468	0.535	0.669	0.833	0.0413	0.0225	0.0253	0.0285	0.0306	0.0354

Sample location		W72	W72	W72	W72	W72	W73	W73	W73	W73	W73	W73	W73	W73	W73	W73	W73
Sampling Date		7-Aug-09	4-Sep-09	6-Oct-09	1-Nov-09	19-Dec-09	16-Jan-09	22-Mar-09	11-Apr-09	10-May-09	8-Jun-09	16-Jul-09	7-Aug-09	3-Sep-09	6-Oct-09	1-Nov-09	19-Dec-09
Lab Report	Units	A941870	A949310	A956923	A962842	A973034	A902628	A913452	A917065	A922441	A928455	A937394	A941870	A949299	A956923	A962842	A973034
Field Physical Parameters																	
Temperature	°C	8.47	5.17	1.78	-	0.06	0.06	0.06	0.07	1.33	5.79	7.09	8.88	5.83	1.99	-	0.05
Conductivity	uS/cm	240	177	170	-	284	125	82	106	38	70	122	96	61	104	-	155
Specific conductivity	uS/cm3	350	285	306	412	149	239	156	202	69	111	180	139	97	185	232	81
pH	pH Units	7.13	7.12	6.07	7.76	6.02	7.36	7.51	7.89	7.51	7.48	7.21	7.13	7.23	6.31	7.85	7.67
Laboratory Parameters																	
Physical Parameters																	
Temperature	°C	3	2.7	1.7	5	1.7	2.7	7.7	2.7	5.7	10.3	1.7	3	2.7	1.7	5	1.7
Conductivity	uS/cm	371	347	359	430	474	280	290	290	98	120	190	219	216	225	232	267
Hardness	mg/L	196	178	186	226	256	142	152	149	51.8	59.3	96.3	115	106	112	123	141
Total Suspended Solids	mg/L	4	<4	<4	<4	<4	<4	<4	<4	5	<4	<4	<4	<4	<4	<4	<4
pH	pH Units	8.1	8.2	8.2	8.2	8.0	8.1	8.1	8.2	7.7	8.0	8.1	8.1	8.1	8.2	8.2	8.1
Major Anions																	
Alkalinity-Total	mg/L	150	140	150	180	210	120	130	130	44	51	87	100	95	99	110	120
Acidity-Total	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromide	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	<0.5	<0.5	0.9	0.5	0.5	2.6	<0.5	<0.5	1.2	0.7	0.5	0.6	<0.5	<0.5	<0.5	<0.5
Fluoride	mg/L	0.18	0.17	0.17	0.19	0.18	0.06	0.07	0.07	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.06
Sulphate	mg/L	43	39	40	48	43	25	27	28	<0.5	8.3	14	17	18	18	19	24
Nutrient Parameters																	
Ammonial Nitrogen	mg/L	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	0.013	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.476	0.011	0.008	0.042	0.075	0.113	0.153	0.14	0.045	0.022	<0.002	0.008	<0.002	0.028	0.075	0.127
Nitrite Nitrogen	mg/L	<0.002	<0.002	0.005	<0.002	<0.002	0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002
Total Phosphate	mg/L	0.01	0.009	0.01	0.009	0.019	0.005	<0.005	<0.005	0.029	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	0.006
Dissolved Ortho-Phosphate	mg/L	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.005	0.002	0.002	0.001	<0.001	<0.001	<0.001	0.002
Total Metals																	
Aluminum (Al)	mg/L	0.0154	0.0209	0.0175	0.012	0.0166	0.0063	0.0034	0.0027	0.0786	0.0218	0.0073	0.0052	0.0055	0.0049	0.0032	0.0036
Antimony (Sb)	mg/L	0.00028	0.00023	0.00021	0.00022	0.00019	0.00013	0.00012	0.00012	0.00009	0.00009	0.00012	0.00011	0.00012	0.00011	0.00011	0.00013
Arsenic (As)	mg/L	0.00158	0.00135	0.00146	0.00164	0.00178	0.00024	0.00026	0.00024	0.00056	0.00019	0.00025	0.00023	0.00024	0.0002	0.00021	0.00021
Cadmium (Cd)	mg/L	0.000543	0.000432	0.000394	0.000418	0.000471	0.000013	0.000015	0.000009	0.000092	0.000006	0.000006	0.000018	0.000009	0.000008	0.000005	0.000005
Calcium (Ca)	mg/L	51.3	42.2	47.7	55.2	66.2	38.2	38.5	39.1	13.1	16.5	25.6	31.7	27.7	29.9	30.7	37.8
Chromium (Cr)	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0003	0.0003	0.0006	0.0002	<0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Cobalt (Co)	mg/L	0.000148	0.000097	0.000095	0.000099	0.000165	0.000014	0.000011	0.00001	0.000144	0.000049	0.000024	0.000019	0.000017	0.000023	0.000014	0.000011
Copper (Cu)	mg/L	0.00129	0.00093	0.00083	0.0006	0.00061	0.00068	0.00049	0.00048	0.00566	0.00224	0.00117	0.00094	0.00096	0.00078	0.0006	0.0006
Iron (Fe)	mg/L	0.154	0.138	0.164	0.157	0.19	0.032	0.034	0.029	0.365	0.056	0.043	0.037	0.046	0.051	0.035	0.031
Lead (Pb)	mg/L	0.000162	0.000051	0.000058	0.000052	0.000069	0.00005	0.000091	0.000053	0.000179	0.000023	0.000008	0.000018	0.000011	0.000006	0.000006	0.000014
Magnesium (Mg)	mg/L	16.5	14.1	15.3	17.3	23.4	10.2	11.7	12.6	4.64	4.38	7.2	8.77	7.33	8.01	8.45	11.5
Manganese (Mn)	mg/L	0.0815	0.0703	0.0831	0.13	0.247	0.00699	0.00444	0.00339	0.125	0.0152	0.0103	0.00737	0.00691	0.00966	0.00611	0.00509
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00319	0.00257	0.00253	0.00305	0.00376	0.00062	0.00057	0.00061	0.00034	0.00029	0.00046	0.00052	0.00044	0.00048	0.00051	0.00056
Nickel (Ni)	mg/L	0.00619	0.00444	0.00415	0.00361	0.0044	0.00058	0.00053	0.00058	0.00366	0.00109	0.00074	0.00072	0.00062	0.00063	0.00056	0.00061
Phosphorus (P)	mg/L	0.021	0.02	0.022	0.019	0.024	0.008	0.004	0.004	0.022	0.006	0.002	<0.002	0.003	0.004	0.003	0.002
Potassium (K)	mg/L	0.67	0.54	0.6	0.68	0.85	0.32	0.36	0.38	0.65	0.22	0.19	0.27	0.24	0.26	0.26	0.34
Selenium (Se)	mg/L	0.00212	0.00181	0.0017	0.00208	0.00185	0.00126	0.00128	0.00116	0.00049	0.00037	0.00062	0.00065	0.00073	0.00077	0.00093	0.0011
Silicon (Si)	mg/L	3.17	3.77	4.38	4.27	4.95	5.15	4.63	4.49	2.9	3.07	3.86	3.75	4.27	4.33	4.17	4.7
Silver (Ag)	mg/L	0.000007	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000006	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.65	1.41	1.57	1.76	2.39	1.19	1.34	1.4	0.55	0.67	0.93	1.1	0.99	1.04	1.02	1.39
Strontium (Sr)	mg/L	0.23	0.186	0.198	0.252	0.311	0.146	0.152	0.159	0.0457	0.0487	0.0862	0.109	0.0921	0.0964	0.114	0.15
Thallium (Tl)	mg/L	0.000003	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0535	0.0495	0.042	0.0453	0.0494	0.0013	0.0016	0.0014	0.0059	0.0006	0.0009	0.0009	0.0004	0.0004	0.0005	0.0007
Dissolved Metals																	
Aluminum (Al)	mg/L	0.0047	0.006	0.0043	0.0019	0.0014	0.0056	0.0012	0.0014	0.0367	0.0104	0.0047	0.0037	0.0041	0.0027	0.0017	0.0015
Antimony (Sb)	mg/L	0.00028	0.00026	0.00021	0.00022	0.00017	0.00013	0.00012	0.00012	0.00009	0.00009	0.00011	0.00012	0.00011	0.00011	0.00012	0.00013
Arsenic (As)	mg/L	0.00145	0.00121	0.00123	0.00129	0.00123	0.00019	0.00022	0.00023	0.00038	0.00016	0.00021	0.00021	0.00022	0.00019	0.00018	0.00019
Cadmium (Cd)	mg/L	0.000384	0.000355	0.000272	0.000271	0.000212	0.000005	0.000008	0.000008	0.000046	0.000009	0.000021	0.00001	0.000011	<0.000005	<0.000005	<0.000005
Calcium (Ca)	mg/L	52	45.8	48.5	58.4	65.4	37.8	40.4	39.6	13.5	15.9	26.3	30.7	29.6	30.7	33.3	37.8
Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	0.0003	0.0003	0.0004	<0.0001	0.0001	0.0003	0.0002	0.0002	0.0002	0.0002
Cobalt (Co)	mg/L	0.000095	0.000086	0.000061	0.000071	0.000097	0.000013	0.000011	0.000008	0.000059	0.000015	0.000016	0.000015	0.000016	0.000012	0.000009	0.00001
Copper (Cu)	mg/L	0.00072	0.00079	0.0006	0.00045	0.00036	0.00051	0.0004	0.00042	0.00453	0.00187	0.00126	0.00091	0.00092	0.00077	0.00063	0.00059
Iron (Fe)	mg/L	0.066	0.077	0.073	0.043	0.03	0.012	0.011	0.013	0.143	0.021	0.025	0.02	0.024	0.034	0.017	0.011
Lead (Pb)	mg/L	0.000018	0.000014	0.000011	<0.000005	<0.000005	0.000011	0.000047	0.000109	0.000064	0.000007	0.000016	0.000013	0.00003	<0.000005	<0.000005	<0.000005
Magnesium (Mg)	mg/L	17.1	15.4	15.8	19.5	22.5	11.6	12.5	12	4.8	4.29	7.43	8.66	7.71	8.5	9.57	11.3
Manganese (Mn)	mg/L	0.0738	0.0652	0.0729	0.116	0.221	0.00161	0.00062	0.00128	0.039	0.00258	0.00431	0.00285	0.00286	0.00287	0.00192	0.00102
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00311	0.00266	0.00253	0.00322	0.00361	0.00058	0.0006	0.00063	0.00032	0.00031	0.00044	0.00051	0.00049	0.00051	0.00053	0.00058
Nickel (Ni)	mg/L	0.00466	0.00465	0.00379	0.00348	0.00372	0.00053	0.00053	0.00052	0.00274	0.00083	0.00068	0.00061	0.00064	0.0006	0.00052	0.00053
Phosphorus (P)	mg/L	0.015	0.015	0.014	0.014	0.011	0.002	0.004	0.003	0.014	<0.002	0.002	0.003	<0.002	<0.002	0.003	0.006
Potassium (K)	mg/L	0.66	0.58	0.61	0.73	0.83	0.35	0.38	0.39	0.69	0.23	0.23	0.27	0.26	0.26	0.27	0.38
Selenium (Se)	mg/L	0.00213	0.00175	0.00153	0.00205	0.00184	0.00113	0.00117	0.00119	0.00033	0.00038	0.00058	0.00067	0.00066	0.0007	0.0009	0.00105
Silicon (Si)	mg/L	3.29	3.8	4.1	5.05	5.28	4.35	4.31	4.64	2.79	3.08	3.65	3.89	4.25	4.14	4.93	4.68
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00001	<0.000005	<0.000005	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.68	1.54	1.62	2	2.3	1.37	1.43	1.3	0.55	0.67	1.04	1.11	1.04	1.1	1.21	1.39
Strontium (Sr)	mg/L	0.23	0.205	0.21	0.256	0.296	0.15	0.16	0.163	0.0451	0.0506	0.0862	0.108	0.0993	0.104	0.118	0.146
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0458	0.0465	0.038	0.0398	0.0427	0.0021	0.0015	0.002	0.0029	0.0003	0.0007	0.0007	0.001	0.0025	0.0006	0.0008

2.3.2 Flow Monitoring Results

Manual flow monitoring at surface water stations W8, W12, W15, W16, W31, and W81 is summarized in Table 2-7; extremely cold weather temperatures or high freshet flow prohibited manual measurements being taken for some sampling periods.

The data from the manual flow measurements are used to produce stage-discharge (rating) curves which calibrate the data collected by the continuous loggers installed at stations W9, W12, W21, W22, W80 and W82 (see Sections 2.3.2.1 to 2.3.2.6). Since some of these stations were installed prior to the Licence coming into effect, data collected since October 2007 is presented below in the graphs.

All stations' graphs displayed a peak in late fall 2009, which resulted from heavy rain events.

Table 2-7 2009 Manual Flow Monitoring Results

Hydrology Site	Date	Stream Discharge m^3/s
W8	15-Jun	0.188
	17-Jul	0.101
	08-Aug	0.035
	02-Sep	0.051
	23-Oct	0.008
W15	25-Apr	0.0095
	16-May	0.311
	08-Jul	0.186
	09-Aug	0.059
	05-Sep	0.113
	15-Nov	0.022
W16	21-Mar	0.050
	16-May	0.106
	08-Jun	0.178
	08-Jul	0.186
	09-Aug	0.083
	05-Sep	0.045
	03-Nov	0.067
	10-Dec	0.033
W31	14-May	0.032
	17-Jul	0.024
	09-Aug	0.008
	06-Sep	0.016
	11-Oct	0.013
	04-Nov	0.002
W81	25-Apr	0.370
	17-May	0.337
	17-Jun	0.479
	08-Jul	0.361
	09-Aug	0.182
	05-Sep	0.156
	15-Oct	0.110
	27-Nov	0.149

2.3.2.1 W9 Continuous Flow Monitoring Results

The monthly average hydrograph for W9 from September 2007 through to December 2009 is presented in Figure 2-3. Readings from the data logger were obscured by ice pressure effects during the winter months of 2007, 2008 and 2009. The November and December 2009 average stream discharges were 0.034 m^3/s as a results of ice pressure effects. The actual stream discharge value was assumed to be similar to the October value of 0.01 m^3/s and the November and December 2009 average monthly values have been corrected to this winter flow, as shown in Figure 2-3.

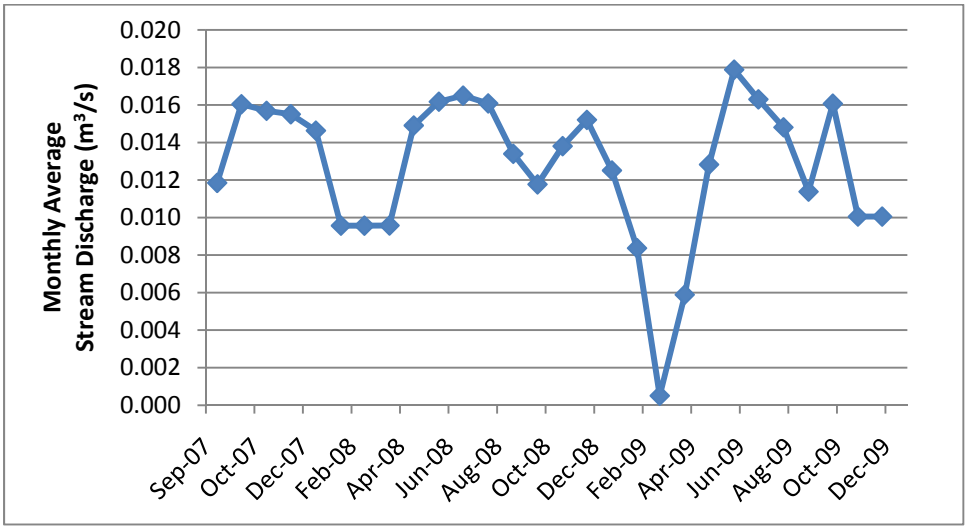


Figure 2-3 W9 Monthly Average Hydrograph, October 2007 – December 2009

2.3.2.2 W12 Continuous Flow Monitoring Results

The continuous hydrograph for W12 from May through December 2009 is presented in Figure 2-4. Data collect prior to May 2009 was omitted due to inconsistencies; a new logger was installed in May 2009.

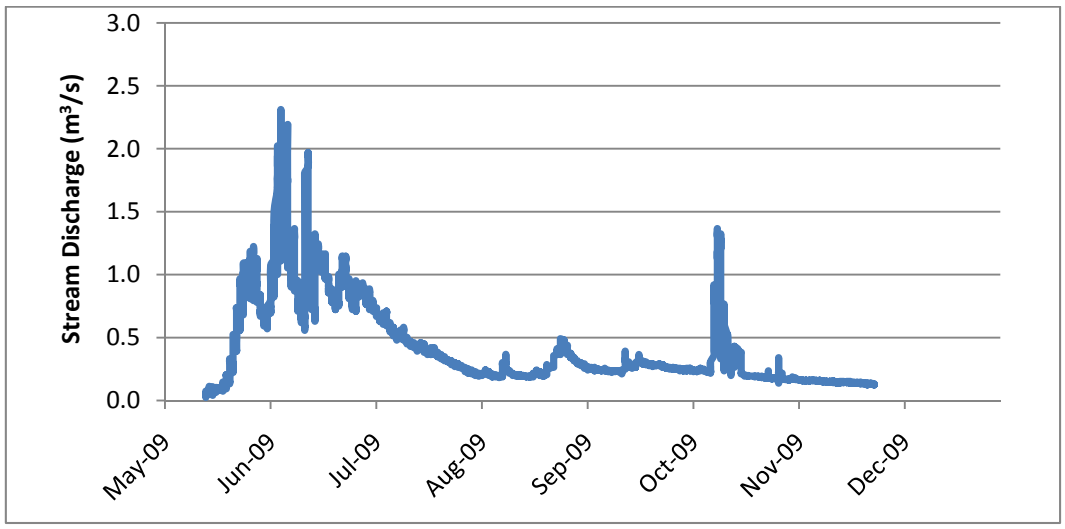


Figure 2-4 W12 Hydrograph, May 2009 – December 2009

2.3.2.3 W21 Continuous Flow Monitoring Results

The monthly average hydrograph for W21 from March 2007 through December 2009 is presented in Figure 2-5. Ice pressure effects were observed April to May 2007, Jan through May 2008, and February through April 2009 and are presented as 0 m^3/s flow.

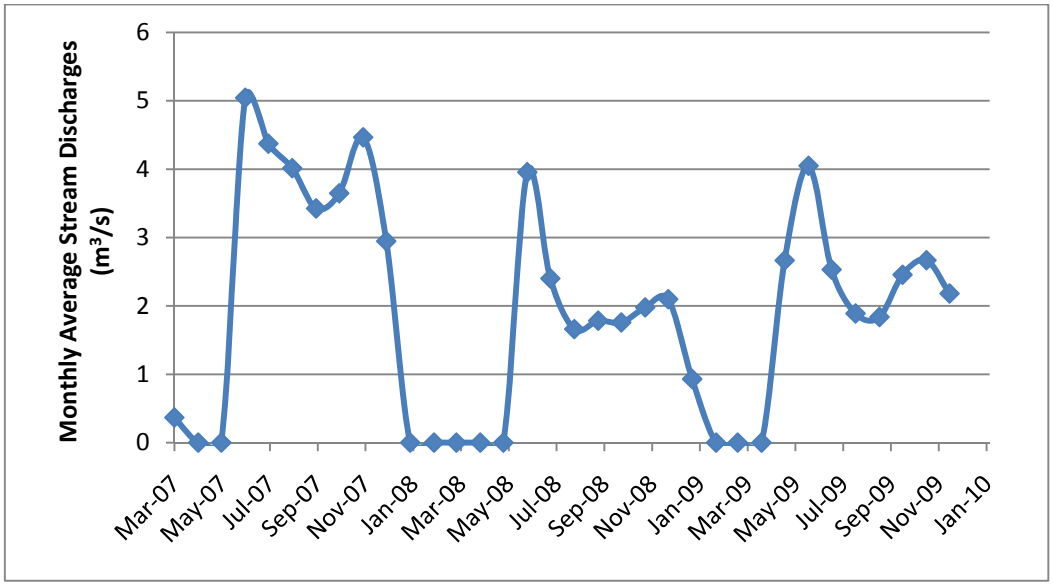


Figure 2-5 W21 Monthly Average Hydrograph, March 2007 – December 2009

2.3.2.4 W22 Continuous Flow Monitoring Results

The continuous hydrograph for W22 from May 2008 through December 2009 is presented in Figure 2-6 as a monthly average stream discharge. High flows were observed in spring 2009 and ice pressure effects were evident during the winter months, January – April 2009 and November – December 2009 (corrected to zero values in Figure 2-6).

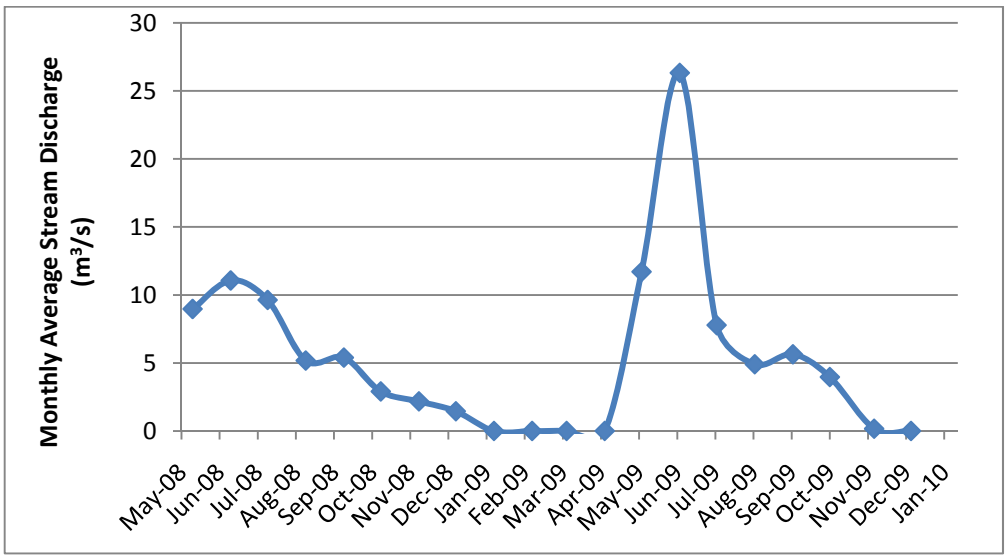


Figure 2-6 W22 Monthly Average Hydrograph, May 2008 – December 2009

2.3.2.5 W80 Continuous Flow Monitoring Results

The monthly average hydrograph for W80 from September 2006 through to December 2009 is presented in Figure 2-7.

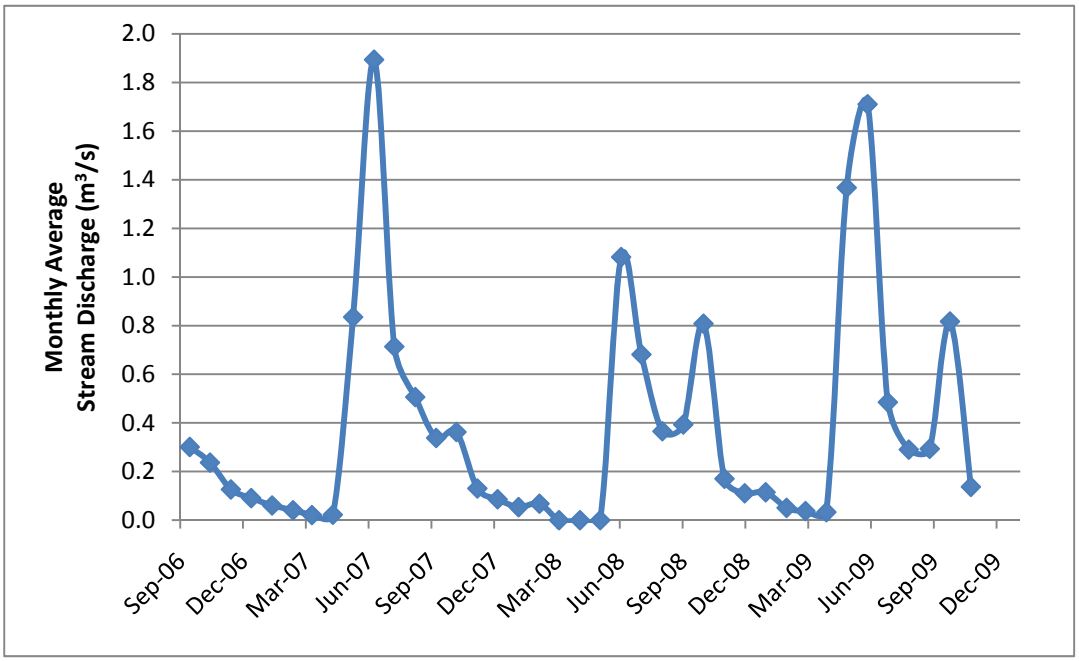


Figure 2-7 W80 Monthly Average Hydrograph, September 2006 – December 2009

2.3.2.6 W82 Continuous Flow Monitoring Results

The average monthly discharges for W82 from October 2007 to December 2009 are presented in Figure 2-8. High flows were observed in spring 2008 and 2009.

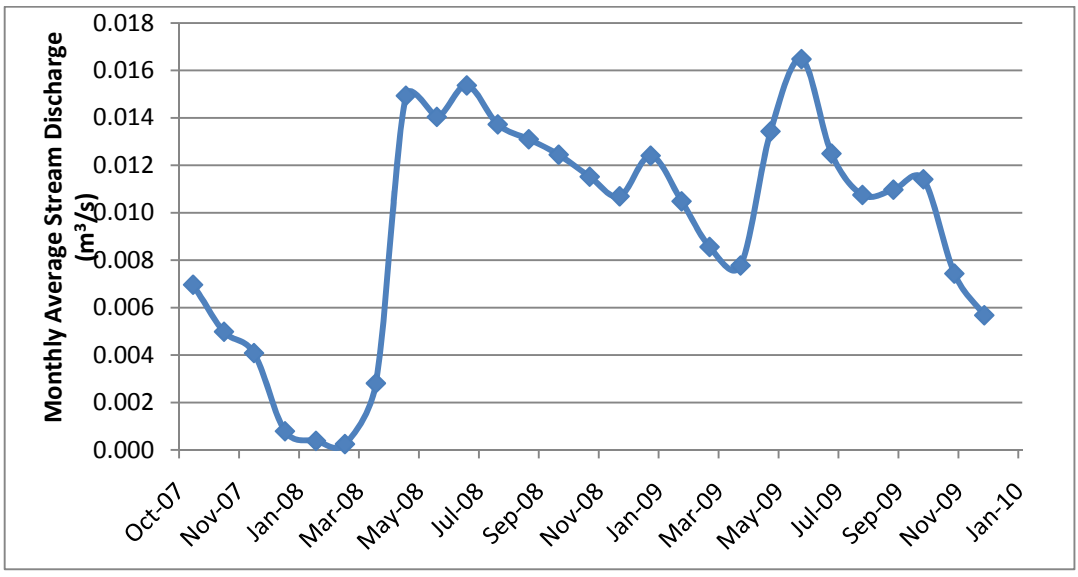


Figure 2-8 W82 Hydrograph, October 2007 – December 2009

2.3.3 Groundwater Monitoring Station Water Quality Results

Groundwater monitoring is required quarterly during the construction phase (Table 2-1), and was conducted in 2009 in April, June/July, September/October and December/January 2010. Table 2-8 summarizes the dates the groundwater wells were sampled at the 24 monitoring stations. Water quality results, as analyzed for the parameters outlined in Table 2-1, for groundwater wells, are summarized in Table 2-9 by sampling site. All groundwater samples are filtered prior to analysis to remove impurities associated with well installation and sampling, hence only dissolved metals were analyzed (Table 2-9). A "-" in Table 2-9 indicates that parameters were not taken either due to technical error or to probe malfunction. The full lab reports for the data summarized in Table 2-9 are provided in Appendix B.

Monitoring wells were not sampled in April and December due to frozen water within the wells. Also, deep wells (MW06-8D, MW06-10M and MW06-10D) are not sampled in the winter because the pumps installed in the wells could break if used at negative temperatures.

Monitoring well MW06-8M was re-drilled in September 2009, as per a *Monitoring Point Co-ordinate Update* submitted to the board September 21, 2009. This well was not sampled in 2009, but will become a groundwater monitoring site in spring 2010.

As with the surface water quality results, analysis and interpretation of the collected data for the groundwater monitoring wells will be conducted as part of the bi-annual data analysis report required for the Quartz Mining Licence QML-0006 Monitoring and Surveillance Plan (to be submitted in early spring 2010). The 2009 data and early 2010 data will comprise the "construction period" and will be compared to data sampled 2006 – 2008 inclusively.

Table 2-8 2009 Groundwater Monitoring Well Stations and Sampling Dates

Monitoring Station	MW05-1A	MW05-1B	MW-05-2A	MW-05-2B	MW05-3A	MW05-3B	MW05-4A	MW05-4B	MW05-5A	MW05-5B	MW-05-6A	MW-05-6B
April	F	F	F	F	F	F	F	F	1-Apr	1-Apr	F	F
June	25-Jun	25-Jun	24-Jun	24-Jun	28-Jun	28-Jun	25-Jun	25-Jun	27-Jun	27-Jun	24-Jun	24-Jun
September	F	28-Sep	26-Sep	26-Sep	23-Sep	23-Sep	25-Sep	25-Sep	23-Sep	28-Sep	1-Oct	1-Oct
December	F	F	F	F	F	F	F	F	2-Jan	2-Jan	F	F

Monitoring Station	MW-05-7B	MW06-8S	MW06-8M	MW06-8D	MW06-9S	MW06-9M	MW06-10S	MW06-10M	MW06-10D	MW06-11S	MW06-12S	MW08-13	MW08-14
April	F	3-Apr	N	D	2-Apr	F	2-Apr	D	D	F	2-Apr	F	F
June	24-Jun	20-Jul	N	20-Jul	25-Jun	25-Jun	19-Jul	20-Jul	19-Jul	28-Jun	25-Jun	24-Jun	24-Jun
September	27-Sep	20-Sep	I	20-Sep	25-Sep	25-Sep	21-Sep	21-Sep	20-Sep	23-Sep	25-Sep	1-Oct	1-Oct
December	25-Dec	27-Dec	I	D	30-Dec	F	4-Jan	D	D	F	28-Dec	25-Dec	F

Notes: F = frozen well/no flow

D = deep well, not advisable to use pump during the winter

N = original well not functioning, well needs to be re-drilled

I = new well installed, but no pump yet installed.

Table 2-9 Groundwater Monitoring Well Water Quality Results

Sample location		MW05-1A	MW05-1B	MW05-1B	MW-05-2A	MW05-2A	MW-05-2B	MW05-2B	MW05-3A	MW05-3A	MW05-3B	MW05-03B	MW05-4A	MW05-4A	MW05-4B	MW05-4B	MW05-5A	MW05-5A	MW05-05A	MW05-5A	MW05-5B	MW05-5B	MW05-05B	MW05-5B
Sampling Date		25-Jun-09	25-Jun-09	28-Sep-09	24-Jun-09	26-Sep-09	24-Jun-09	26-Sep-09	28-Jun-09	23-Sep-09	28-Jun-09	23-Sep-09	25-Jun-09	25-Sep-09	25-Jun-09	25-Sep-09	1-Apr-09	27-Jun-09	23-Sep-09	2-Jan-10	1-Apr-09	27-Jun-09	28-Sep-09	2-Jan-10
Lab Report	Units	A932718	A932718	A954306	A932237	A954306	A932237	A954306	A933481	A953309	A933481	A953309	A932718	A954306	A932718	A954306	A916247	A933481	A953309	B000586	A916247	A933481	A954306	B000586
Field Physical Parameters																								
Temperature	°C	-	2.91	3.49	3.27	2.6	1.94	3.27	3.43	2.79	3.3	3.19	3.5	2.35	-	2.52	2.01	2.76	2.9	1.03	1.01	2.16	4.3	1.12
Conductivity	uS/cm	-	240	85	404	198	262	141	412	199	257	123	336	106	-	133	237	521	146	239	115	308	150	138
Specific conductivity	uS/cm3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	423	-	-	-	-	-	-	-
pH	pH Units	-	7.28	6.98	7.17	7.03	6.78	6.52	7.09	7.09	6.54	6.69	7.6	7.33	-	6.24	7.49	7.14	7.14	7.15	7.35	7.15	7.1	7.38
Laboratory Parameters																								
Physical Parameters																								
Temperature	°C	3.7	3.7	1.7	3	1.7	3	1.7	10	1.7	10	1.7	3.7	1.7	3.7	1.7	7	10	1.7	1	7	10	1.7	1
Conductivity	uS/cm	220	230	239	400	400	250	255	410	420	250	252	330	335	240	262	490	500	502	504	300	300	306	295
Hardness	mg/L	114	116	130	215	223	135	129	218	216	125	124	164	169	110	121	243	284	283	279	133	156	155	154
Total Suspended Solids	mg/L	<4	5	5	<4	<4	25	21	8	6	<4	<4	4	6	<4	<4	8	<4	4	<4	5	<4	<4	<4
pH	pH Units	8.6	8.0	8.0	8.1	8.2	7.8	7.7	8.2	8.1	7.7	7.7	8.2	8.0	7.8	7.6	8.2	8.3	8.1	8.1	8.1	8.0	7.9	8.1
Major Anions																								
Alkalinity-Total	mg/L	100	110	120	190	190	130	130	180	190	95	95	110	120	64	78	250	230	240	240	110	110	110	110
Acidity-Total	mg/L	<0.5	1.2	1	4.3	<0.5	12	1.4	5.4	<0.5	11.8	1.6	<0.5	<0.5	5.9	1.9	2.4	7.6	<0.5	1.6	2	3.2	<0.5	<0.5
Bromide	mg/L	<0.4	<0.4	<0.4	0.7	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.4	<0.4	<0.4	<0.1	<0.4	<0.4	<0.4
Chloride	mg/L	1	0.8	1	<0.5	1.4	<0.5	0.7	1.1	<0.5	1	<0.5	0.7	1.1	0.6	1.2	0.7	0.6	<0.5	<0.5	<0.5	0.5	0.8	<0.5
Fluoride	mg/L	0.49	0.17	0.2	0.25	0.27	0.06	0.07	0.67	0.9	0.18	0.18	0.97	1.1	0.42	0.38	2.3	2.09	2.25	2.24	0.25	0.23	0.23	0.22
Sulphate	mg/L	6.2	6.6	5.8	30	27	8.5	9	37	36	32	29	56	47	54	45	29	37	36	34	40	43	38	40
Nutrient Parameters																								
Ammonial Nitrogen	mg/L	0.019	0.53	0.523	0.089	0.097	0.049	0.045	0.05	0.046	<0.005	0.005	0.05	0.245	0.044	0.042	0.071	0.069	0.067	0.082	0.027	0.02	0.022	0.031
Nitrate Nitrogen	mg/L	0.005	<0.002	0.016	0.003	0.003	0.148	0.003	<0.002	<0.002	0.294	0.39	<0.002	0.003	<0.002	0.006	0.029	0.004	0.003	0.032	0.009	0.003	0.012	0.019
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	0.004	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	0.004
Total Phosphate	mg/L	0.202	0.254	0.452	0.01	0.007	0.239	0.211	0.007	0.008	<0.005	0.008	0.025	0.038	0.007	<0.005	0.007	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Ortho-Phosphate	mg/L	0.19	0.023	0.404	0.001	0.002	0.052	0.174	<0.001	<0.001	0.001	0.002	0.002	0.02	0.001	0.002	0.002	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001
Dissolved Metals																								
Aluminum (Al)	mg/L	0.0031	0.0203	0.0091	0.004	0.0018	0.0024	0.0017	0.0012	0.0007	0.0015	0.0038	0.0034	0.0017	0.0017	0.0016	0.0053	0.0018	0.0046	0.0022	0.0465	0.0015	0.0009	0.0009
Antimony (Sb)	mg/L	0.00022	0.00005	0.00004	<0.00002	<0.00002	0.00004	0.00002	0.00032	0.00022	0.00016	0.00015	0.00005	0.00022	0.0001	0.00025	0.00393	0.0062	0.00681	0.00715	0.00039	0.00007	0.00009	0.00005
Arsenic (As)	mg/L	0.00175	0.00509	0.00538	0.00086	0.00084	0.0304	0.0247	0.00099	0.00097	0.00006	0.00009	0.00537	0.00457	0.00935	0.0115	0.00318	0.00451	0.00502	0.00474	0.00205	0.00154	0.00178	0.00176
Cadmium (Cd)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.00051	0.000473	0.0136	0.0131	<0.000005	<0.000005	0.00344	0.00322	0.000194	0.000009	0.000007	<0.000005	0.000182	0.00004	0.000017	0.000026
Calcium (Ca)	mg/L	37.4	40.7	44.9	56.9	58.7	42.2	38.6	72.9	72.4	41.5	41	59.1	60.8	38.7	42.7	69.8	75.6	75.3	74.7	49.1	50.3	50.8	50.6
Chromium (Cr)	mg/L	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0005	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	<0.000005	0.000034	0.00004	0.000017	0.000007	0.000393	0.000109	0.000325	0.000401	0.000026	0.000036	0.000019	0.000018	0.00343	0.00468	0.000211	0.000128	0.000115	0.000122	0.000665	0.000652	0.000603	0.000608
Copper (Cu)	mg/L	<0.00005	0.00012	<0.00005	0.0001	<0.00005	0.00009	<0.00005	0.00009	0.00006	0.00276	0.0022	0.00037	<0.00005	0.00017	0.00018	0.00044	0.00034	0.00013	0.00008	0.005	0.00076	0.00006	0.00017
Iron (Fe)	mg/L	0.005	1.5	2.41	0.725	0.814	10.7	9.94	3.12	2.95	0.013	0.023	2.01	2.57	2.3	2.25	2.55	1.49	1.25	1.44	0.592	0.717	0.354	0.964
Lead (Pb)	mg/L	0.000031	0.000032	0.000013	0.000013	<0.000005	0.000017	<0.000005	0.000199	0.000056	0.000283	0.000431	0.000031	<0.000005	0.000032	0.000013	0.000296	0.00006	0.000046	0.0229	0.00171	0.000093	0.00001	0.00098
Magnesium (Mg)	mg/L	5	3.43	4.31	17.6	18.6	7.21	8	8.82	8.67	5.25	5.22	4.01	4.26	3.28	3.47	22.7	23.2	23.1	22.5	6.69	7.35	6.89	6.83
Manganese (Mn)	mg/L	0.0875	0.354	0.683	0.199	0.188	1.47	0.913	0.28	0.281	0.00323	0.00336	0.47	0.474	2.95	3.25	0.252	0.0668	0.0503	0.0579	0.523	0.588	0.609	0.61
Mercury (Hg)	mg/L	<0.00001	0.00001	0.00006	0.00002	0.00004	<0.00001	0.00002	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.0134	0.00356	0.00378	0.0027	0.00243	0.00078	0.00179	0.00161	0.00186	0.0007	0.00083	0.00497	0.00468	0.0013	0.00119	0.00891	0.00743	0.00751	0.00794	0.00184	0.00165	0.00192	0.00183
Nickel (Ni)	mg/L	0.00003	0.00114	0.00144	0.00011	0.00005	0.00011	0.00009	0.00352	0.00351	0.00327	0.00327	0.00008	0.00008	0.00577	0.00724	0.00055	0.00072	0.00063	0.00057	0.00399	0.00318	0.00381	0.00271
Phosphorus (P)	mg/L	0.2	0.308	0.529	0.004	0.004	0.246	0.2	0.018	0.012	<0.002	0.002	0.027	0.03	0.006	0.002	0.017	0.011	0.011	0.012	0.016	0.003	0.002	0.004
Potassium (K)	mg/L	1.16	1.38	1.54	1.81	1.96	0.49	0.56	1.48	1.45	1.04	1	2.08	2.08	1.63	1.85	1.55	1.51	1.49	1.51	2.33	0.68	0.76	0.74
Selenium (Se)	mg/L	<0.00004	0.00006	0.00006	<0.00004	<0.00004	<0.00004	<0.00004	0.00034	0.00025	0.0108	0.011	<0.00004	<0.00004	<0.00004	0.00028	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
Silicon (Si)	mg/L	0.662	4.75	5.97	4.09	3.94	5.36	4.55	3.97	3.93	4.41	4.65	4.17	4.25	7.08	7.41	3.8	4.44	4.19	4.57	3.45	3.54	3.48	3.65
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	1.58	1.47	1.7	0.57	0.59	1.16	1.05	1.75	1.79	1.61	1.56	1.18	1.25	1.2	1.38	0.41	0.35	0.33	0.32	2.39	0.84	0.86	0.83
Strontium (Sr)	mg/L	0.125	0.142	0.142	0.167	0.158	0.082	0.0841	0.182	0.189	0.129	0.13	0.191	0.184	0.157	0.159	0.13	0.132	0.128	0.138	0.111	0.111	0.111	0.116
Thallium (Tl)	mg/L	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000004	0.000006	0.000011	0.000011	<0.000002	<0.000002	0.000038	0.000076	0.000003	<0.000002	<0.000002	0.000003	0.000004	0.000002	0.000003	<0.000002
Vanadium (V)	mg/L	<0.0002	0.0008	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0008	0.0006	0.0002	0.0002	<0.0001	0.0008	0.0009	0.483	0.455	1.2	1.18	0.0018	0.0002	0.214	0.276	0.0059	0.0054	0.0058	0.0047	0.0895	0.0437	0.0477	0.0425

Sample location		MW-05-6A	MW-05-6A	MW-05-6B	MW-05-6B	MW-05-7B	MW05-07B	MW05-7B	MW06-8S	MW06-8S	MW06-8S	MW06-8S	MW06-8D	MW06-8D	MW06-9S	MW06-9S	MW06-09S	MW06-9S	MW06-9M	MW06-09M
Sampling Date		**24-Jun-09**	**1-Oct-09**	**24-Jun-09**	**1-Oct-09**	**24-Jun-09**	**27-Sep-09**	**25-Dec-09**	**3-Apr-09**	**20-Jul-09**	**20-Sep-09**	**27-Dec-09**	**20-Jul-09**	**20-Sep-09**	**2-Apr-09**	**25-Jun-09**	**25-Sep-09**	**30-Dec-09**	**25-Jun-09**	**25-Sep-09**
Lab Report	**Units**	**A932237**	**A955546**	**A932237**	**A955546**	**A932237**	**A954306**	**A973505**	**A916247**	**A937827**	**A952605**	**B000586**	**A937827**	**A952605**	**A916247**	**A932718**	**A954306**	**B000586**	**A932718**	**A954306**
Field Physical Parameters																				
Temperature	°C	2.73	2.3	3.04	2.16	3.27	-	1.63	1.13	2.86	2.59	0.73	5.97	3.27	1.52	2.54	2.09	0.49	3.12	2.83
Conductivity	uS/cm	180	82	191	88	190	-	74	55	138	54	40	437	173	116	258	75	126	392	134
Specific conductivity	uS/cm3	-	-	-	-	-	-	-	101	-	-	-	-	-	210	-	-	-	-	-
pH	pH Units	6.87	6.42	7.05	6.33	6.9	-	7.73	6.75	7.22	6.37	6.2	7.28	7.51	8.30	8.01	7.5	8.16	7.35	6.7
Laboratory Parameters																				
Physical Parameters																				
Temperature	°C	3	2	3	2	3	1.7	2	7	3	5	1	3	5	7	3.7	1.7	1	3.7	1.7
Conductivity	uS/cm	170	179	190	198	190	176	166	170	170	171	167	460	459	250	260	268	251	390	326
Hardness	mg/L	81.6	81.5	95.9	96.2	99.9	84.6	77.6	72.5	74.8	72.3	72.5	254	236	111	132	136	128	203	200
Total Suspended Solids	mg/L	<4	<4	<4	<4	<4	<4	<4	8	<4	<4	<4	5	4	<4	<4	<4	<4	<4	<4
pH	pH Units	7.7	8.0	7.9	8.0	8.0	8.1	8.0	7.6	7.0	7.1	7.5	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.0
Major Anions																				
Alkalinity-Total	mg/L	70	74	92	97	90	80	76	51	50	50	49	230	220	110	100	120	100	160	170
Acidity-Total	mg/L	5.8	1.6	4.4	1.3	2.4	<0.5	<0.5	4	2.5	6.5	1.4	1.1	1.6	0.6	<0.5	<0.5	<0.5	1.8	<0.5
Bromide	mg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	<0.5	0.8	<0.5	<0.5	<0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	0.8	1.1	<0.5	<0.5	1	<0.5	0.5	1.2
Fluoride	mg/L	0.14	0.14	0.03	0.03	0.07	0.1	0.11	0.25	0.24	0.29	0.29	0.82	0.88	0.72	0.66	0.48	0.71	0.94	0.97
Sulphate	mg/L	18	14	9.1	9.1	9.5	9.6	13	29	29	31	26	31	28	26	27	21	27	38	31
Nutrient Parameters																				
Ammonial Nitrogen	mg/L	0.009	0.043	<0.005	<0.005	0.015	0.024	0.033	0.033	0.017	0.026	0.023	0.08	0.092	0.027	0.034	0.034	0.039	0.079	0.072
Nitrate Nitrogen	mg/L	0.003	<0.002	0.265	0.262	0.016	0.106	0.014	0.003	0.022	0.005	0.005	<0.002	0.009	0.006	<0.002	0.003	0.003	<0.002	0.002
Nitrite Nitrogen	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002
Total Phosphate	mg/L	0.89	0.91	0.009	0.006	0.021	0.034	0.033	0.043	0.165	0.296	0.268	0.008	0.009	0.388	0.372	0.387	0.309	0.047	0.037
Dissolved Ortho-Phosphate	mg/L	0.65	0.61	0.002	0.002	0.005	0.025	0.009	0.04	0.084	0.18	0.085	0.003	0.001	0.385	0.339	0.198	0.201	0.002	0.021
Dissolved Metals																				
Aluminum (Al)	mg/L	0.0112	0.0013	0.018	0.0175	0.0023	0.0044	0.0025	0.006	0.0012	0.0053	0.0058	0.0038	0.0072	0.003	0.0034	0.0027	0.0029	0.0016	0.0011
Antimony (Sb)	mg/L	0.00029	0.00023	0.00006	0.00006	0.00006	0.00005	0.00004	0.00074	0.00122	0.00134	0.00127	0.00167	0.00165	<0.00002	0.00003	0.00004	0.00003	0.00005	0.00006
Arsenic (As)	mg/L	0.00565	0.00529	0.00016	0.00012	0.00045	0.0005	0.00036	0.00199	0.00105	0.00139	0.00122	0.00305	0.00446	0.00842	0.00908	0.0108	0.00765	0.00166	0.00174
Cadmium (Cd)	mg/L	<0.000005	<0.000005	<0.000005	0.000007	<0.000005	0.000006	<0.000005	0.000031	0.000032	0.000074	0.000075	0.00001	0.000006	0.000007	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Calcium (Ca)	mg/L	27.4	27.2	33.8	33.7	34.4	29.2	26.8	24.4	24.8	24	24.1	59.3	55.7	41.6	44.5	46.5	43.4	61.3	60.5
Chromium (Cr)	mg/L	<0.0001	<0.0001	0.001	0.0012	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	0.000321	0.000261	0.000022	0.000025	0.000461	0.000204	0.000134	0.0042	0.00426	0.00536	0.00465	0.000242	0.000221	0.000024	0.000035	0.00005	0.000036	0.000041	0.000047
Copper (Cu)	mg/L	0.00011	<0.00005	0.00102	0.00118	0.00029	0.00034	0.00015	0.00029	0.0001	<0.00005	0.0001	<0.00005	<0.00005	0.00011	0.00018	<0.00005	0.00012	0.00015	<0.00005
Iron (Fe)	mg/L	1.08	0.936	0.005	0.006	0.579	0.239	0.153	1.67	0.575	0.767	0.677	0.009	0.319	0.343	0.39	0.549	0.419	1.39	1.38
Lead (Pb)	mg/L	0.000036	<0.000005	0.000027	0.000013	0.000012	0.000026	0.000012	0.000102	0.000015	0.000014	0.000023	0.000008	0.000042	0.000066	0.000038	<0.000005	0.000021	<0.000005	<0.000005
Magnesium (Mg)	mg/L	3.23	3.29	2.81	2.89	3.4	2.86	2.6	2.99	3.14	3.03	2.97	25.8	23.5	4.47	5.01	4.74	4.63	12	11.9
Manganese (Mn)	mg/L	0.21	0.225	0.00374	0.00269	0.695	0.29	0.22	0.448	0.373	0.346	0.318	0.0307	0.0294	0.117	0.135	0.172	0.121	0.0459	0.0319
Mercury (Hg)	mg/L	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	0.00237	0.002	0.00042	0.00041	0.00462	0.00667	0.00773	0.00301	0.00323	0.00345	0.00339	0.00166	0.00202	0.00656	0.00673	0.00686	0.00641	0.00485	0.00465
Nickel (Ni)	mg/L	0.00099	0.00069	0.00078	0.00072	0.00052	0.0003	0.00023	0.0174	0.0239	0.0363	0.0293	0.0006	0.00049	0.00019	0.00018	0.00019	0.00013	0.00004	0.00006
Phosphorus (P)	mg/L	0.931		0.007		0.021	0.037	0.031	0.107	0.11	0.306	0.286	<0.002	0.009	0.404	0.375	0.395	0.363	0.048	0.045
Potassium (K)	mg/L	1.12	1.11	0.76	0.75	1.07	0.97	0.92	1	0.94	0.88	0.86	1.82	1.79	1.15	1.12	0.93	1.05	1.72	1.77
Selenium (Se)	mg/L	<0.00004	<0.00004	0.00071	0.00066	0.00006	<0.00004	<0.00004	<0.00004	<0.00004	0.00008	<0.00004	0.00005	0.00005	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
Silicon (Si)	mg/L	7.48	7.23	4.87	4.7	5.27	4.48	3.73	5.79	5.29	4.89	5.6	4.93	4.55	4.36	4.47	4.4	4.39	3.8	3.68
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	2.3	2.36	1.26	1.32	1.69	1.81	1.6	2.77	2.54	2.21	1.95	1.45	2.2	1.99	1.66	1.48	1.67	0.31	0.38
Strontium (Sr)	mg/L	0.0298	0.03	0.0477	0.0482	0.0697	0.0602	0.0555	0.0563	0.0555	0.0517	0.0511	0.159	0.161	0.157	0.168	0.185	0.164	0.0821	0.0798
Thallium (Tl)	mg/L	<0.000002	<0.000002	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000005	0.000003	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0023	0.0008	0.0007	0.0012	0.0012	0.0012	0.0006	0.165	0.441	0.959	0.771	0.0006	0.0011	0.0017	0.0009	0.0003	0.0009	0.0002	0.0002

Sample location		MW06-10S	MW06-10S	MW06-10S	MW06-10S	MW06-10M	MW06-10M	MW06-10D	MW06-10D	MW06-11S	MW06-11S	MW06-12S	MW06-12S	MW05-12S	MW06-12S	MW-08-13	MW-08-13	MW08-13	MW-08-14	MW-08-14
Sampling Date		**2-Apr-09**	**19-Jul-09**	**21-Sep-09**	**4-Jan-10**	**20-Jul-09**	**21-Sep-09**	**19-Jul-09**	**20-Sep-09**	**28-Jun-09**	**23-Sep-09**	**2-Apr-09**	**25-Jun-09**	**25-Sep-09**	**28-Dec-09**	**24-Jun-09**	**1-Oct-09**	**25-Dec-09**	**24-Jun-09**	**1-Oct-09**
Lab Report	**Units**	**A916247**	**A937827**	**A952605**	**B000586**	**A937827**	**A952605**	**A937827**	**A952605**	**A933481**	**A953309**	**A916247**	**A932718**	**A954306**	**A973505**	**A932237**	**A955546**	**A973505**	**A932237**	**A955546**
Field Physical Parameters																				
Temperature	°C	1.88	2.7	2.95	0.41	4.38	3.17	3.08	3.24	2.53	2.48	0.67	5.27	3.41	1.44	3.67	3.44	0.93	1.8	1.64
Conductivity	uS/cm	149	267	97	218	467	229	483	155	429	191	355	795	321	399	230	101	140	219	72
Specific conductivity	uS/cm3	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH	pH Units	7.70	8.13	7.63	7.68	7.86	7.53	7.7	7.56	7.8	7.54	8.01	7.75	7.33	7.65	6.35	6.22	6.54	6.91	6.38
Laboratory Parameters																				
Physical Parameters																				
Temperature	°C	7	3	5	1	3	5	3	5	10	1.7	7	3.7	1.7	2	3	2	2	3	2
Conductivity	uS/cm	310	310	278	286	480	483	480	491	370	433	790	790	798	790	230	255	278	220	212
Hardness	mg/L	143	142	126	148	260	255	262	263	171	248	351	360	382	368	110	124	137	108	104
Total Suspended Solids	mg/L	<4	<4	<4	<4	7	7	7	10	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
pH	pH Units	8.2	8.1	8.0	8.2	8.3	8.1	8.2	8.1	8.3	8.3	8.3	8.2	8.0	8.0	7.8	7.9	7.9	8.0	8.0
Major Anions																				
Alkalinity-Total	mg/L	120	100	110	120	220	210	250	250	150	200	140	130	140	150	110	130	150	99	97
Acidity-Total	mg/L	1.3	<0.5	<0.5	<0.5	<0.5	1.9	2.6	2.1	<0.5	<0.5	1.6	0.6	1.3	1.4	7.2	6.4	1.8	2.1	1
Bromide	mg/L	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	<0.5	0.9	<0.5	<0.5	0.7	<0.5	0.6	<0.5	0.6	<0.5	1.7	0.6	0.7	<0.5	1	0.8	0.8	<0.5	1.1
Fluoride	mg/L	0.26	0.24	0.15	0.21	0.71	0.75	0.86	0.91	2.02	2.45	1.08	1.06	1.05	1	0.03	0.03	0.05	0.06	0.05
Sulphate	mg/L	35	36	28	26	37	48	22	23	34	33	270	290	230	210	10	0.9	3.8	15	11
Nutrient Parameters																				
Ammonial Nitrogen	mg/L	0.029	0.161	0.008	0.033	0.084	0.083	0.117	0.089	0.13	0.199	0.092	0.149	0.151	0.049	0.011	0.046	0.059	<0.005	<0.005
Nitrate Nitrogen	mg/L	0.002	0.29	0.03	0.019	<0.002	0.002	<0.002	0.01	0.002	0.003	0.063	0.016	0.006	0.111	0.216	0.003	0.009	0.157	0.116
Nitrite Nitrogen	mg/L	<0.002	0.109	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002
Total Phosphate	mg/L	0.02	0.017	0.009	0.009	0.025	0.008	0.009	0.008	<0.005	0.009	0.025	0.021	0.008	0.009	0.009	0.007	0.009	0.008	0.006
Dissolved Ortho-Phosphate	mg/L	0.019	0.005	0.002	0.001	0.002	0.002	0.002	0.002	0.001	0.002	0.02	0.019	0.002	0.001	0.002	0.001	0.002	0.002	0.001
Dissolved Metals																				
Aluminum (Al)	mg/L	0.0034	0.002	0.0033	0.0032	0.0017	0.0057	0.0017	0.0043	0.0105	0.0046	0.0031	0.0021	0.0023	0.0013	0.0071	0.0117	0.0036	0.0017	0.001
Antimony (Sb)	mg/L	0.00058	0.00685	0.00042	0.00037	0.00019	0.00007	0.0012	0.0004	0.00496	0.00025	0.00216	0.00175	0.00156	0.00097	0.00004	0.00003	0.00002	0.00004	0.00003
Arsenic (As)	mg/L	0.00516	0.00326	0.00279	0.00477	0.00071	0.00055	0.00035	0.00035	0.00397	0.00359	0.00215	0.00226	0.00202	0.00082	0.00019	0.00039	0.00053	0.00007	0.00014
Cadmium (Cd)	mg/L	0.00001	0.000019	0.000013	<0.000005	0.00002	0.000012	0.000007	0.000009	0.000014	0.000006	0.000018	<0.000005	<0.000005	<0.000005	0.000023	0.00008	0.000053	<0.000005	<0.000005
Calcium (Ca)	mg/L	52.4	49.6	44.1	51.7	82.5	81.3	73.1	73.5	47.5	67.5	105	113	120	115	37.7	43.6	48	39.3	37.8
Chromium (Cr)	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0002
Cobalt (Co)	mg/L	0.000346	0.00029	0.000235	0.000233	0.000084	0.000036	0.000043	0.000023	0.000218	0.000187	0.000703	0.00074	0.000886	0.000673	0.000072	0.000254	0.00159	0.000029	0.000016
Copper (Cu)	mg/L	0.0003	0.00022	0.00011	0.00008	0.00011	0.00013	0.00021	0.00013	0.00025	0.00007	0.00014	0.00014	<0.00005	0.00007	0.00286	0.00296	0.00134	0.00025	0.00022
Iron (Fe)	mg/L	0.301	0.005	0.009	0.181	3.06	3.73	4.18	3.92	0.131	0.348	0.287	0.17	0.385	0.388	0.03	0.034	0.645	0.001	0.002
Lead (Pb)	mg/L	0.000138	0.000007	0.000007	0.000025	0.000024	0.000175	0.000018	0.000076	0.000025	0.000008	0.000178	0.000019	0.000005	0.000005	0.000094	0.000072	0.0001	0.000009	<0.000005
Magnesium (Mg)	mg/L	4.88	4.38	3.94	4.6	13.2	12.6	19.4	19.4	12.8	19.3	18.2	18.7	20	20	3.79	3.8	4.17	2.34	2.23
Manganese (Mn)	mg/L	0.163	0.116	0.134	0.129	0.261	0.243	0.0872	0.0827	0.081	0.0882	0.29	0.261	0.291	0.264	0.0404	0.356	1.01	0.0119	0.00359
Mercury (Hg)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00003	0.00002	0.00001	<0.00001	<0.00001	<0.00001	0.00001	<0.00001	<0.00001		<0.00001	<0.00001	
Molybdenum (Mo)	mg/L	0.00152	0.00141	0.00116	0.0013	0.00252	0.00258	0.00442	0.00463	0.0347	0.0163	0.00256	0.00233	0.00202	0.00138	0.00028	0.00058	0.00053	0.00073	0.00074
Nickel (Ni)	mg/L	0.00189	0.0012	0.00074	0.00068	0.00146	0.00047	0.00047	0.00046	0.00119	0.00049	0.00135	0.00177	0.00194	0.00163	0.00048	0.00115	0.00129	0.0002	0.00014
Phosphorus (P)	mg/L	0.024	0.007	0.01	0.017	0.034	0.042	0.012	0.011	0.046	0.042	0.03	0.022	0.014	0.013	0.009		0.009	0.005	
Potassium (K)	mg/L	1.66	2.16	1.9	1.5	1.86	1.85	2.96	2.27	1.96	1.77	2.96	2.87	3.13	2.9	1.13	0.98	0.95	1.21	1.1
Selenium (Se)	mg/L	<0.00004	0.00577	0.00031	<0.00004	<0.00004	0.00005	0.00006	0.00006	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.00042	0.00007	0.00005	0.00109	0.00092
Silicon (Si)	mg/L	4.09	4.38	4.6	4.11	3.59	3.45	3.44	3.41	4.47	5.12	7.74	6.99	7.32	5.86	5.23	5.07	5.78	3.74	3.76
Silver (Ag)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000011	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	2.88	6.19	4.82	2.17	2.72	2.79	1.35	1.12	5.85	2.68	34.9	30.2	29.2	21.6	4.45	1.34	1.69	1.24	0.91
Strontium (Sr)	mg/L	0.202	0.224	0.22	0.221	0.145	0.149	0.175	0.177	0.106	0.141	0.354	0.398	0.378	0.364	0.15	0.105	0.108	0.0882	0.0854
Thallium (Tl)	mg/L	0.000003	0.000033	0.000006	0.000003	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	0.000007	0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.0048	0.0028	0.0022	0.0015	0.0008	0.002	0.0054	0.0018	0.0006	0.0007	0.0027	0.0006	0.0026	0.0025	0.002	0.0014	0.0017	0.0005	0.0002

2.3.4 Groundwater Monitoring Station Water Level Results

Water levels were taken at the groundwater wells outlined in the Licence, and the results are summarized in Table 2-10. The water levels are measured from the top of the well to the water level in the well, not from the water level below the ground. A "-" in the table indicates that the well head was frozen to the top of the standpipe, and consequently a water level measurement was unachievable. "Artesian" indicates that the well was overflowing the top of the well without encouragement from pumping.

Table 2-10 2009 Groundwater Monitoring Stations and Water Levels (m)

Monitoring Site	MW05-1A	MW05-1B	MW-05-2A	MW-05-2B	MW05-3A	MW05-3B	MW05-4A	MW05-4B	MW05-5A	MW05-5B	MW-05-6A	MW-05-6B
Sampling Period												
April	F	F	F	F	F	F	F	F	3.24	3.93	F	F
June	Artesian	2.03	12.9	0.53	1.51	1.77	0.00	Artesian	2.98	2.73	5.51	F
September	F	2.12	0.39	0.64	1.66	1.98	1.025	0.98	3.9	3.81	7.67	8.17
December	F	2.23	F	Ice at 1.05	F	F	Ice at 0.99	Ice at 1.03	3.23	3.93	F	F
Monitoring Site	**MW-05-7B**	**MW06-8S**	**MW06-8D**	**MW06-9S**	**MW06-9M**	**MW06-10S**	**MW06-10M**	**MW06-10D**	**MW06-11S**	**MW06-12S**	**MW08-13**	**MW08-14**
Sampling Period												
April	F	8.67	11.02	4.29	F	5.5	4.45	2.3	F	2.25	F	F
June	0.26	7.4	8.36	2.57	Artesian	4.54	3.57	2.26	1.57	1.46	1.44	0.62
September	0.43	7.82	8.42	3.54	Artesian	4.53	3.87	1.3	1.35	1.86	2.05	1.16
December	1.15	8.15	9.83	18.41	F	6.88	6.52	4.09	F	2.23	Ice at 2.99	Ice at 0.78

Notes: F = Water frozen in the well, hence no water level was achievable.

3 Water Use

The Licence permits the use of water from the Go Creek and Wolverine Creek watersheds, up to 7230 m^3/day. In 2009, the Wolverine Project used water from the Wolverine Creek watershed in the form of groundwater discharge to the underground mine, and water from the Go Creek watershed for camp use, cement batch plant operation and at temporary washroom facility at the mill building construction site. The total water use from both watersheds in 2009 was 75,846 m^3 or on average 207 m^3/day. This water use is further detailed below.

3.1 Wolverine Creek Watershed Water Use

Water extracted from the underground mine from the Wolverine watershed was treated and discharged to the environment under Type B Water Use Licence QZ01-051 January through October 2009. Completion of the lining of the tailings storage facility and of the installation of the discharge pipeline occurred in October 2009, and the underground groundwater discharge was pumped to the tailings storage facility starting October 7, 2009.

The daily water use from the Wolverine watershed, via dewatering of the underground mine, is presented in Figure 3-1. A flow meter was installed at the end of the discharge pipeline in July, whereas prior to the flow meter being installed the use rate was based on the volume of the surface storage sumps.

The total water used from the Wolverine Creek watershed in 2009 was 63,655 m^3 or on average 173.2 m^3/day. 21,345 m^3 was pumped to the tailings storage facility and will be used for mill start up in early summer 2010.

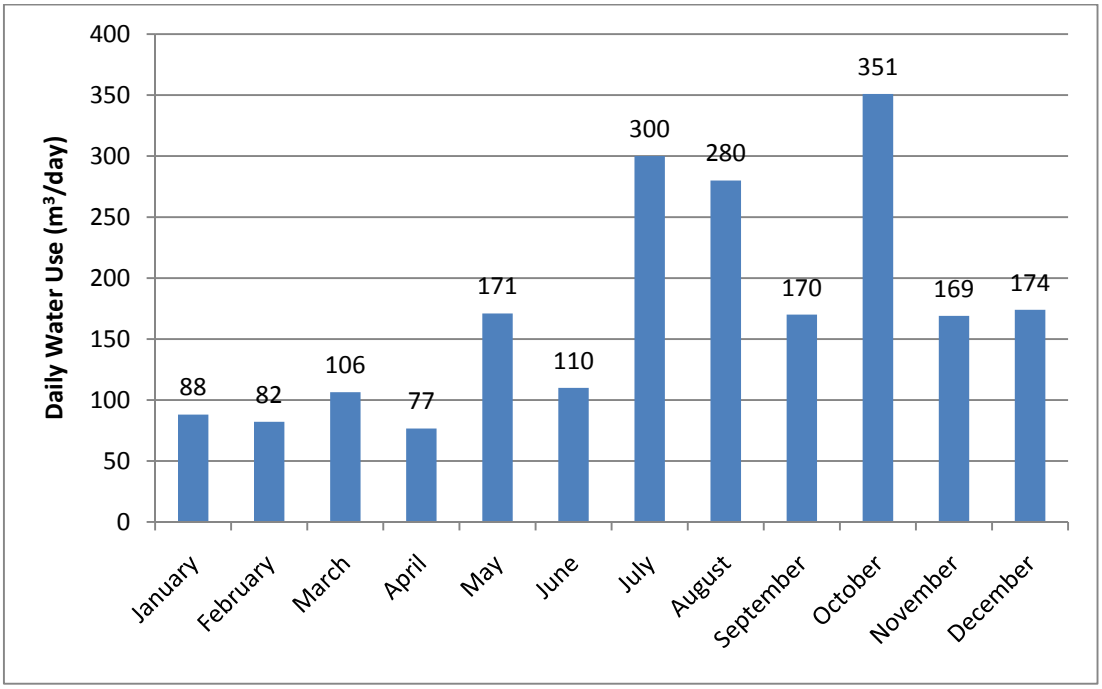


Figure 3-1 2009 Wolverine Creek Watershed Water Use

3.2 Go Creek Watershed Water Use

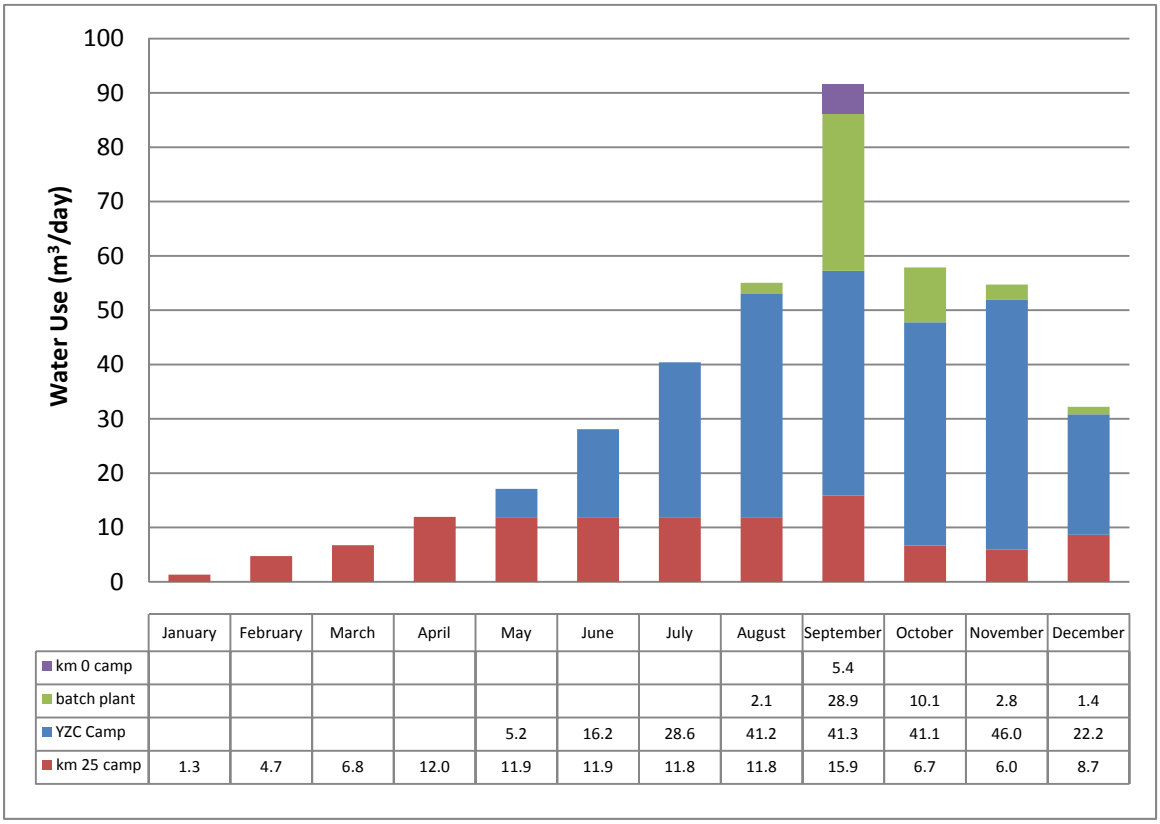
Water extracted from the upper Go Creek watershed in 2009 was used for the following purposes:

1. The YZC work camp, May through December;
2. Temporary Construction Camp at km 25, January through December;
3. Temporary Construction Camp at km 0, in September only;
4. Concrete batch plant (for concrete production), August through December; and
5. The wash shack at the mill construction site October through December.

The monthly consumption and average daily consumption is summarized in Table 3-1and the daily water use from the Go Creek watershed by consumption location is provided in Figure 3-2. The water consumed at the mill building washroom is incorporated in the km 25 camp values. The total water consumed in 2009 from the Go Creek watershed was approximately 12,191 m^3 or on average approximately 33.5 m^3/day.

Table 3-1 2009 Go Creek Watershed Consumption

Month	Monthly Total (m^3)	Daily Use (m^3/day)
January	41.1	1.3
February	147.2	4.7
March	209.3	6.8
April	371.0	12.0
May	530.2	17.1
June	842.4	28.1
July	1252.9	40.4
August	1706.3	55.0
September	2746.6	91.6
October	1735.9	57.9
November	1642.0	54.7
December	966.4	32.2



	January	February	March	April	May	June	July	August	September	October	November	December
km 0 camp									5.4			
batch plant								2.1	28.9	10.1	2.8	1.4
YZC Camp					5.2	16.2	28.6	41.2	41.3	41.1	46.0	22.2
km 25 camp	1.3	4.7	6.8	12.0	11.9	11.9	11.8	11.8	15.9	6.7	6.0	8.7

Figure 3-2 2009 Go Creek Watershed Water Use

Sewage produced at the km 25 Temporary Construction Camp was discharged to the sewage disposal system located adjacent to the camp, as per Yukon Health and Social Services Permit #3337. At the YZC camp, sewage was treated at the sewage treatment plant, and effluent from the sewage treatment plant was pumped to the surface water storage sumps May to October and to the tailings storage facility after October 7, 2009. The total volume pumped to the tailings storage facility from the sewage treatment plant in 2009 was approximately 3207 m^3, or approximately 35 m^3/day.

4 Decommissioning and Reclamation Plan Update

An update to the Decommissioning and Reclamation Plan (titled Reclamation and Closure Plan Version 2009-03) was submitted to the Yukon Energy, Mines and Resources Chief for review and approval in November 2009. A copy of the final document will be submitted to the Board once approved under Quartz Mining License QML-0006.

5 Inspection of Water Retaining Structures

An annual inspection of water retaining structures was conducted June 16 through 18, 2009 by EBA Engineering Consultants, and included a visual inspection of the following structures:

1. Industrial Complex – cut and fill slopes.

2. Industrial Complex Surface and Underground Water Treatment Sumps (1, 2, 3, 4 and 5) - liners and slopes.
3. Industrial Complex Diversion Ditches (1 and 6) – cut and fill slopes.
4. Industrial Complex Collection Ditches (2, 3, 4 and 5) – liners, cut and fill slopes.
5. Mine Camp Pad Area including upper generator and water treatment pad, sewage treatment plant pad, and treated effluent pond – liner, cut and fill slopes.
6. Temporary Waste Rock and Ore Storage Facility including seepage collection sump and ore waste stockpiles contained within the facility – cut and fill slopes.
7. Land Treatment Facility (Hydrocarbon Contaminated Material) including runoff collection sump – liners and fill slopes.
8. Tailings Facility Area Diversion Ditches A & B – cut and fill slopes.

Many of these areas were still under construction when the inspection took place; however, the report contained the following recommendations for water bearing stuctures, summarized in Table 3-2 and the corresponding actions were taken by YZC in 2009. The full report from EBA is provided in Appendix C.

Table 3-2 2009 Inspection Recommendations and Actions taken for Water Bearing Structures

Structure	Recommendation	Actions
Ditch #1	1. The cut slope between Ditch #1 and the mill pad showed some sloughing. The sloped should be more gradual and engineered fill should be placed from the toe to the crest along the affected area. 2. Noticeable erosion channels along the south western side of the Mill fill that were created during recent heavy rainfalls. Proper grading to divert surface runoff towards the designated drainage ditches should be completed.	Recommendations completed with geotextile fabric and rip rap. To be completed in June 2010
Surface Sumps #1, #2 & #3	Noticeable settlement of the backfill along the perimeter lined key trenches and buried propane lines indicating that backfill material was not compacted during placement. No immediate actions are required, but the area should be monitored and repaired if required.	Monitor and address in June 2010.
Surface Sumps #4 & #5	The backfill along the perimeter of each sump was soft, indicating that the backfill material was not compacted during placement. No immediate actions are required, but the area should be monitored and repaired if required.	Monitor and address in June 2010.
Collection Ditches #2, #3, #4 & #5	Large tension crack forming on western downslope of Ditch #4.	Repairs were conducted immediately, in June 2009.
Tailings Storage Facility Diversion Ditches A & B	1. Settlement cracks were evident Ditches A & B, and two areas of localized sloughing, one along Ditch A and one along Ditch B were also evident. The areas should be monitored and repaired prior to Fall 2009. 2. Settlement crack at the buried culvert sections of the ditches were also evident. The backfill along these alignments should be graded and compacted to reduce future erosion and settlement problems.	Remedial actions were completed in September 2009 Continue monitoring.

6 Summary

37 reports were submitted to the Yukon Water Board in 2009 to fulfill licence requirements under Sections 10, 14, 15, 16, 31, 33 and 40.

Surface water quality and flow monitoring, groundwater monitoring well water quality and level monitoring was conducted throughout 2009, as outlined in A-Licence QZ04-065 Schedule A.

A total of 180 samples were taken from surface water quality stations in 2009 on the road route, and throughout the Go Creek, Wolverine Creek and Money Creek watersheds. 61 samples were taken from the nested groundwater wells within the Wolverine Creek watershed and Go Creek watershed. Surface and groundwater water quality will be compared to baseline water quality (i.e., pre-construction activities) in the bi-annual report required by the Quartz Mining License QML-0006 Monitoring and Surveillance Plan.

Water was consumed from the Wolverine Creek watershed (as groundwater discharge to the underground mine) and the Go Creek watershed (for human use and concrete production) in 2009 for a total consumption from both watersheds of approximately 75,846 m^3 or on average 207 m^3/day, well below the permitted maximum water use rate of 7230 m^3/day.

Sewage treatment plant effluent and underground groundwater discharge was pumped to the tailings storage facility commencing in October 2009, for a total stored volume at the end of 2009 of 24,552 m^3.

An inspection of water bearing structures installed in 2009 was conducted June 16 through 18 2009. Remediation activities recommended by the inspection were conducted to alleviate any areas of concern.

Monitoring under Type A Water Licence QZ04-065 will continue in 2010, with groundwater quality monitoring increasing frequency from quarterly to monthly once mill production starts. The monthly results will be presented the *Monitoring and Surveillance Monthly Reports*, submitted 30 days subsequent to the end of the month. An annual summary of 2010 monitoring data will be compiled and submitted by February 28, 2011.

Appendix A Surface Water Quality Lab Reports

Appendix A on the enclosed disk includes the following full lab reports:

A902628	A930270	A959421
A906233	A930976	A961093
A907297	A931188	A962842
A910072	A935359	A964560
A913452	A936094	A965984
A914684	A937394	A969041
A916243	A940905	A971785
A917065	A941870	A973034
A919550	A942402	A973517
A922441	A949299	L793547
A923809	A949310	L840320
A928455	A956923	

Appendix B Groundwater Monitoring Well Water Quality Lab Reports

Appendix B on the enclosed disk includes the following full lab reports:

A916247
A932237
A932718
A933481
A937827
A952605
A953309
A954306
A955546
A973505
B000586

Appendix C EBA Engineering Consultants Ltd. Annual Inspection Report – July 8, 2009

WOLVERINE PROJECT

TYPE B WATER LICENCE QZO1-051

ANNUAL REPORT 2009

Prepared by

Yukon Zinc Corporation

Vancouver, British Columbia

February 19, 2010

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1 Introduction

This annual report has been prepared to satisfy requirements contained within Yukon Water Board Type B Water Licence QZ01-051 (Licence), and specifically provides information with respect to Licence Conditions 15 and 16 for the year 2009. The conditions are as follows

Condition 15: On or before the anniversary of the date of issuance of this licence, and for each year during which this licence is in effect, the Licensee shall submit an annual report to the Board.

Condition 16: Annual reports shall include the information required by this licence and by the Regulation, including but not necessarily limited to

a) all monitoring data required to be collected by this licence,

b) a report on all activities carried out during the preceding year as part of any study required by this licence, and

c) the quantity of water used per day for camp use for the year period.

The activities that occurred in 2009 that pertain to the Licence include:

- The use of water from Go Creek, Wolverine Lake, and intercepted water from underground workings,
- Care and maintenance of the underground test mine constructed in 2005 through to April 2009,
- Water treatment of underground test mine discharge prior to discharge to Go Creek,
- Water quality monitoring of surface water treatment sumps, waste rock storage area collection sump, underground test mine discharge and Wolverine and Go Creeks,
- Use of Wolverine Lake water for exploration camp consumption, and
- Deposition and storage of waste rock and ore within a lined area.

Discharges under Schedule 3 of the Waters Act from the land treatment facility collection sump and waste rock storage area pad were also conducted in 2009.

Increased activities in the underground mine resulted in poorer water quality in the underground effluent, and YZC was not able to meet the allowable discharge limits outlined in the Licence. As such, on July 9, 2009 Yukon Zinc Corporation (YZC) applied for an emergency amendment to the Licence under Sections 19(3)(c) and 21(4) of the Waters Act, S.Y. 2003, c.19 to release water from the Wolverine Project site under effluent quality standards proposed by the amendment application (Appendix F). This amendment was approved July 10, 2009, with a typographical correction issued July 13, 2009 by the Yukon Water Board (Appendix G). This amendment allowed for increased effluent quality limits (i.e., higher concentrations) for total selenium and ammonia, and decreased effluent quality limits for cadmium, copper and lead, and was in effect until completion of tailings storage facility construction, or October 31, 2009; whichever came first.

On August 11, 2009 YZC applied for a second amendment to increase the amount of volume allowed to be discharged on a daily basis from 200 m^3 per day to 432 m^3 per day (Appendix H). This amendment was approved August 18, 2009 (Appendix I).

Discharge as per the amended B Licence effluent quality limits was ongoing from July 11 through August 17, 2009 and at the amended effluent quality limits and amended discharge volume from August 18 through October 5, 2009.

On October 5, 2009 the discharge of treated mine water to Go Creek ceased, and as of October 7, 2009 all underground effluent reports to the tailings storage facility.

This report also summarizes monitoring conducted under the two emergency amendments issued in 2009.

1.1 2009 B Licence Submissions

For 2009, Yukon Zinc Corporation (YZC) submitted documents to the Yukon Water Board as per all Licence requirements. Table 1-1 summarizes by Licence conditions the document submitted to the Board as well as the date of submission.

Table 1-1 2009 Document Submissions under Licence QZ01-051

B Licence Condition No.	Submission Requirements and Details	Date Submitted
#8	Spill Contingency Plan V2009-02	04-Sep-09
#12	Spill Report – Diesel spill at tailings storage facility	07-Apr-09
#12	Spill Report – diesel spill at portal fuel tanks	29-Sep-09
#12	Spill Report – unauthorized discharge of effluent to Go Creek	29-Sep-09
#12	Spill Report - antifreeze spill at km 0	07-Dec-09
#15-16	Annual report for 2008	30-Jan-09
#38	Notice of minor modification for removal of 2 water treatment sumps	02-Feb-09
#39	Sump #3 As-Built Report	24-Feb-09
#40-45	Surveillance Network Program (Dec 08)	23-Jan-09
#40-45	Surveillance Network Program (Jan 09)	27-Feb-09
#40-45	Surveillance Network Program (Feb 09)	30-Mar-09
#40-45	Surveillance Network Program (Mar 09)	30-Apr-09
#40-45	Surveillance Network Program (Apr 09)	28-May-09
#40-45	Surveillance Network Program (May 09)	29-Jun-09
#40-45	Surveillance Network Program (June 09)	30-Jul-09
#40-45	Surveillance Network Program (July 09)	14-Aug-09
#40-45	Surveillance Network Program (August 09)	11-Sep-09
#40-45	Surveillance Network Program (September 09)	15-Oct-09
#40-45	Surveillance Network Program (October 09)	14-Nov-09
#40-45	Surveillance Network Program (November 09)	31-Dec-09
#53	Water Management and Treatment Plan	23-Apr-09
#53	Water Management and Treatment Plan	31-Aug-09
#53	Water Management and Treatment Plan	23-Dec-09
Waters Act[1]	Notice of waste deposit without a licence Waste rock storage area collection sump	01-May-09
Waters Act[1]	Notice of waste deposit without a licence LTF Sump discharge	20-May-09

B Licence Condition No.	Submission Requirements and Details	Date Submitted
Waters Act[1]	Notice of waste deposit without a licence LTF Sump discharge	15-Jul-09
Waters Act[1]	Notice of waste deposit without a licence LTF Sump discharge	09-Sep-09
Waters Act[2]	Request for Amendment to Licence QZ01-051	09-Jul-09
	Subsequent to above letter Response to Questions Regarding to Go Creek Hydrology	09-Jul-09
	Subsequent to above letter Response to YWB review for adequacy	09-Jul-09
Waters Act[2]	Response to amendment of Licence QZ01-051	04-Aug-09
Waters Act[2]	Request for Second Amendment to Licence QZ01-051	11-Aug-09
	Letter subsequent to above letter Response to Interventions 5.1-5.3	18-Aug-09

1. Waters Act O.I.C. 2003/58 Schedule 3 Notice of Water Use/Waste Deposit without Licence
2. Waters Act O.I.C. 2003/58 Schedule 4 Application for Licence or Amendment

2 Water Use

Under the Licence, YZC is authorized to obtain water from Go Creek and Wolverine Lake and to remove intercepted water from the underground workings up to 203 m^3 of water per day. Under Scheduel 7 of the *Waters Act: Waters Regulation* allowable direct water use without a water use licence is 300 m^3/day. The two uses of water in 2009 include surface drilling and domestic purposes at the exploration camp.

2.1 Intercepted Water from Underground Workings

Recharge water from the underground workings was either discharged from the mine either for treatment, or recycled for underground drilling. Mine water recharge rate was calculated from surface sump volumes, and ranged from ~54.3 m^3/day to ~300 m^3/day, as summarized in Figure 2-1. On average, the recharge rate for the January through October 2009 period was calculated to be approximately 124 m^3/day. Treatment and discharge of the underground groundwater recharge was discontinued October 5th, 2009 when the tailings storage facility impoundment construction was complete, and mine recharge was pumped directly to the facility (as permitted by Type A Water Use Licence QZ04-065). Mine water recharge from the underground mine and discharge to the tailings facility after October 5th, 2009 is summarized in the A Licence QZ04-065 2009 Annual Report (submitted February 11, 2010).

2.2 Wolverine Watershed

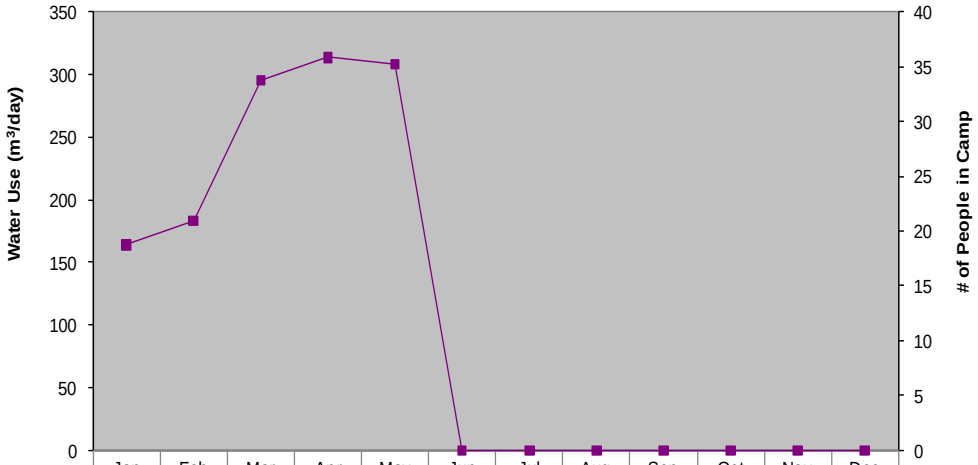
Water from Wolverine Lake was filtered and treated for potable water uses in the exploration camp kitchen and dry facilities. The exploration camp was in use from January through May 2009, when all personnel moved to the permanent camp facility at the industrial complex (water use at the permanent camp is regulated by A Licence QZ04-065). Based on a conservative estimate of 232 L per person per day for showering, hand washing, laundry, human consumption, food preparation and dishwashing, the maximum amount of water used in 2009 was 8.3 m^3/day when there were 36 people in camp and the minimum was 4.4 m^3/day when there were 19 people in camp (Figure 2-1). There are no flushing

toilets in Wolverine Camp, and therefore, toilets are not a contributor to camp water consumption.

Surface drilling was also conducted using water from the upper Wolverine Creek watershed from June 1 through August 17, for a total of 43.4 m^3 of water usage over 77 days, or approximately 0.6 m^3/day.

2.3 Total Water Consumption

Figure 2-1 shows the average daily water usage per month for the two water uses, and the camp occupancy for the 2009 program. Although the maximum daily water use in 2009 was ~307 m^3, the average water consumption was ~130 m^3/day. Underground recharge was measured from surface storage sump discharge and the value shown is higher for July as water accumulated in the surface sumps until the Licence amendment was issued July 10, 2009 (see Section 4).



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Definition drilling	0	0	0	0	0	0.6	0.6	0.6	0	0	0	0
Camp	4.4	4.9	7.8	8.3	8.2	0	0	0	0	0	0	0
Underground recharge	88.1	79.3	106.5	76.7	171.0	220.0	298.9	224.1	168.2	54.3	0	0
People in Camp	18.8	20.9	33.8	35.8	35.2	0	0	0	0	0	0	0

Figure 2-1 Monthly Average Daily Water Consumption 2009

3 Surveillance Network Monitoring Program

The intent of the Surveillance Network Monitoring (SNM) Program is to monitor the effectiveness of water management and treatment processes as well as changes to the receiving environment compared to baseline conditions. SNM station locations and required water quality sampling and flow monitoring frequency, as outlined in the Licence are summarized in Table 3-1.

Table 3-1 QZ01-051 Surveillance Network Monitoring Sampling Requirements

Component and Station No.	Sampling Frequency	Flow monitoring Frequency	Analytical Suite*
Water Quality - W9 Wolverine Creek	Quarterly	Quarterly	A, B, DOC
Water Quality - W12 Go Creek above Pup Creek	Quarterly	Quarterly	A, B, DOC
Water Quality - W16 Go Creek near Hawkowl Creek	Monthly	Monthly	A, B, DOC
Sediment (W9, W12, W16)	Annually	n/a	B
UTMD - Underground test mine discharge	Weekly	Weekly	A, B
WRSS - Waste rock stockpile decant	Weekly	Weekly	A, B
C-PS - Clean sump decant	Weekly	Weekly	A, B
WTSP - Water treatment plant settling pond	Weekly	Weekly	A, B
AWP-SP - Aggregate wash plant settling pond	Monthly	-	TSS

*A: Physical parameters, ICP-MS – dissolved metals, ammonia, nitrate; B: ICP-MS – total metals; DOC: Dissolved Organic Carbon; TSS: Total suspended solids

Information contained within this section pertains to Part F of the Licence, "Monitoring and Surveillance", and includes baseline water quality, sediment quality and surface hydrology at stream stations W9, W12 and W16, as outlined above.

3.1 W9, W12 and W16 Water Quality Results

Although water quality monitoring is only required quarterly for stations W9 and W12, they were sampled more frequently to increase the data set; W9 was sampled 11 times and W12 was sampled nine times in 2009. Water quality results for W9, W12 and W16 are summarized in Table 3-2, Table 3-3 and Table 3-4, respectively, and the complete lab reports listed in Appendix A are provided on the enclosed disk. There are no results for W9 and W12 in May 2009 due to lack of safe access for off road vehicles (i.e., snowmobiles or ATVs) and W12 was not sampled in January or February 2009 as extremely cold weather conditions prevented sampling.

All parameters have been assessed as per Licence requirements, with the exception of DOC at W12 throughout 2009 and W16 in November, due to technician and lab errors, respectively. *Canadian Council of Ministers of the Environment (CCME) Guidelines (2002) for the Protection of Aquatic Life* (Guidelines) are provided in the tables below for comparison purposes and values that exceed the Guideline have been bolded.

Table 3-2 W9 Water Quality Results 2009

Sample location	CCME	W9	W9	W9	W9	W9	W9	W9	W9	W9	W9	W9
Sampling Date	Guidelines for the protection of aquatic life*	17-Jan	9-Feb	28-Mar	6-Apr	15-Jun	8-Jul	8-Aug	3-Sep	23-Oct	16-Nov	21-Dec
Lab Report		A902628	A906233	A914684	A916243	A930270	A935359	A942402	A949310	A961093	A965984	A973034
Physical Parameters												
Temperature (°C)		2.7	3.7	6	7	5	7	6.7	2.7	1	1	1.7
Conductivity (uS/cm)		290	290	310	900	220	240	263	276	297	288	306
Hardness (mg/L)		145	147	143	475	104	127	134	136	151	157	177
TSS (mg/L)	**25**[1]	<4	<4	11	7	<4	4	<4	<4	<4	<4	<4
pH (pH Units)	**6.5-9.0**	8.1	8.2	8.1	8.1	8.0	8.1	8.1	8.1	8.2	8.3	8.0
DOC (mg/L)		1.1	1.2	1.7	6.3	3.6	2.5	1.8	3.9	2	2	1
Major Anions (mg/L)												
Alkalinity		120	120	120	380	86	96	110	110	120	120	120
Acidity		<0.5	<0.5	<0.5	7.2	<0.5	3.1	1.3	<0.5	<0.5	<0.5	<0.5
Bromide		<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride		0.9	0.7	<0.5	2.6	0.8	0.7	1	<0.5	0.7	0.6	0.5
Fluoride		0.1	0.09	0.11	0.31	0.12	0.15	0.1	0.12	0.11	0.11	0.11
Sulphate		36	36	44	110	24	26	29	30	30	33	33
Nutrient Parameters (mg/L)												
Ammonia	**1.4-1.5**[2]	0.013	<0.005	0.055	0.11	<0.005	<0.005	0.031	<0.005	0.013	<0.005	<0.005
Nitrate	**13**	0.275	0.287	0.347	0.944	0.176	0.201	0.1	0.117	0.162	0.171	0.238
Nitrite		<0.002	<0.002	<0.002	0.003	0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002
Total P		0.008	0.008	0.008	0.01	0.01	0.006	0.008	0.008	0.005	0.005	0.007
Dissolved Ortho-Phosphate		0.003	0.004	0.001	0.003	0.001	0.001	0.002	0.001	0.002	0.001	0.002
Total Metals (mg/L)												
Aluminum (Al)	**0.1**	0.0069	0.0227	0.0422	0.065	0.0377	0.0645	0.009	0.0167	0.0032	0.0036	0.029
Antimony (Sb)		0.00014	0.00017	0.00029	0.0008	0.00018	0.00019	0.00016	0.00017	0.00015	0.00014	0.00024
Arsenic (As)	**0.005**	0.00021	0.00026	0.0003	0.00082	0.00021	0.00027	0.00021	0.00024	0.00022	0.00022	0.00029
Cadmium (Cd)	**0.00008**[3]	**0.00123**	**0.00135**	**0.00136**	**0.00316**	**0.00138**	**0.00176**	**0.00158**	**0.00173**	**0.00127**	**0.00129**	**0.0015**
Calcium (Ca)		42.5	43	41.1	137	31.8	38.8	40.3	37.9	42.8	42.9	46.6
Chromium (Cr)	**0.0089**	0.0011	0.0011	0.0004	0.0006	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)		0.00001	0.000035	0.000056	0.000104	0.000048	0.000105	0.000023	0.000046	0.00001	0.000006	0.000033
Copper (Cu)	**0.002**[4]	0.00055	0.00078	0.00139	**0.00298**	0.00182	0.00191	0.00093	0.00128	0.00057	0.00054	0.00081
Iron (Fe)	**0.3**	0.01	0.053	0.072	0.051	0.077	0.16	0.031	0.071	0.007	0.01	0.048
Lead (Pb)	**0.002**[3]	0.000106	0.000196	0.00047	0.000592	0.000141	0.000356	0.000066	0.00011	0.00001	0.000012	0.000121
Magnesium (Mg)		9.98	9.87	9.83	32.4	6.08	7.26	8.4	8.34	9.58	10.3	10.8
Manganese (Mn)		0.00218	0.00451	0.00862	0.00938	0.00685	0.0191	0.00344	0.00778	0.00058	0.00069	0.00291
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)		0.00102	0.00101	0.00108	0.00259	0.00061	0.00062	0.00081	0.00082	0.00091	0.00097	0.00132
Nickel (Ni)	**0.065**[3]	0.00257	0.00274	0.00281	0.00765	0.00474	0.00581	0.00409	0.00458	0.00322	0.00293	0.00316
Phosphorus (P)		0.007	0.008	0.015	0.008	0.01	0.024	0.007	0.011	0.004	0.005	0.032
Potassium (K)		1.09	1.17	1.3	5.29	0.87	1	0.98	0.96	1.04	1.04	1.27
Selenium (Se)	**0.001**	**0.00366**	**0.00432**	**0.00519**	**0.0148**	**0.00296**	**0.00282**	**0.00311**	**0.00397**	**0.00383**	**0.00386**	**0.00419**
Silicon (Si)		3.11	3.27	3.68	11	2.85	3.58	3.36	4.22	3.43	3.51	3.48
Silver (Ag)	**0.00001**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.04	1.11	0.91	3.37	0.75	0.9	0.86	0.84	0.86	0.9	1.06
Strontium (Sr)		0.126	0.129	0.125	0.411	0.0902	0.113	0.12	0.113	0.123	0.121	0.139
Thallium (Tl)	**0.0008**	0.000003	0.000002	0.000003	0.000009	0.000004	0.000005	0.000005	0.000004	0.000002	0.000003	0.000003
Vanadium (V)		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	**0.03**	**0.0996**	**0.104**	**0.112**	**0.258**	**0.148**	**0.181**	**0.137**	**0.147**	**0.113**	**0.105**	**0.124**
Dissolved Metals (mg/L)												
Aluminum (Al)		0.0081	0.0026	0.0037	0.0084	0.0071	0.0154	0.0046	0.0047	0.0035	0.0017	0.0022
Antimony (Sb)		0.00015	0.00017	0.00021	0.00074	0.00018	0.00019	0.00016	0.00017	0.00016	0.00013	0.00016
Arsenic (As)		0.00021	0.00027	0.00024	0.00078	0.00017	0.00017	0.00021	0.0002	0.00022	0.00024	0.00026
Cadmium (Cd)		0.0012	0.00124	0.00112	0.00309	0.00121	0.00147	0.00149	0.00154	0.00139	0.00131	0.00144
Calcium (Ca)		41.9	43.3	42.3	139	30.5	38.1	40.1	40.4	44.3	45.6	51.3
Chromium (Cr)		0.001	0.0011	0.0002	0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)		0.00001	0.000009	0.000017	0.000077	0.00002	0.000016	0.000009	0.000011	0.000009	0.000006	0.000006
Copper (Cu)		0.00054	0.00052	0.0006	0.00271	0.0016	0.00133	0.00086	0.00085	0.00055	0.00049	0.00046
Iron (Fe)		0.004	0.003	0.003	0.024	0.01	0.014	0.006	0.008	0.002	0.005	0.003
Lead (Pb)		0.000078	0.000074	0.000075	0.000203	0.000032	0.000049	0.000017	0.000026	<0.000005	<0.000005	<0.000005
Magnesium		9.73	9.51	10	33.7	6.17	7.13	8.32	8.53	9.81	10.6	11.8
Manganese		0.0016	0.00017	0.00237	0.0074	0.00025	0.00183	0.00023	0.00027	0.00008	<0.00005	0.00025
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum		0.00107	0.00108	0.00107	0.00374	0.00065	0.0007	0.00084	0.00083	0.00095	0.00102	0.00115
Nickel (Ni)		0.00258	0.00247	0.0024	0.00792	0.00464	0.00471	0.00383	0.00445	0.00326	0.0031	0.00305
Phosphorus (P)		0.007	0.006	0.008	0.005	0.006	0.011	0.006	0.007	0.005	0.006	0.008
Potassium (K)		1.08	1.1	1.39	5.39	0.87	0.98	0.98	1.02	1.11	1.09	1.31
Selenium (Se)		0.0036	0.00441	0.00429	0.0147	0.00313	0.00289	0.00298	0.00321	0.00358	0.00357	0.00451
Silicon (Si)		2.92	3.08	3.34	9.53	2.7	3.17	3.43	3.67	3.48	3.31	3.9
Silver (Ag)		<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.05	0.99	0.92	3.5	0.77	0.97	0.85	0.86	0.89	0.93	1.01
Strontium (Sr)		0.127	0.133	0.127	0.417	0.0899	0.113	0.118	0.12	0.133	0.126	0.147
Thallium (Tl)		0.000002	<0.000002	<0.000002	0.000009	0.000003	0.000005	0.000004	0.000005	0.000003	0.000003	0.000003
Vanadium (V)		<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)		0.0988	0.0959	0.0862	0.251	0.143	0.144	0.129	0.142	0.115	0.106	0.116

*Bold numbers indicate exceedances of CCME guidelines for the protection of aquatic life

1. Maximum induced TSS is 25 mg/L for 24 hours when background is less than or equal to 25; 2. At pH 8, temp 1-10ºC; 3. For hardness = 60-120 mg/L CaCO3; 4. For hardness = 0-120 mg/L CaCO3

Table 3-3 W12 Water Quality Results 2009

Sample location	CCME	W12	W12	W12	W12	W12	W12	W12	W12	W12
Sampling Date	Guidelines for the protection	27-Mar	26-Apr	14-Jun	12-Jul	2-Aug	4-Sep	3-Oct	25-Nov	26-Dec
Lab Report	of aquatic life*	A914684	A919550	A930270	A936094	A940905	A949310	A956923	A969041	A973517
Physical Parameters										
Temperature (°C)		2.7	6	9.3	5	1.7	6	2.7	1.7	5.3
Conductivity (uS/cm)		290	170	170	120	150	170	163	161	169
Hardness (mg/L)		145	74.1	84.3	49.4	71.2	84.3	74	77.6	83.5
TSS (mg/L)	**25**[1]	**34**	<4	5	<4	<4	<4	<4	<4	<4
pH (pH Units)	**6.5-9.0**	7.9	8.1	7.9	8.0	8.2	7.9	8.0	8.0	8.0
DOC (mg/L)		-	-	-	-	-	-	-	-	-
Major Anions (mg/L)										
Alkalinity		70	70	47	64	71	66	67	70	71
Acidity		<0.5	0.9	<0.5	3	1.5	<0.5	<0.5	<0.5	<0.5
Bromide		<0.1	<0.1	0.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride		<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.6
Fluoride		0.05	0.06	0.05	0.05	0.05	0.04	0.05	0.05	0.05
Sulphate		17	17	14	12	15	13	15	17	17
Nutrient Parameters (mg/L)										
Ammonia	**1.4-1.5**[2]	0.035	0.026	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	<0.005
Nitrate	**13**	0.154	0.156	0.021	<0.002	<0.002	0.037	0.004	0.076	0.098
Nitrite		0.003	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002
Total P		<0.005	0.007	0.006	0.01	<0.005	0.006	<0.005	<0.005	<0.005
Dissolved Ortho-Phosphate		0.003	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.002
Total Metals (mg/L)										
Aluminum (Al)	**0.1**	0.0048	0.006	0.0349	0.0145	0.0117	0.0115	0.0103	0.0042	0.0057
Antimony (Sb)		0.0001	0.00007	0.00004	0.00005	0.00004	0.00005	0.00003	0.00004	0.00005
Arsenic (As)	**0.005**	0.00018	0.00021	0.00023	0.00026	0.00034	0.00027	0.00025	0.00015	0.00016
Cadmium (Cd)	**0.00008**[3]	0.000017	0.000019	0.000022	0.00003	0.000023	0.000018	0.000015	0.00001	0.00001
Calcium (Ca)		22	25.4	15.5	22.3	26.2	21.6	23.7	23.8	26
Chromium (Cr)	**0.0089**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)		0.00001	0.000019	0.000067	0.000042	0.000034	0.000029	0.000036	0.000026	0.000022
Copper (Cu)	**0.002**[4]	0.00038	0.00045	0.00119	0.00078	0.00108	0.00058	0.00054	0.00038	0.00042
Iron (Fe)	**0.3**	0.053	0.052	0.079	0.065	0.078	0.07	0.091	0.042	0.053
Lead (Pb)	**0.002**[3]	0.000072	0.000068	0.000118	0.000041	0.000088	0.000035	0.000026	0.000007	0.000017
Magnesium (Mg)		9.98	4.69	5.04	2.62	3.79	4.6	3.76	4.09	4.52
Manganese (Mn)		0.00218	0.00855	0.00678	0.0132	0.014	0.0137	0.0139	0.019	0.0136
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)		0.00102	0.00051	0.00064	0.00031	0.00039	0.0005	0.00044	0.00041	0.00042
Nickel (Ni)	**0.065**[3]	0.0002	0.00024	0.00043	0.00026	0.00061	0.00026	0.00026	0.00022	0.00024
Phosphorus (P)		0.004	0.007	0.008	0.005	0.007	0.005	0.006	<0.002	0.005
Potassium (K)		0.54	0.71	0.4	0.47	0.62	0.51	0.56	0.54	0.62
Selenium (Se)	**0.001**	0.00127	0.00113	0.00087	0.00084	0.00072	0.00065	0.00077	0.00096	0.0011
Silicon (Si)		3.66	3.99	2.54	3.04	3.44	3.35	3.33	3.48	3.88
Silver (Ag)	**0.00001**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.03	1.16	0.7	0.99	1.12	1.02	1.04	1.04	1.17
Strontium (Sr)		0.0479	0.0515	0.03	0.0426	0.051	0.0439	0.0453	0.05	0.0521
Thallium (Tl)	**0.0008**	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	**0.03**	0.0013	0.0033	0.0017	0.0007	0.0065	0.0011	0.0006	0.0006	0.0006
Dissolved Metals (mg/L)										
Aluminum (Al)		0.0022	0.0021	0.011	0.0095	0.0057	0.0047	0.0029	0.0017	0.0019
Antimony (Sb)		0.00006	0.00006	0.00004	0.00006	0.00005	0.00004	0.00005	0.00004	0.00005
Arsenic (As)		0.00016	0.00016	0.00019	0.00026	0.00026	0.00027	0.00021	0.00014	0.00014
Cadmium (Cd)		0.00002	0.000018	0.000013	0.000016	0.000015	0.000008	<0.000005	0.00001	0.000006
Calcium (Ca)		24.1	25.7	15.5	24.1	23.9	23.1	24.1	25.7	25
Chromium (Cr)		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)		0.000007	0.000012	0.000039	0.000026	0.000022	0.000021	0.000018	0.000016	0.000011
Copper (Cu)		0.0004	0.00029	0.00097	0.00099	0.00151	0.00057	0.00036	0.00036	0.00033
Iron (Fe)		0.019	0.023	0.03	0.049	0.05	0.095	0.054	0.017	0.015
Lead (Pb)		0.000058	0.00005	0.000015	0.0001	0.000019	0.000009	<0.000005	<0.000005	<0.000005
Magnesium (Mg)		5.12	5.11	2.75	4.15	4.59	3.96	4.25	4.68	5.01
Manganese (Mn)		0.00431	0.00274	0.00546	0.0104	0.0072	0.00694	0.00848	0.00825	0.00657
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)		0.00049	0.00054	0.00031	0.00042	0.00051	0.00045	0.00039	0.00044	0.00044
Nickel (Ni)		0.00019	0.00018	0.00033	0.00033	0.00027	0.00029	0.00022	0.00019	0.00023
Phosphorus (P)		0.003	0.002	0.004	0.003	0.006	0.002	<0.002	0.003	<0.002
Potassium (K)		0.62	0.69	0.42	0.52	0.56	0.55	0.57	0.58	0.6
Selenium (Se)		0.00118	0.00116	0.00084	0.00086	0.00078	0.0006	0.00077	0.00101	0.00103
Silicon (Si)		3.78	3.88	2.42	3.4	2.98	3.23	3.38	3.68	3.64
Silver (Ag)		<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.14	1.12	0.72	1.16	1.12	1.06	1.1	1.1	1.15
Strontium (Sr)		0.0522	0.0512	0.0324	0.0477	0.0507	0.0461	0.0474	0.0492	0.0516
Thallium (Tl)		<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)		0.0018	0.0023	0.0007	0.0016	0.0013	0.0004	0.0004	0.0007	0.0005

*Bold numbers indicate exceedances of CCME guidelines for the protection of aquatic life

1. Maximum induced TSS is 25 mg/L for 24 hours when background is less than or equal to 25; 2. At pH 8, temp 1-10ºC; 3. For hardness = 60-120 mg/L CaCO3; 4. For hardness = 0-120 mg/L CaCO3

Table 3-4 W16 Water Quality Results 2009

Sample location	CCME Guidelines for the protection of aquatic life*	W16	W16	W16	W16	W16	W16	W16	W16	W16	W16	W16	W16
Sampling Date		18-Jan	28-Feb	21-Mar	10-Apr	16-May	8-Jun	8-Jul	9-Aug	5-Sep	15-Oct	3-Nov	8-Dec
Lab Report		A902628	A910072	A913452	A917065	A923809	A928455	A935359	A942402	A949299	A959421	A964560	A971785
Physical Parameters													
Temperature (°C)		2.7	2.7	5	7.7	2.7	6	10.3	7	6.7	2.7	6.7	7.7
Conductivity (uS/cm)		290	140	150	150	150	130	85	150	152	161	158	157
Hardness (mg/L)		145	68.8	72.7	72.6	72.9	61.3	39.5	76.4	75.9	74.9	70.5	76.1
TSS (mg/L)	**25**[1]	<4	<4	<4	<4	10	12	5	<4	9	<4	<4	4
pH (pH Units)	**6.5-9.0**	8.0	8.0	7.9	7.9	7.8	7.8	8.0	7.8	7.9	8.0	7.8	7.9
DOC (mg/L)		0.8	<0.5	1.1	<0.5	3.4	4.1	3.8	1.3	2.1	<0.5	-	0.8
Major Anions (mg/L)													
Alkalinity		64	66	66	67	57	38	65	70	69	66	68	68
Acidity		<0.5	<0.5	<0.5	0.9	<0.5	0.8	1.1	<0.5	0.7	<0.5	<0.5	<0.5
Bromide		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride		0.9	3.7	<0.5	<0.5	1	0.6	<0.5	1.1	<0.5	0.6	2.5	<0.5
Fluoride		0.03	0.03	0.03	0.04	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.02
Sulphate		11	10	9.6	11	9.4	7.1	28	8.3	11	10	9.8	10
Nutrient Parameters (mg/L)													
Ammonia	**1.4-1.5**[2]	0.098	0.009	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate	**13**	0.098	0.122	0.133	0.104	0.085	0.02	3	0.15	0.045	0.106	0.109	0.23
Nitrite		0.002	0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.008
Total P		0.008	0.005	0.006	0.01	0.027	0.009	0.006	0.008	<0.005	<0.005	0.006	0.006
Dissolved Ortho-Phosphate		0.003	0.006	0.001	0.002	0.002	0.014	0.001	0.002	0.001	0.002	<0.001	0.002
Total Metals (mg/L)													
Aluminum (Al)	**0.1**	0.0067	0.0015	0.004	0.0046	**0.225**	0.109	0.0776	0.0455	0.11	0.0073	0.0079	0.0138
Antimony (Sb)		0.00002	<0.00002	0.00003	0.00002	0.00005	0.00004	0.00006	0.00005	0.00006	0.00004	0.00004	0.00005
Arsenic (As)	**0.005**	0.00013	0.00009	0.00011	0.00011	0.00024	0.00015	0.00018	0.00018	0.00021	0.00011	0.00015	0.00014
Cadmium (Cd)	**0.00008**[3]	**0.000096**	**0.000088**	**0.000103**	**0.000107**	**0.000098**	0.000041	**0.00053**	**0.000099**	**0.000086**	**0.00012**	**0.0001**	**0.000117**
Calcium (Ca)		23	23.6	23.6	25	20.6	13.2	25.3	25.5	23.5	23.7	24.1	22.6
Chromium (Cr)	**0.0089**	<0.0001	0.0012	<0.0001	0.0001	0.0004	<0.0001	<0.0001	0.0002	0.0003	0.0001	0.0001	0.0001
Cobalt (Co)		0.000026	0.000023	0.000024	0.000027	0.00024	0.000105	0.000108	0.000079	0.000194	0.000039	0.00004	0.000051
Copper (Cu)	**0.002**[4]	0.00048	0.00053	0.00041	0.00056	0.00229	0.00208	0.00181	0.00086	0.00166	0.00046	0.00047	0.00063
Iron (Fe)	**0.3**	0.044	0.022	0.041	0.053	0.281	0.144	0.116	0.108	0.2	0.036	0.047	0.062
Lead (Pb)	**0.002**[3]	0.000006	0.000077	0.000055	0.000058	0.000262	0.000107	0.000108	0.00004	0.000173	0.000007	<0.00000	0.000026
Magnesium (Mg)		9.98	2.32	2.52	2.38	2.53	2.36	1.61	3.21	3.06	3.04	2.77	2.8
Manganese (Mn)		0.00218	0.0172	0.0178	0.0203	0.0225	0.0273	0.00894	0.0195	0.0225	0.0243	0.0141	0.0161
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)		0.00102	0.0004	0.00039	0.00053	0.00039	0.0003	0.00028	0.00058	0.00045	0.0004	0.00038	0.00044
Nickel (Ni)	**0.065**[3]	0.00014	0.00017	0.00014	0.00013	0.00085	0.00049	0.00059	0.0004	0.00058	0.00017	0.00017	0.00019
Phosphorus (P)		0.01	0.006	0.011	0.009	0.018	0.013	0.076	0.008	0.011	0.003	0.006	0.013
Potassium (K)		0.45	0.45	0.49	0.48	0.87	0.44	0.55	0.54	0.55	0.49	0.48	0.46
Selenium (Se)	**0.001**	0.00059	0.00045	0.00056	0.00055	0.00053	0.00039	0.00056	0.00051	0.00057	0.0006	0.00059	0.00059
Silicon (Si)		3.88	3	3.34	3.36	3.18	2.32	3.29	3.28	3.39	3.07	3.47	3.02
Silver (Ag)	**0.00001**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.05	1.18	1.06	1.11	1.03	0.64	1.48	1.25	1.4	1.21	1.16	1.14
Strontium (Sr)		0.0324	0.0378	0.0333	0.0352	0.0348	0.0252	0.0504	0.0462	0.0458	0.0408	0.0392	0.0362
Thallium (Tl)	**0.0008**	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)		<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0005	0.0003	0.0002	0.0004	<0.0002	<0.0002	<0.0002
Zinc (Zn)	**0.03**	0.0045	0.0049	0.0056	0.0052	0.0067	0.0095	0.0119	0.0051	0.0049	0.0047	0.0045	0.005
Dissolved Metals (mg/L)													
Aluminum (Al)		0.0075	0.0012	0.0016	0.0015	0.0735	0.0258	0.01	0.0054	0.0045	0.0029	0.0027	0.0022
Antimony (Sb)		0.00005	0.00003	0.00003	0.00002	0.00007	0.00003	0.00005	0.00005	0.00006	0.00005	0.00004	0.00004
Arsenic (As)		0.0001	0.00009	0.00009	0.0001	0.0002	0.00011	0.00011	0.00016	0.00013	0.0001	0.00011	0.00011
Cadmium (Cd)		0.000079	0.000077	0.000097	0.000089	0.000058	0.000024	0.000089	0.00009	0.00008	0.000084	0.000101	0.000074
Calcium (Ca)		23.5	24.6	24.9	25.5	21.1	13.8	25.2	25.4	24.8	25	25.5	24.5
Chromium (Cr)		0.0001	0.0011	0.0001	0.0001	0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001
Cobalt (Co)		0.000022	0.000022	0.000022	0.000018	0.000086	0.00004	0.000047	0.000056	0.000041	0.000023	0.000035	0.000028
Copper (Cu)		0.00051	0.0004	0.00036	0.00034	0.00146	0.0016	0.00079	0.00066	0.00054	0.00038	0.00043	0.00038
Iron (Fe)		0.013	0.002	0.013	0.016	0.113	0.064	0.031	0.039	0.034	0.013	0.016	0.01
Lead (Pb)		0.000084	0.000068	0.000162	0.000057	0.000121	0.000037	0.000215	0.000066	0.000008	<0.00000	<0.00000	<0.00000
Magnesium (Mg)		2.47	2.72	2.54	2.45	2.49	1.63	3.14	3.06	3.14	2.91	3.02	2.7
Manganese (Mn)		0.0146	0.0173	0.0194	0.0191	0.015	0.00398	0.0105	0.0196	0.0162	0.0127	0.0138	0.0147
Mercury (Hg)		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum		0.00041	0.00038	0.00041	0.0004	0.00037	0.00031	0.00038	0.00044	0.00043	0.00041	0.0004	0.00043
Nickel (Ni)		0.00013	0.00014	0.00014	0.00011	0.00038	0.00042	0.0002	0.00038	0.00025	0.00016	0.00018	0.00018
Phosphorus (P)		0.008	0.006	0.007	0.007	0.01	0.005	0.01	0.004	0.002	0.003	0.009	0.005
Potassium (K)		0.46	0.48	0.49	0.49	0.87	0.43	0.47	0.52	0.57	0.51	0.65	0.49
Selenium (Se)		0.00051	0.0005	0.00054	0.00054	0.00048	0.00039	0.00057	0.0005	0.00056	0.00056	0.00054	0.00055
Silicon (Si)		3.18	3.32	3.2	3.43	3.24	2.1	3.12	3.29	3.54	3.08	3.28	2.88
Silver (Ag)		<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)		1.11	1.28	1.12	1.06	1.07	0.68	1.39	1.37	1.44	1.25	1.28	1.17
Strontium (Sr)		0.034	0.037	0.0352	0.0362	0.037	0.0257	0.0497	0.0491	0.0489	0.0427	0.0405	0.0399
Thallium (Tl)		<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)		<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)		0.0058	0.0045	0.0061	0.0044	0.005	0.0117	0.0045	0.006	0.0033	0.0046	0.0049	0.0044

*Bold numbers indicate exceedances of CCME guidelines for the protection of aquatic life

1. Maximum induced TSS is 25 mg/L for 24 hours when background is less than or equal to 25; 2. At pH 8, temp 1-10ºC; 3. For hardness = 60-120 mg/L CaCO3; 4. For hardness = 0-120 mg/L CaCO3

3.2 W9, W12 and W16 Sediment Quality Monitoring Results

Sediment sampling and analysis for total metals is required annually during summer low flows for W9, W12 and W16. Samples were taken August 8th and 9th in triplicate, and analyzed by ICP-MS. Sediment quality results are summarized in Table 3-5 and the Maxxam Analytics lab report listed in Appendix B is provided on the enclosed disk.

Values that exceed the *CCME (2004) Interim Sediment Quality Guidelines* (Sediment Guidelines) are presented as bold text in Table 3-5. Concentrations for As, Cd, Cu and Zn were above Sediment Guidelines at W9; As, Cd and Cu concentrations were above Sediment Guidelines at W12; and Cd, Cr, Cu and Zn concentrations were above Sediment Guidelines at W16.

Table 3-5 W9, W12 and W16 Sediment Quality Monitoring Results 2009 (Lab Report A942363)

	Sampling Site	W9A	W9B	W9C	W12A	W12B	W12C	W16A	W16B	W16C
	Date Sampled	8-Aug-09	8-Aug-09	8-Aug-09	9-Aug-09	9-Aug-09	9-Aug-09	9-Aug-09	9-Aug-09	9-Aug-09
Total Metals by ICPMS	ISQG (mg/kg)									
Total Aluminum (Al)	-	10100	8890	10800	12000	12400	13000	17800	16300	16100
Total Antimony (Sb)	-	2	2	2.1	0.3	0.4	0.4	0.3	0.3	0.3
Total Arsenic (As)	**5.9**	**13.9**	**13.7**	**14.1**	**6.3**	**6**	**7.1**	5.1	4.4	5.1
Total Barium (Ba)	-	677	588	635	280	284	289	271	237	248
Total Beryllium (Be)	-	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2
Total Bismuth (Bi)	-	0.5	0.4	1.2	0.1	0.1	0.1	<0.1	<0.1	<0.1
Total Cadmium (Cd)	**0.6**	**28.6**	**23.6**	**27**	**0.95**	**0.87**	**0.98**	**4.36**	**3.54**	**4.46**
Total Calcium (Ca)	-	11700	10300	11500	6390	6030	6580	11000	9860	9790
Total Chromium (Cr)	**37.3**	24	24	25	35	36	37	**64**	**65**	**67**
Total Cobalt (Co)	-	11.4	11.2	11.7	11.1	11.0	11.6	20.8	19.6	20.5
Total Copper (Cu)	**35.7**	**81.8**	**77.9**	**83.9**	**36.1**	35.4	**41.5**	**60.5**	**57**	**55.3**
Total Iron (Fe)	-	27500	26100	27500	24900	25200	26000	31500	28600	29000
Total Lead (Pb)	**35**	25.6	25.5	27	8.7	8.3	9.1	3.3	3.3	3.2
Total Magnesium (Mg)	-	6940	6670	7620	7450	7570	7570	11900	12500	12600
Total Manganese (Mn)	-	1350	1250	1370	913	867	926	1240	1010	1360
Total Mercury (Hg)	**0.17**	0.09	0.08	0.09	<0.05	<0.05	<0.05	0.07	0.06	0.05
Total Molybdenum (Mo)	-	2.6	2.7	2.7	0.5	0.5	0.6	1.2	1	1.2
Total Nickel (Ni)	-	125	114	125	30.7	29.4	31.5	43.7	43.4	44.4
Total Phosphorus (P)	-	1310	1550	1450	682	624	641	881	739	763
Total Potassium (K)	-	903	1020	1020	585	556	573	470	508	461
Total Selenium (Se)	-	4.4	3.3	4.3	2.3	2	1.7	3.6	4.5	2.9
Total Silver (Ag)	-	0.65	0.6	0.63	0.17	0.16	0.15	0.18	0.17	0.15
Total Sodium (Na)	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total Strontium (Sr)	-	59.2	55.3	60.3	22.3	22	22.4	27.9	24.3	23.8
Total Thallium (Tl)	-	0.18	0.17	0.18	0.06	0.06	0.06	0.05	<0.05	<0.05
Total Tin (Sn)	-	0.4	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.2
Total Titanium (Ti)	-	534	551	525	948	1030	1030	1890	1800	1810
Total Vanadium (V)	-	44	43	47	35	35	36	53	50	52
Total Zinc (Zn)	**123**	**3760**	**3590**	**4000**	111	109	116	**180**	**159**	**176**
Total Zirconium (Zr)	-	0.8	0.7	0.7	1	1	1.1	0.9	0.8	0.7

*Post-scripts A,B,C indicate triplicate sampling of the same area; ISGQ = interim sediment quality guideline (CCME, 2004); numbers in bold indicate that ISGQ is exceeded

3.3 Surface Water Hydrology

Manual hydrology measurements are required quarterly at monitoring stations W9 and W12 and monthly at station W16 as per the Licence. To ensure consistent monitoring, water level sensors are located at stations W9 and W12, and 3.4 km downstream of W16 at W80. Water levels are measured hourly by the sensor, and monthly stream velocity measurements (Table 3-6) are taken manually using a flow probe. At certain times, monitoring was not possible due to high or low flow conditions or flow probe malfunction. Conversion of water level height to flow is done by plotting the manual measurements of water level versus volumetric flow and determining the trend line relationship. This relationship is then used to convert the hourly sensor water levels to hourly volumetric flow.

Table 3-6 W9, W12 and W16 Calculated Stream Flow Rates (m^3/s)

	Flow (m^3/s)			
Station	**W9**	**W12**	**W16**	**W80**
January	I	I	0.036	I
February	I	I	I	I
March	I	0.045	0.033	I
April	I	0.019	I	I
May	I	S	0.106	I
June	0.015	1.501	0.178	D
July	0.026	0.403	0.184	0.391
August	0.007	0.220	0.083	0.188
September	0.015	0.230	0.045	0.413
October	0.006	0.184	P	0.195
November	0.002	0.159	0.069	0.149
December	I	0.070	0.033	0.193

I = ice prevented measurement
S = snow conditions prevent safe access
P = flow probe malfunction
D = flow is too fast to safety achieve a manual measurement

3.3.1 W9

The average monthly hydrograph for station W9 from September 2007 through December 2009 is presented in Figure 3-1. Ice pressure effects were seen in winter 2007/2008 and winter 2008/2009, with high flows due to rain events in early summer (June/July) and in October 2007 and 2009. In early September 2009 a flume was installed at station W9 (see Picture 3-1).

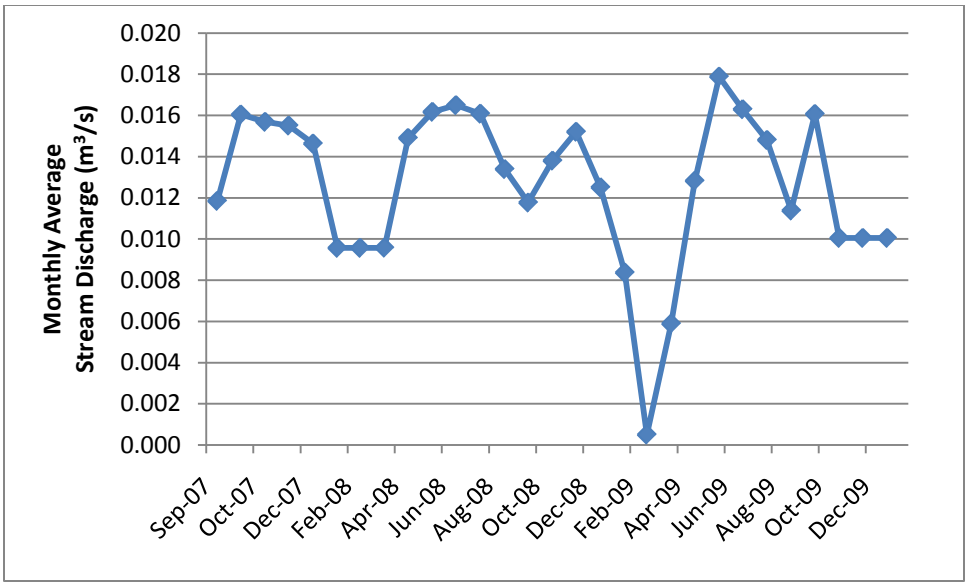


Figure 3-1 Monthly Hydrograph for W9, September 2007 to December 2009



Picture 3-1 Completed Flume Installation – September 12, 2009

3.3.2 W12

The continuous hydrograph for W12 from May through December 2009 is presented in Figure 3-2. Data collect prior to May 2009 was omitted due to inconsistencies; a new logger was installed in May 2009. High flows were seen following rain events throughout summer 2009 and in October 2009.

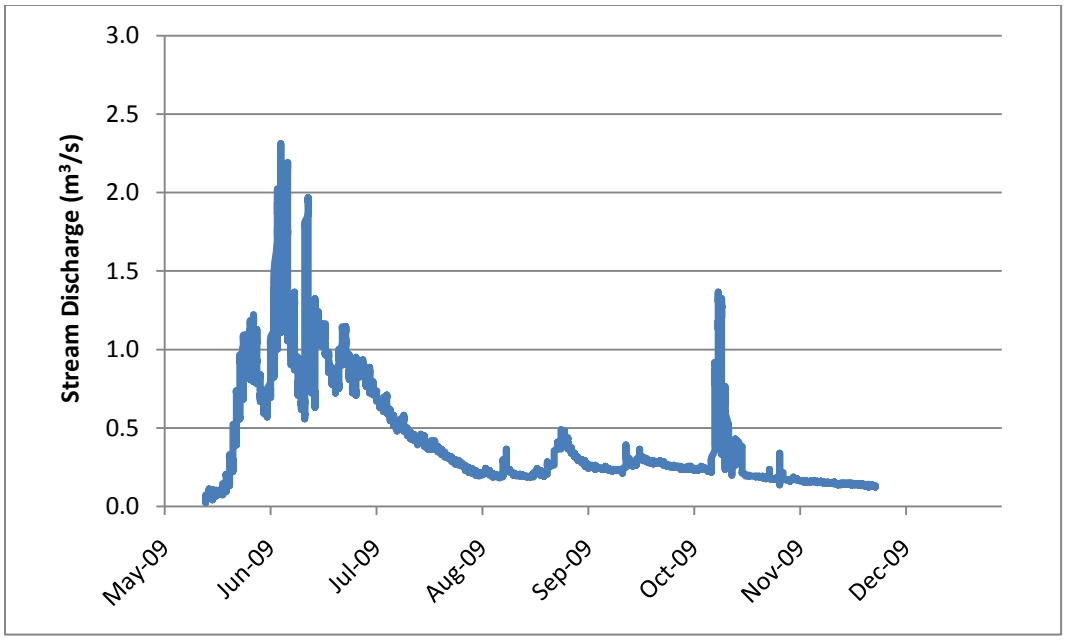


Figure 3-2 W12 Hydrograph, May 2009 – December 2009

3.3.3 W80

The monthly average hydrograph for monitoring station W80 from September 2006 through to December 2009 is presented in Figure 3-3. High flows were evident in the monthly average hydrograph June/July 2007, 2008 and 2009, and following rain events in October 2008 and 2009.

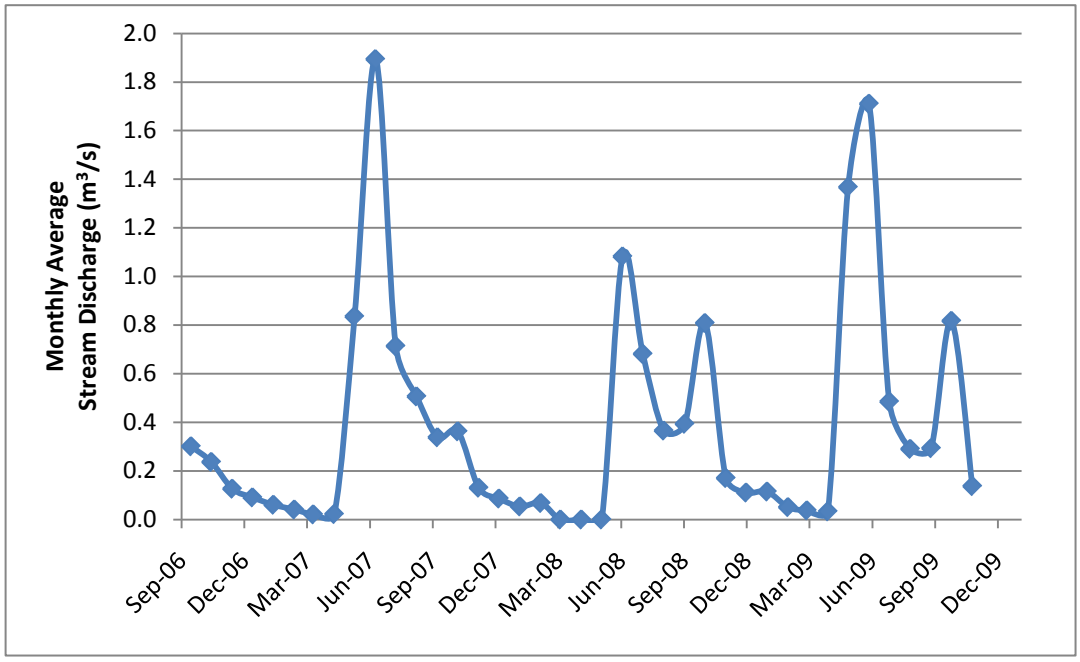


Figure 3-3 W80 Monthly Average Hydrograph, September 2006 – December 2009

3.4 Effluent Quality

Information provided in this section pertains to Part E of the Licence, "Effluent Quality Standards" and details sampling and discharge requirements for the aggregate wash plant settling pond (AWP – SP), the underground test mine discharge (UTMD), the waste rock stockpile sump (WRSS), the collection sump (C-PS) and the water treatment plant settling pond (WTSP). Treatment in the sumps is conducted as a batch process, and hence there are no weekly flows to monitor; however, since the only source of water is the UTMD, the overall flows through the sumps can be equated to the groundwater inflow in the underground mine.

Tables provided in this section summarize the nine parameters that have discharge limits set by the Licence and lab results (containing all parameters) listed in Appendix A are provided on the enclosed disk.

3.4.1 AWP-SP – Aggregate Wash Plant

An aggregate wash plant was not constructed as part of the advanced exploration program and therefore there is no station AWP-SP.

3.4.2 UTMD – Underground Test Mine Discharge

The main focus in early 2009 was to maintain dewatered status in preparation for pre-production development, which commenced in April 2009. Flows from the UTMD increased during the summer, and appeared to decrease again in the fall. Figure 3-4 summarizes the seasonal flow rates as compared to 2006, 2007 and 2008 averages. The overall 2009 flow rate was 176 m^3/day compared to 95 m^3/day, 123 m^3/day and 120 m^3/day for 2006, 2007 and 2008, respectively.

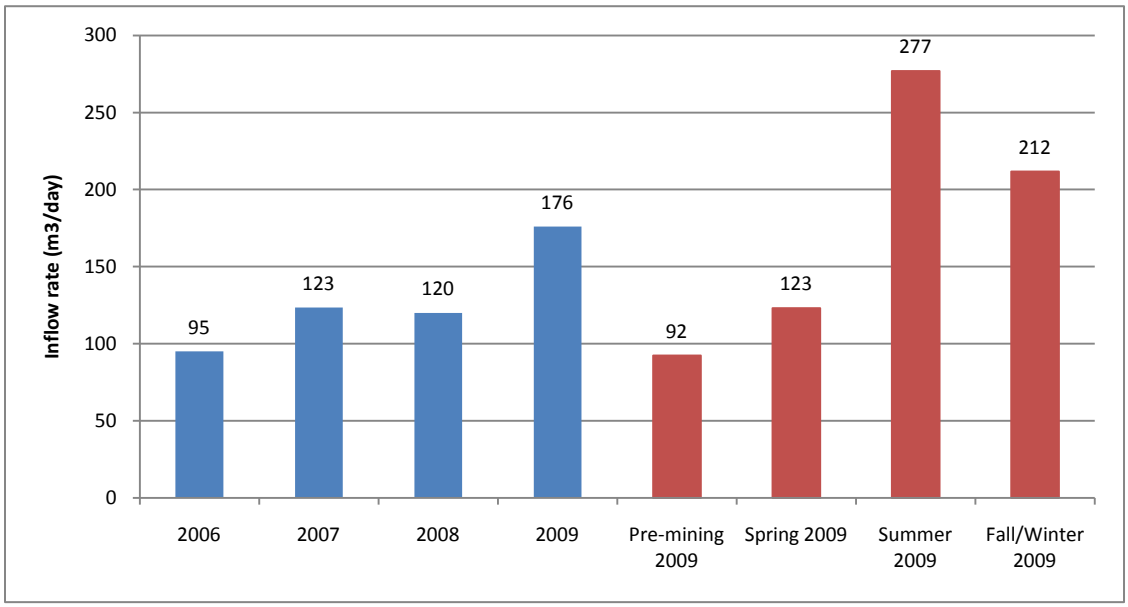


Figure 3-4 UTMD average daily inflow rates 2009

Samples representing UTMD were taken weekly as per the Licence, and 2009 water quality results are summarized in Table 3-7 for parameters limited by the Licence (January – July 9, October 6 – December) and in Table 3-8 for parameters temporarily regulated by the amended Licence for the period from July 9 – October 5. Samples are labelled by their location underground: "UTMD 2-1" and "UTMD 2-2" represents an underground settling sump at the top of the main ramp; "UTMD 3" represents a collection sump at the bottom of the main ramp; "UTMD 3-4" and "UTMD 4-2"is representative of the water quality from UTMD 3 at the end of the discharge pipe into the surface sump; "UTMD 5" represents a temporary underground settling sump; and "UTMD 6" represents a collection sump at underground elevation 1294 masl.

The underground test mine water quality was generally above discharge limits for TSS (31 of 33 samples), Cd (13 of 33 samples), Cu (17 of 33 samples), Pb (17 of 33 samples), Se (28 of 33 samples) and Zn (20 of 33 samples). UTMD water was pumped to surface for treatment with ferric sulphate prior to discharge to Go Creek (see Section 3.4.5 for water quality results prior to discharge to Go Creek).

Table 3-7 UTMD 2009 Water Quality Results under Type B Licence Discharge Limits

Sample name		UTMD 2-1	UTMD 2-1	UTMD 3-4	UTMD 2-1	UTMD-2-1	UTMD 2-1	UTMD 3	UTMD2-1	UTMD 2-1	UTMD 2-1	UTMD 5	UTMD 5	UTMD 5	UTMD 3	UTMD 3	UTMD 3	UTMD 3	UTMD 3	UTMD 6	UTMD 6
Date		12-Jan	20-Jan	11-Feb	16-Feb	9-Mar	18-Mar	23-Mar	13-Apr	21-Apr	29-Apr	13-May	18-May	25-May	25-May	01-Jun	17-Jun	01-Jun	17-Jun	22-Jun	01-Jul
Job Number		L724976	L726992	L733412	L734993	L741201	L744455	L745996	L752466	L754901	L758505	L764400	L764798	L769270	L769270	L772029	L781062-1	L772029	L781062-1	L783091-3	L786906
Parameters (mg/L)	ADL*																				
TSS	15	**35.5**	**141**	**925**	10.8	**820**	**106**	10.3	**324**	**232**	**135**	**76.3**	**266**	**172**	**219**	**1600**	**38**	**1600**	**38**	**346**	**1040**
Ammonia	**2.5**	0.0179	0.0343	0.0606	0.0212	0.284	0.218	0.137	1.57	1.32	1.65	0.724	0.48	1.07	1.88	1.77	1.16	1.77	1.16	0.975	1.02
Total Arsenic	**0.1**	0.00168	0.00173	**0.451**	0.00218	0.0146	0.00386	0.00225	0.00962	0.00697	0.0221	0.00148	0.00875	0.0144	0.00244	0.0321	0.00258	0.0321	0.00258	0.00647	0.0866
Total Cadmium	**0.02**	0.00172	<0.0020	**0.433**	0.00165	0.00873	0.00199	0.00147	0.008	0.00355	0.0113	0.000713	0.00719	**0.0324**	0.000911	0.0163	0.000303	0.0163	0.000303	0.000929	**0.0575**
Total Copper	**0.2**	0.018	0.0444	**3.14**	0.00943	**0.248**	0.0167	0.011	**0.311**	0.121	0.166	0.0161	0.0897	**0.912**	0.0272	**0.277**	0.03	**0.277**	0.03	0.0255	**3.61**
Total Lead	**0.2**	0.0252	0.0328	**7.91**	0.0352	0.198	0.0648	0.0271	**0.46**	0.129	**0.46**	0.00913	0.158	**0.596**	0.0251	**0.441**	0.0178	**0.441**	0.0178	0.0244	**0.688**
Total Nickel	**0.5**	0.00258	0.00251	0.0325	0.00204	0.0313	0.00222	0.00144	0.022	0.0132	0.0132	0.0034	0.0212	0.0222	0.0015	0.0534	0.0232	0.0534	0.0232	0.0115	0.146
Total Selenium	**0.015**	0.0115	0.0133	**0.092**	**0.0213**	**0.0215**	**0.0218**	**0.0317**	**0.0965**	**0.127**	**0.0904**	0.00991	**0.0156**	**0.042**	**0.0967**	**0.0863**	**0.0986**	**0.0863**	**0.0986**	0.0073	**0.279**
Total Zinc	**0.5**	0.246	0.144	**45.4**	0.186	**1.13**	0.237	0.179	**0.901**	0.4	**1.26**	0.0296	**0.748**	**3.71**	0.0991	**1.87**	0.0342	**1.87**	0.0342	0.133	**5.58**

*ADL = Acceptable discharge limits as per the Licence; bold numbers indicate values greater than the ADL.

Table 3-7 UTMD 2009 Water Quality Results under Type B Licence Discharge Limits cont'd

Sample name		UTMD2-1	UTMD4-2	UTMD4-2	UTMD 2-1	UTMD 2-2	UTMD 4-2	UTMD 4-2
Date		17-Oct	25-Oct	03-Nov	23-Nov	06-Dec	14-Dec	30-Dec
Job Number		L832293	L834841	L837071	A967526	L847377	L849078	L851757
Parameters (mg/L)	ADL*							
TSS	15	120	1490	5250	2500	154	409	86.8
Ammonia	2.5	1.03	0.659	0.789	0.774	1.11	0.702	0.847
Total Arsenic	0.1	0.013	0.0199	0.0759	0.00786	0.00196	0.0112	0.00444
Total Cadmium	0.02	0.00783	0.0129	0.0512	0.00509	0.000068	0.00647	0.000830
Total Copper	0.2	0.267	0.446	1.91	0.0508	0.0428	0.256	0.0312
Total Lead	0.2	0.152	0.22	0.695	0.14	0.0125	0.115	0.0222
Total Nickel	0.5	0.0229	0.0272	0.0806	0.00827	<0.0010	0.0207	0.00567
Total Selenium	0.015	0.112	0.0982	0.155	0.0413	0.0764	0.0723	0.169
Total Zinc	0.5	0.908	1.35	5.41	0.562	0.0280	0.737	0.0938

*ADL = Acceptable discharge limits as per the Licence; bold numbers indicate values greater than the ADL.

Table 3-8 UTMD 2009 Water Quality Results under Amended Type B Licence Discharge Limits

Sample name		UTMD 2-1	UTMD 2-1	UTMD 2-1	UTMD2-1	UTMD2-1	UTMD 6	UTMD 2-1	UTMD 6
Date		09-Jul	27-Jul	10-Aug	12-Aug	26-Aug	02-Sep	09-Sep	20-Sep
Job Number		L790698	L798602	L804460	L805528	L811554	L814703	L817281	L822121
Parameters (mg/L)	ADL*								
TSS	15	1160	385	188	165	39.3	231	472	381
Ammonia Nitrogen	5	0.747	0.318	0.449	0.874	1.1	0.394	0.404	2.33
Total Arsenic	0.1	0.0522	0.0172	0.0126	0.0135	0.0045	0.0205	0.0171	0.0179
Total Cadmium	0.006	0.0407	0.0153	0.0106	0.00971	0.000584	0.0149	0.0142	0.00697
Total Copper	0.05	1.69	0.688	0.363	0.306	0.0236	0.588	0.582	0.415
Total Lead	0.07	0.448	0.219	0.209	0.155	0.0201	0.275	0.204	0.0883
Total Nickel	0.5	0.0534	0.0251	0.0177	0.0144	0.00164	0.0469	0.03	0.0074
Total Selenium	0.06	0.266	0.128	0.101	0.11	0.183	0.0542	0.172	0.0772
Total Zinc	0.5	3.54	1.57	1.16	1.06	0.0622	1.63	1.63	0.775

*ADL = Acceptable discharge limits as per the amended Licence; bold numbers indicate values greater than the ADL.

3.4.3 WRSS – Waste Rock Stockpile Seepage

As water entered the temporary waste rock storage area, it collected on the pad upslope of the stockpiled waste (WRSS 1) or within the collection sump at the south end (WRSS 2). Samples were taken periodically, and water was moved to the treatment sumps as necessary. Results of the water quality for 2009 are summarized in Table 3-9 for parameters limited by the Licence at Type B Licence limits and in Table 3-10 for parameters temporarily limited by the amended Licence. In Table 3-9 the suffix "E.C. DUP" indicates a duplicate taken at the same time as a sample taken by Environment Canada. Lab reports for the water quality results presented in Table 3-9 are listed in Appendix A and are provided on the enclosed disk.

Water quality at the waste rock pad collection sump is characterized by high selenium concentrations, often 2-3 times greater than the acceptable discharge limits. Zinc was above discharge limits in samples taken in May, June and July; however, all other parameters remained below the acceptable discharge limits. No water was discharged directly from this area in 2009, but it was moved periodically to the surface water treatment sumps for treatment prior to discharge.

Table 3-9 WRSS 2009 Water Quality Results under Type B Licence Discharge Limits

Sample name		WRSS 1	WRSS-2	WRSS 2 - E.C. DUP	WRSS2	WRSS 2	WRSS 2	WRSS 2	WRSS 2	WRSS 2
Date		**23-Apr**	**30-Apr**	**07-May**	**18-May**	**25-May**	**01-Jun**	**11-Jun**	**22-Jun**	**01-Jul**
Job Number		**L756210**	**L758856**	**L761917**	**L764798**	**L769270**	**L772029**	**L777015**	**L783091**	**L786906**
Parameters (mg/L)	**ADL***									
TSS	**15**	**123**	**15.8**	9.5	3.8	<3.0	<3.0	<3.0	7.3	4.4
Ammonia Nitrogen	**2.5**	0.0575	0.0204	0.029	0.0548	0.0393	0.0436	0.0204	0.0227	0.0061
Total Arsenic	**0.1**	0.0193	0.00075	0.00038	0.00024	0.00024	<0.00050	<0.00050	0.0008	0.0007
Total Cadmium	**0.02**	0.000977	0.00503	0.013	0.0159	0.0144	0.0133	**0.00993**	**0.0144**	**0.0111**
Total Copper	**0.2**	0.199	0.00839	0.0129	0.00598	0.00467	0.00639	0.00465	0.00707	0.00612
Total Lead	**0.2**	0.0691	0.00235	0.00452	0.00159	0.00129	0.00132	0.00109	0.00324	0.00306
Total Nickel	**0.5**	0.0814	0.00476	0.00909	0.0271	0.0366	0.0541	0.053	0.0646	0.0517
Total Selenium	**0.015**	0.00485	0.00866	0.0143	**0.0367**	**0.0397**	**0.0561**	**0.0609**	**0.0773**	0.0259
Total Zinc	**0.5**	0.216	0.274	**0.815**	**1.12**	**0.958**	**0.936**	**0.753**	**0.753**	0.456

*ADL = Acceptable discharge limits as per the Licence; bold numbers indicate values greater than the ADL

Table 3-10 WRSS 2009 Water Quality Results under Type B Amended Licence Discharge Limits

Sample name		WRSS 2	WRSS2
Date		27-Jul	13-Aug
Job Number		L798602	L805528
Parameters (mg/L)	ADL*		
TSS	**15**	3.2	4.7
Ammonia Nitrogen	**5**	<0.0050	0.0164
Total Arsenic	**0.1**	0.00059	0.00063
Total Cadmium	**0.006**	0.00494	0.00306
Total Copper	**0.05**	0.00398	0.00542
Total Lead	**0.07**	0.00094	0.00077
Total Nickel	**0.5**	0.0279	0.0225
Total Selenium	**0.06**	**0.0826**	**0.0686**
Total Zinc	**0.5**	0.173	0.133

*ADL = Acceptable discharge limits as per the amended Licence; bold numbers indicate values greater than the ADL

3.4.4 C-PS – Polishing Sump

Decant from the collection/polishing sump referred to in the Licence is represented by a ~2000 m^3 covered and heated sump constructed in late November 2008 (Sump #3). Prior to the installation of the tailings facility pipeline, Sump #3 received water pumped from the underground to be either returned underground for use as drill water, or pumped to the water treatment sumps (see Section 3.4.5) for ferric sulphate treatment prior to discharge to Go Creek. Water stored in Sump #3 was treated with sulphuric acid to lower the pH to prevent injuries associated with high pH water when used as underground drill water. Following the installation of the pipeline to the tailings storage facility (early October 2009), water in Sump #3 continued to be treated with sulphuric acid, but was pumped directly to the tailings storage facility via Sump #2 without further ferric sulphate treatment.

Table 3-11 summarizes the water quality results for samples taken from the C-PS area under the original Licence limits; Table 3-12 summarizes the water quality results for samples taken from the C-PS area under the temporarily amended Licence limits. The suffix "T" indicates the water volume was treated with sulphuric acid prior to sampling. Water quality in the C-PS in 2009 was typically above discharge limits for selenium and total suspended solids, and hence was not discharged from for the majority of the year. However, two discharges from Sump #3 were conducted in May, as water quality met the licence limits set by Type A Water Licence QZ04-065, and licence parameters required by Type B Water Licence QZ01-051 (Table 3-13).

Table 3-11 C-PS 2009 Water Quality Results under Type B Licence Discharge Limits

Sample name		CPS	CPS	C-PS	C-PS	C-PS	C-PS 1	C-PS 1	C-PS 1	C-PS	C-PS-1	C-PS 1T	CPS - 1T	CPS	CPS 1	CPS 1T	CPS1	CPS	CPS 1	CPS 1
Date		26-Jan	02-Feb	11-Feb	16-Feb	22-Feb	09-Mar	18-Mar	23-Mar	06-Apr	13-Apr	22-Apr	28-Apr	06-May	13-May	23-May	04-Jun	16-Jun	22-Jun	01-Jul
Job Number		L728876	L731399	L733412	L734993	L737019	L741201	L744455	L745996	L750482	L752466	L756017	L757507	L761082	L764400	L767672	L774016-3	L779229	L783091	L786906
Parameters (mg/L)	ADL*																			
TSS	**15**	3.5	12.3	6	3.3	<3.0	<3.0	5.5	<3.0	<3.0	**19**	**16.7**	8.7	9.3	12.3	14	**35**	**30.3**	**17**	4.3
Ammonia Nitrogen	**2.5**	0.0159	0.0286	0.0351	0.0282	0.0121	0.712	0.742	0.404	1.17	2.27	2.34	2.35	**3.27**	1.67	1.63	2.21	1.82	1.72	2.05
Total Arsenic	**0.1**	0.00084	0.00068	0.00177	0.00216	0.00149	0.00108	0.00124	0.00112	0.00092	0.00159	0.00221	0.00061	0.00142	0.00163	0.00113	0.00408	0.00353	0.0022	0.00217
Total Cadmium	**0.02**	0.000099	0.00008	0.00074	0.000687	0.000275	0.000067	0.000137	0.000168	0.000031	<0.00030	0.000357	<0.000034	0.000063	0.000218	0.000299	0.0013	0.000487	0.000289	0.000178
Total Copper	**0.2**	0.00903	0.00557	0.00748	0.00504	0.00262	0.0025	0.00594	0.00481	0.00506	0.0389	0.0589	0.0325	0.0473	0.0369	0.00972	0.0391	0.0335	0.0206	0.00996
Total Lead	**0.2**	0.00397	0.00338	0.00779	0.0139	0.00444	0.00176	0.00505	0.00425	0.00133	0.0137	0.0149	0.00043	0.0207	0.0104	0.00574	0.0447	0.0249	0.0144	0.0035
Total Nickel	**0.5**	0.00091	<0.00050	0.00099	0.00123	0.0017	0.00063	<0.00050	0.00101	0.00069	0.00174	0.0016	<0.0010	0.0013	0.0014	0.00261	0.0074	0.00384	0.00112	0.00094
Total Selenium	**0.015**	**0.0179**	**0.0196**	**0.0217**	**0.0246**	**0.0208**	0.013	**0.0212**	**0.0174**	**0.0293**	**0.083**	**0.0687**	**0.0644**	**0.0691**	**0.0874**	**0.0275**	**0.0752**	**0.0957**	**0.102**	**0.0946**
Total Zinc	**0.5**	0.0171	0.0118	0.0562	0.0853	0.038	0.0106	0.0183	0.0273	0.0059	0.0279	0.0348	0.0067	<0.0090	0.0128	0.0264	0.125	0.0521	0.028	0.01

*Acceptable discharge limits as per the Licence; bold numbers indicate values greater than the ADL

Table 3-11 C-PS 2009 Water Quality Results under Type B Licence Discharge Limits cont'd

Sample name		CPS-1	CPS 1	CPS 1T	CPS-1	CPS 1	CPS 1-96	CPS 1	CPS 1	CPS 1	CPS 1
Date		18-Oct	25-Oct	03-Nov	17-Nov	30-Nov	30-Nov	06-Dec	14-Dec	21-Dec	30-Dec
Job Number		L832293	L834841	L837071	A965987	A969045	A969045	L847377	L849078	A973030	L851757
Parameters (mg/L)	ADL*										
TSS	**15**	**134**	8	**34**	**45**	**30**	**38**	**27.3**	**51.5**	**200**	**76.8**
Ammonia Nitrogen	**2.5**	1.01	0.77	1.18	0.712	0.875	0.859	1.03	0.764	0.390	0.687
Total Arsenic	**0.1**	0.00314	0.00191	0.00247	0.00417	0.00351	0.00349	0.00244	0.00288	0.0111	0.00500
Total Cadmium	**0.02**	0.000196	0.000098	0.000168	0.000854	0.000368	0.000351	0.000209	0.000387	0.00297	0.00129
Total Copper	**0.2**	0.00917	0.00641	0.0157	0.00942	0.00916	0.00952	0.0122	0.0155	0.0418	0.0459
Total Lead	**0.2**	0.0048	0.00225	0.00787	0.0292	0.00944	0.00968	0.00525	0.00910	**0.113**	0.0318
Total Nickel	**0.5**	0.00154	0.00058	0.00218	0.00139	0.00094	0.00093	0.00065	0.00155	0.00881	0.00529
Total Selenium	**0.015**	**0.0907**	**0.233**	**0.105**	**0.0477**	**0.0782**	**0.08**	**0.0908**	**0.0614**	**0.0647**	**0.0927**
Total Zinc	**0.5**	0.0244	0.0104	0.0168	0.0947	0.0403	0.0407	0.0228	0.0462	0.339	0.145

*Acceptable discharge limits as per the Licence; bold numbers indicate values greater than the ADL

Table 3-12 C-PS 2009 Water Quality Results under Amended Type B Licence Discharge Limits

Sample name		CPS-1T	CPS-1T	CPS 1T	CPS1	CPS 1	CPS-1	CPS1	CPS-1	CPS 1	CPS 1	CPS-1	CPS 1	CPS 1
Date		09-Jul	14-Jul	21-Jul	23-Jul	27-Jul	06-Aug	13-Aug	19-Aug	26-Aug	03-Sep	09-Sep	19-Sep	30-Sep
Job Number		L790447	L792238	L795112	L796785	L798602	L802424	L805528	L808970	L811554	L814703	L817281	L822121	L826458
Parameters	ADL*													
TSS	**15**	**23.3**	**27.6**	**16.8**	**21.7**	**18.9**	**30**	**59.5**	**198**	**24.8**	**35.5**	**39.3**	**25.2**	**40.3**
Ammonia	**5**	1.08	1.16	1.17	0.945	0.525	0.714	0.598	0.687	0.724	0.945	0.704	1.1	1.27
Total Arsenic	**0.1**	0.00139	0.00188	0.00332	0.00292	0.00255	0.00288	0.00348	0.00326	0.0034	0.00336	0.00336	0.00259	0.00456
Total Cadmium	**0.006**	0.000832	0.00235	0.000363	0.000447	0.000125	0.000589	0.000892	0.001	0.000256	0.000605	0.000201	0.000266	0.00148
Total Copper	**0.05**	0.0341	0.0455	0.0107	0.0127	0.00986	0.0328	0.0359	0.0434	0.0141	0.0229	0.0159	0.028	**0.0617**
Total Lead	**0.07**	0.013	0.034	0.00806	0.0123	0.00571	0.0188	0.0243	0.0246	0.00589	0.0147	0.00631	0.00629	0.0293
Total Nickel	**0.5**	0.00357	0.00412	0.00123	0.00111	<0.00050	0.00192	0.00314	0.00308	0.00102	0.00093	0.00107	0.0015	0.00268
Total Selenium	**0.06**	**0.0773**	**0.104**	**0.174**	**0.181**	**0.173**	**0.144**	**0.12**	**0.101**	**0.0951**	**0.155**	**0.104**	**0.0842**	**0.0823**
Total Zinc	**0.5**	0.0868	0.219	0.032	0.0441	0.0139	0.0646	0.0892	0.104	0.0261	0.0631	0.0237	0.0302	0.166

*Acceptable discharge limits as per the amended Licence; bold numbers indicate values greater than the ADL

Table 3-13 C-PS 2009 Water Quality Results for discharges under Type A Water Use Licence QZ04-065 Discharge Limits

Sample name	A Licence	CPS 1T	UTMD 4 - 2045
Date	QZ04-065	25-May	29-May
Job Number	ADL*	L769270	L770935
Parameters (mg/L)			
Total Suspended Solids	**15**	10.8	<3.0
Ammonia as N	**5**	1.74	1.71
Total Arsenic	**0.05**	0.00079	0.00061
Total Cadmium	**0.002**	0.000277	0.000228
Total Copper	**0.015**	0.00881	0.00566
Total Lead	**0.02**	0.00362	0.00387
Total Nickel	**0.5**	0.00228	0.00142
Total Selenium	**0.02**	0.0181	0.0221
Total Zinc	**0.5**	0.0266	0.018

*Acceptable discharge limits as per the Type A Water Licence QZ04-065; bold numbers indicate values greater than the ADL

3.4.5 WTSP – Water Treatment Plant Settling Pond

Although the water treatment plant was not used directly to treat mine water, and is a contingency measure for treatment, the sump infrastructure was utilized during ferric sulphate treatment. The water treatment plant settling pond (WTSP) is represented by Sump #1 (WTSP 1), Sump #2 (WTSP 2), Sump #4 (WTSP 4) and Sump #5 (WTSP 5) at the lower laydown area (for further infrastructure details see the *Water Management and Treatment Plan* submitted December 23, 2009). Ferric sulphate was injected in-line as water was pumped from underground into either Sump #1 or Sump #2. Samples were sent to a laboratory in Vancouver, and upon receipt of sample analysis indicating that water quality was below discharge limits, the water was discharged to the headwaters of Go Creek.

Water from the WTSP infrastructure was discharged on a batch basis as water quality objectives were met, and the monthly volumes discharged from the area are summarized in Table 3-14. The average monthly discharge over the 10 months of discharge was 4,547 m^3, with no discharges occurring in November and December 2009, and the total discharged volume in 2009 was 45,472 m^3.

Table 3-14 2009 Discharge volumes from WTSP Infrastructure

Month	Discharge Volume (m^3)
January	2,730
February	2,300
March	3,300
April	2,300
May	5,300
June	6,600
July	9,265
August	6,947
September	5,047
October	1,683
November	0
December	0
Average	**4,547**
Total	**45,472**

In May 2009, following the commencement of mining in April, increased activity resulting in poorer water quality, water treatment using ferric sulphate was not effective to meet allowable discharge limits. YZC consequently requested, and was granted, water quality discharge limits at the same concentrations as those outlined in Type A Water Licence QZ04-065 for the nine parameters limited by Type B Water Licence QZ01-051 (Yukon Environment letter provided in Appendix E). In July and August 2009 YZC also applied for, and was granted, emergency amendments to the Licence under Sections 19(3)(c) and 21(4) of the Waters Act, S.Y.2003, C.19 (see Section 4).

The water quality results are presented below for discharges conducted January through May, May through July, July through August and August through October, (Tables 3-15 3-16, 3-17 and 3-18, respectively) for the various discharge limits. The samples are labelled by the sump name ("WTSP 1" or "WTSP 2") for samples taken prior to discharge under the original Licence limits and under the A Licence limits (Table 3-15 and Table 3-16), and the suffix "T" represents that the water was treated prior to the sample being taken. Samples taken under the amended Licence limits were taken at the end of the discharge pipe and represented by sample label "UTMD 4", followed by the sump being discharged. For example, sample label "UTMD 4 – WTSP 1T" indicates an end-of-pipe sample during discharge of Sump #1, which was treated with ferric sulphate prior to discharge. A sample label with two sump names indicates that two sumps were discharged simultaneously. The suffix "-CS" indicates a confirmatory sample taken during discharge, when the original sump sample was above discharge limits. The suffix "-96" indicates a duplicate taken for QA/QC purposes, and a suffix with numbers (i.e., "-2230" or "-24 hr") indicates the amount of time following the completion of ferric sulphate treatment that had passed when the sample was taken. Bold values in the tables indicate a parameter that was above the allowable discharge limit. The complete lab reports for the results summarized in the below tables are listed in Appendix A and are provided on the enclosed disk.

For the most part, water quality results during discharge were below allowable discharge limits. On January 12th and March 30th the preliminary results indicated the water in the sumps were above discharge limits for total suspended solids (TSS); however, a subsequent sample taken during discharge on January 18th and April 4th, respectively, indicated that the suspended solids had settled out with additional settling time resulting from the time delay from the time of sampling to the receipt of lab analysis results. In June 2009, 11 of the 14 discharges conducted were above the allowable discharge limit (0.02 mg/L) for selenium by 0.005 mg/L to 0.01 mg/L. Discharging was necessary to prevent flooding of the underground workings, and associated safety issues. To prevent other exceedances, YZC sought an emergency amendment to the Licence to increase the licence limits for selenium and ammonia in early July 2009 (see Section 4).

Under the amended Licence, the July 18th sample was in exceedance of the discharge limit for TSS and the September 19-21 samples were in exceedance for ammonia. Discharge was completed October 5th, and as of October 7th all water from the surface sumps was pumped to the tailings storage facility. For water volumes pumped to the tailings storage facility in 2009 see the *Type A Water Licence QZ04-065 2009 Annual Report* (submitted February 11, 2010).

Table 3-15 WTSP 2009 Water Quality Results Prior to Discharge Under Type B Licence Discharge Limits

Sample name	B Licence	WTSP 1T	WTSP 2T	WTSP 2T - CS	WTSP 2T	WTSP 2T - 96	WTSP2T	WTSP2T	WTSP1T	WTSP2T	WTSP1T	WTSP-2T	WTSP-2T	WTSP-2T-96	WTSP 1T	WTSP 2T	WTSP1	WTSP 1T-CS	WTSP 2T	WTSP 1T - 24 HR	WTSP 2T	WTSP 2T-CS	WTSP 1T	WTSP 1T-CS
Date	QZ01-051	07-Jan	12-Jan	18-Jan	20-Jan	20-Jan	26-Jan	02-Feb	17-Feb	17-Feb	25-Feb	01-Mar	09-Mar	09-Mar	18-Mar	19-Mar	30-Mar	04-Apr	06-Apr	25-Apr	05-May	06-May	06-May	07-May
Job Number	ADL*	L723950	L724976	L726992	L726992	L726992	L728876	L731399	L734993	L734993	L737864	L739201	L741201	L741201	L744455	L744455	L748223	L750482	L750482	L756210	L760126	L761912	L760127	L761912
Parameters (mg/L)																								
TSS	**15**	4.5	**18**	3	10.5	**16**	<3.0	<3.0	3.3	6.3	4.3	<3.0	<3.0	3.8	<3.0	3.5	**20.3**	<3.0	<3.0	6	10	<3.0	<3.0	4
Ammonia Nitrogen	**2.5**	0.0057	0.0053	0.0055	0.0075	0.0054	0.0202	0.0415	0.0384	0.0327	0.0167	<0.0050	0.255	0.265	0.701	0.68	0.216	-	0.485	2.47	2.31	2.64	2.39	2.45
Total Arsenic	**0.1**	0.00067	0.00116	-	0.00079	0.00078	0.00022	0.00016	0.00054	0.00076	0.00088	0.00114	0.0005	0.00049	0.00034	0.00028	0.00076	-	0.00033	0.00017	0.00034	0.00027	0.00023	0.00017
Total Cadmium	**0.02**	0.000853	0.00132	-	0.000507	0.000528	0.000028	0.000041	0.00086	0.00213	0.000546	0.000108	0.000047	0.000052	0.000136	0.000049	0.000401	-	0.00018	0.000079	0.00011	0.000097	0.000116	0.000126
Total Copper	**0.2**	0.00279	0.0106	-	0.00617	0.00659	0.00315	0.00202	0.00227	0.00963	0.00321	0.00201	0.00123	0.00114	0.0027	0.00125	0.00403	-	0.00222	<0.0020	<0.0030	<0.0030	<0.0040	<0.0040
Total Lead	**0.2**	0.0066	0.0189	-	0.00607	0.00597	0.000321	0.00123	0.00314	0.00454	0.0032	0.00167	0.000917	0.000811	0.00106	0.000649	0.00474	-	0.00133	0.000249	0.000449	0.000351	0.000199	0.000322
Total Nickel	**0.5**	0.00294	0.00394	-	0.0034	0.00397	0.00083	0.00078	0.0038	0.00646	0.0024	0.00087	0.00056	0.00054	0.00133	0.00064	0.00284	-	<0.0030	0.00154	0.00144	0.0014	0.0028	0.00265
Total Selenium	**0.015**	0.0066	0.0081	-	0.00593	0.00604	0.0134	0.00638	0.00614	0.00669	0.0131	0.0155	0.014	0.0124	0.0044	0.00899	0.00783	-	0.00531	0.0131	0.0128	0.01	0.0135	0.0119
Total Zinc	**0.5**	0.164	0.187	-	0.0604	0.0639	0.0029	0.0136	0.103	0.308	0.0818	0.0123	0.006	0.0059	0.0163	0.003	0.0464	-	0.0194	0.0054	0.0121	0.0066	0.012	0.0068

Table 3-16 WTSP 2009 Water Quality Results Prior to Discharge Under Type A Water Licence Discharge Limits

Sample name	A Licence	WTSP 2T	UTMD 4 - 2230	WTSP 1T	UTMD 4 - 1230	WTSP-1T	UTMD4	WTSP-2T	UTMD 4	WTSP 1T	UTMD-4	WTSP 2T	UTMD-4	WTSP-4T	UTMD 4	WTSP 5T	UTMD4-WTSP5T	WTSP 2T	UTMD 4-WTSP 2T	WTSP 1T	WTSP 5T	UTMD 4-WTSP 1T+5T	WTSP 1T	UTMD4-WTSP1T
Date	QZ04-065	19-May	22-May	25-May	30-May	07-Jun	07-Jun	08-Jun	09-Jun	13-Jun	13-Jun	13-Jun	14-Jun	16-Jun	20-Jun	21-Jun	24-Jun	25-Jun	29-Jun	01-Jul	01-Jul	03-Jul	05-Jul	07-Jul
Job Number	ADL	L764798	L767674	L769270	L770935	L776271	L776269	L776250	L776247	L777732	L777724	L777732	L779229	L779229	L781375	L781375	L784053	L784053	L786325	L786325	L786325	L787793	L787793	L790447
Parameters (mg/L)																								
Total Suspended Solids	**15**	<3.0	<3.0	<3.0	3.5	<3.0	3.7	4.8	5.3	3.7	4.7	10.2	3.8	<3.0	<3.0	<3.0	<3.0	<3.0	7.3	<3.0	9.5	<3.0	4.5	4.3
Ammonia as N	**5**	2.78	2.45	2.45	1.74	2.32	2.37	1.91	1.97	1.81	1.82	1.47	1.59	1.68	1.67	1.72	1.76	1.59	1.55	1.93	2.05	1.88	1.79	1.75
Total Arsenic	**0.05**	0.00023	0.00018	<0.00020	0.00071	0.00021	<0.00020	0.00042	0.00046	0.00061	0.00064	0.00104	0.00057	0.00047	0.00031	0.00061	0.00036	0.00022	0.00101	0.00036	0.00019	0.0003	0.00019	0.00017
Total Cadmium	**0.002**	0.000445	0.000385	0.000901	0.000272	0.00108	0.00094	0.0014	0.00175	0.0015	0.00143	0.00254	0.00207	0.00161	0.00149	0.000495	0.000487	0.00116	0.0015	0.000851	0.000841	0.000778	0.000139	0.00026
Total Copper	**0.015**	<0.0030	0.00119	0.00198	0.00458	0.00227	0.00208	0.00253	0.00308	0.00311	0.0034	0.00705	0.00381	0.00367	0.00171	0.00446	0.00329	0.00286	0.0118	0.00512	0.00497	0.00237	0.00442	0.00587
Total Lead	**0.02**	0.000165	0.000098	0.00024	0.00142	0.00048	0.0003	0.0017	0.0019	0.00124	0.0014	0.00576	0.00212	0.000914	0.000093	0.000231	0.000122	0.000481	0.00511	0.0012	0.000166	0.000151	0.000573	0.00126
Total Nickel	**0.5**	0.00119	0.00162	0.0035	0.00183	0.0038	0.0038	0.00262	0.00385	0.00372	0.00411	0.00471	0.00415	0.00361	0.00259	0.00129	0.00132	0.00179	0.00266	0.00238	0.00201	0.0017	0.00199	0.00269
Total Selenium	**0.02**	0.0208	0.0188	0.0232	0.0214	0.0245	**0.0276**	0.0213	0.0246	**0.0252**	**0.0283**	**0.0298**	**0.0286**	**0.0285**	**0.0254**	**0.0273**	**0.0262**	**0.0255**	**0.0254**	0.0244	0.0244	0.0226	0.0208	0.0218
Total Zinc	**0.5**	0.0079	0.0048	0.0119	0.0195	0.028	0.0254	0.03	0.0464	0.0326	0.0314	0.0639	0.0451	0.035	0.0322	0.0175	0.0151	0.0165	0.0741	0.0371	0.0066	0.0134	0.0082	0.0178

Table 3-17 WTSP 2009 Water Quality Results at the End of Pipe as per Amendment 1 of the Licence

Sample name	B Lic QZ01-051	UTMD - 4 - WTSP 2T	UTMD - 4 - WTSP 2T/4T	UTMD-4-WTSP 4T/5T	WSTP 1T	UTMD-4-WTSP2T	UTMD-4-WTSP2T/5T	UTMD4-WTSP 4T	UTMD 4-WTSP 1T	UTMD 4-WTSP 4T	UTMD 4-WTSP 4T	UTMD 4-WTSP 4T	UTMD 4-WTSP 4T	UTMD4-WTSP4T	UTMD4-WTSP4T	UTMD4-WTSP2T	UTMD4-WTSP2T	UTMD4-WTSP1T	UTMD4-WTSP1T	UTMD4-WTSP1T
Date	**Amendment 1**	**09-Jul**	**10-Jul**	**14-Jul**	**09-Jul**	**18-Jul**	**18-Jul**	**31-Jul**	**01-Aug**	**06-Aug**	**07-Aug**	**08-Aug**	**09-Aug**	**11-Aug**	**12-Aug**	**13-Aug**	**14-Aug**	**15-Aug**	**16-Aug**	**17-Aug**
Job Number	**ADL**	**L790698**	**L790698**	**L792238**	**L790447**	**L794085**	**L794085**	**L800385**	**L803137**	**L803137**	**L803137**	**L804460**	**L804460**	**L805528**	**L805528**	**L807605**	**L807605**	**L807605**	**L807605**	**L807605**
Parameters (mg/L)																				
TSS	**15**	<3.0	<3.0	3.5	4.3	**17.8**	9.8	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.5	<3.0	<3.0	5.2	4.2	3.2
Ammonia Nitrogen	**5**	3.89	2.75	1.46	1.31	4.9	3.1	0.50	1.78	1.46	1.54	1.52	1.50	1.08	1.11	1.07	1.11	1.00	1.01	1.01
Total Arsenic	**0.1**	0.00019	0.00012	0.00015	0.00071	0.00054	0.00028	0.0001	0.00021	0.00013	0.00013	0.00024	0.00017	0.00016	0.00016	0.00018	0.0002	0.0001	<0.00010	<0.00010
Total Cadmium	**0.006**	0.000713	0.000509	0.000262	0.00197	0.000837	0.000455	0.000159	0.000283	0.000066	0.000057	0.00008	0.000063	0.000055	0.000053	0.000042	0.000059	0.000028	0.000018	0.000026
Total Copper	**0.05**	0.00592	0.0039	0.00274	0.0339	0.00873	0.0048	0.00088	0.00219	0.00238	0.00168	0.00178	0.00142	0.00137	0.00128	0.00142	0.00262	0.00139	0.0012	0.00123
Total Lead	**0.07**	0.000217	0.000174	0.00106	0.0473	0.00213	0.00108	0.000334	0.000246	0.000156	<0.000050	0.0001	0.000084	0.000098	0.000056	<0.000050	0.000103	<0.000050	0.000689	0.000074
Total Nickel	**0.5**	0.00296	0.00219	0.00294	0.00155	0.00511	0.00369	0.00199	0.00313	0.00404	0.00256	0.00261	0.00232	0.00168	0.00175	0.00147	0.00164	0.00099	0.00094	0.00088
Total Selenium	**0.06**	0.0199	0.023	0.0327	0.032	0.0456	0.0517	0.0404	0.0327	0.0296	0.0289	0.0311	0.03	0.0206	0.0193	0.0286	0.0223	0.0212	0.0217	0.0192
Total Zinc	**0.5**	0.022	0.0141	0.0204	0.158	0.0473	0.0276	0.0095	0.0273	0.0043	0.002	0.0037	0.0026	0.0024	0.0034	0.0017	0.003	<0.0010	<0.0010	<0.0010

Table 3-18 WTSP 2009 Water Quality Results at the End of Pipe as per Amendments 1 and 2 of the Licence

Sample name	B Lic QZ01-051	UTMD4-WTSP5T	UTMD4-WTSP5T	UTMD4-WTSP5T	UTMD4-WTSP4T	UTMD4-WTSP4T	UTMD4-WTSP1T	UTMD4-WTSP1T/2T	UTMD4-WTSP1T/2T	UTMD4-WTSP-1T	UTMD4-WTSP5T	UTMD4-WTSP5T	UTMD 4-WTSP 5T	UTMD 4-WTSP 4T	UTMD 4-WTSP 4T-98	UTMD 4-WTSP 4T
Date	**Amendment 1 & 2**	**18-Aug**	**19-Aug**	**20-Aug**	**21-Aug**	**22-Aug**	**23-Aug**	**24-Aug**	**25-Aug**	**26-Aug**	**31-Aug**	**01-Sep**	**02-Sep**	**03-Sep**	**03-Sep**	**04-Sep**
Job Number	**ADL**	**L808970**	**L808970**	**L808970**	**L811564**	**L811564**	**L811564**	**L811564**	**L811564**	**L811554**	**L813565**	**L813565**	**L814805**	**L814805**	**L814805**	**L816256**
Parameters (mg/L)																
TSS	**15**	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	14.3	<3.0	<3.0	<3.0	<3.0	<3.0	3.2
Ammonia Nitrogen	**5**	4.17	4.22	4.16	0.85	0.81	0.90	0.91	1.98	4.56	1.01	1.00	1.01	1.50	1.51	1.54
Total Arsenic	**0.1**	<0.00010	<0.00010	0.00011	0.00011	<0.00010	0.00022	0.00018	0.00095	0.00077	0.00011	0.0001	0.00015	0.00017	0.00017	0.00021
Total Cadmium	**0.006**	0.000124	0.000119	0.000161	0.000288	0.000343	0.000218	0.000233	0.000436	0.000277	0.000184	0.0002	0.000237	0.000177	0.000176	0.000196
Total Copper	**0.05**	0.00563	0.00518	0.00577	0.00153	0.00077	0.00109	0.00102	0.00772	0.0073	0.0014	0.00124	0.00172	0.00138	0.00134	<0.0015
Total Lead	**0.07**	0.000263	0.000166	0.000205	0.000108	<0.000050	0.000577	0.000633	0.00519	0.00421	0.000107	<0.000050	0.000082	0.000092	0.000084	0.000292
Total Nickel	**0.5**	0.00392	0.00383	0.00383	0.00088	0.00082	0.0012	0.00154	0.00235	0.00261	0.00105	0.00108	0.00131	0.00171	0.00183	0.00182
Total Selenium	**0.06**	0.0317	0.0322	0.0304	0.0148	0.0161	0.0156	0.0168	0.0157	0.0147	0.0127	0.0135	0.00144	0.00176	0.00198	0.00216
Total Zinc	**0.5**	0.0146	0.0147	0.0197	0.003	<0.0010	0.0035	0.0037	0.0275	0.0222	0.0022	0.001	0.0016	<0.0010	0.0013	0.0041

Table 3-18 WTSP 2009 Water Quality Results at the End of Pipe as per Amendments 1 and 2 of the Licence cont'd

Sample name	B Lic QZ01-051	UTMD4-WTSP1T	UTMD4-WTSP1T	UTMD4-WTSP1T	UTMD4-WTSP1T	UTMD4-WTSP4T	UTMD4-WTSP4-96	UTMD4-WTSP4	UTMD4-WTSP-1T	UTMD4-WTSP-1T	UTMD4-WTSP-4T	UTMD4-WTSP4T	UTMD4-WTSP 1T	UTMD4-WTSP 5T	UTMD4-WTSP 5T	UTMD4-WTSP 1T
Date	**Amendment 1 & 2**	**11-Sep**	**12-Sep**	**18-Sep**	**19-Sep**	**19-Sep**	**20-Sep**	**21-Sep**	**25-Sep**	**26-Sep**	**29-Sep**	**30-Sep**	**02-Oct**	**03-Oct**	**04-Oct**	**05-Oct**
Job Number	**ADL**	**L819238**	**L819238**	**L822123**	**L822123**	**L822123**	**L822123**	**L822123**	**L825161**	**L825161**	**L825161**	**L826455**	**L828801**	**L828801**	**L828801**	**L828801**
Parameters (mg/L)																
TSS	**15**	3	6	<3.0	<3.0	<3.0	<3.0	<3.0	4	<3.0	**18.5**	<3.0	<3.0	<3.0	<3.0	<5.0
Ammonia Nitrogen	**5**	2.23	2.24	3.58	3.51	**5.30**	**5.44**	**5.13**	2.94	2.86	2.34	2.31	1.40	1.72	2.13	1.73
Total Arsenic	**0.1**	0.00012	0.00027	0.00015	0.00016	0.0003	0.00031	0.00029	0.00012	0.00013	0.00117	0.00012	<0.00010	0.00012	0.00014	0.00014
Total Cadmium	**0.006**	0.000053	0.000093	<0.000017	<0.000017	0.000051	0.000066	0.000036	0.000038	0.000032	0.000239	0.000045	0.000023	<0.000017	0.000037	0.000035
Total Copper	**0.05**	0.00114	0.00188	0.00202	0.0018	0.00314	0.00324	0.00246	0.00128	0.00082	0.00515	0.00075	<0.00080	<0.0020	0.00102	0.00133
Total Lead	**0.07**	<0.000050	0.000864	0.000116	<0.000050	0.000342	0.000648	0.000064	0.000116	<0.000050	0.00104	<0.000050	<0.000050	<0.000050	<0.000050	0.000257
Total Nickel	**0.5**	0.00182	0.00199	0.00115	0.00098	0.00234	0.00271	0.00225	0.00105	0.00105	0.00234	0.00122	0.00052	<0.00050	0.00079	0.00092
Total Selenium	**0.06**	0.0221	0.0246	0.0231	0.0234	0.0273	0.0275	0.0271	0.0116	0.0112	0.026	0.0101	0.00908	0.0145	0.0127	0.00805
Total Zinc	**0.5**	0.003	0.0073	0.0011	<0.0010	0.0022	<0.0030	0.0014	0.002	0.0018	0.0117	0.001	0.002	<0.0010	0.0027	0.0045

All discharges are also required to meet a fish bioassay standard of 96 hour LC_{50}. Table 3-19 summarizes the results of the 2009 bioassays taken and the complete lab reports listed in Appendix D are provided on the enclosed disk. Twenty three of the 26 samples achieved a fish bioassay result of >100% concentration LC_{50}. Three bioassays resulted in fish mortality sampled June 20th, July 7th and July 16th although water quality concentrations were acceptable for the July samples under the amended Licence limits.

Table 3-19 2009 Bioassay Results

Lab Report	Sample Identification	Sample Collection Date (Time)	Rainbow Trout 96-h LC_{50} [% vol/vol]
2-11-200-219-09-001	WTSP-1T	13-Jan-09 (10:00 AM)	>100
2-11-200-219-09-002	WTSP-1T	9-Feb-09 (12:00 PM)	>100
2-11-200-219-09-003	WTSP-1T	24-Mar-09 (08:55 AM)	>100
2-11-200-219-09-004	WTSP-2T	13-Apr-09 (09:00 AM)	>100
2-11-200-219-09-005	WTSP-1T	5-May-09 (10:00 AM)	>100
2-11-200-219-09-006	WTSP-2T	5-May-09 (10:00 AM)	>100
2-11-200-219-09-009	UTMD4	23-May-09 (12:30 AM)	>100
2-11-200-219-09-010	UTMD4	29-May-09 (08:45 AM)	>100
2-11-200-219-09-011	WTSP-1T	7-Jun-09 (05:30 PM)	>100
2-11-200-219-09-012	WTSP 2T	9-Jun-09 (03:00 PM)	>100
2-11-200-219-09-013	UTMD4	13-Jun-09 (02:00 PM)	>100
2-11-200-219-09-014	UTMD4	14-Jun-09 (09:00 PM)	>100
2-11-200-219-09-015	UTMD4	20-Jun-09 (10:00 AM)	**89.97 (56, 100)**
2-11-200-219-09-016	UTMD4 - WTSP 5T	24-Jun-09 (05:15 PM)	>100
2-11-200-219-09-017	UTMD4 - WTSP 2T	29-Jun-09 (09:00 PM)	>100
2-11-200-219-09-018	UTMD4 - WTSP 1T + 5T	3-Jul-09 (09:00 PM)	>100
2-11-200-219-09-019	UTMD4 - WTSP 1T	7-Jul-09 (10:00 AM)	**100 (56, 100)**
2-11-200-219-09-020	UTMD4	10-Jul-09 (08:00 AM)	>100
2-11-200-219-09-021	UTMD4 - WTSP 4T	16-Jul-09 (08:20 AM)	**<100**
2-11-200-219-09-022	UTMD4 - WTSP 4T + 5T	14-Jul-09 (02:00 PM)	>100
2-11-200-219-09-031	UTMD4 - WTSP 4T	31-Jul-09 (05:50 PM)	>100
2-11-200-219-09-032	UTMD4 - WTSP 1T	17-Aug-09 (12:03 AM)	>100
2-11-200-219-09-033	UTMD4 - WTSP 5T	1-Sep-09 (08:00 AM)	>100
2-11-200-219-09-034	UTMD4 - WTSP 4T	21-Sep-09 (01:00 PM)	>100
2-11-200-219-09-035	W80	2-Oct-09 (02:30 PM)	>100
2-11-200-219-09-036	UTMD4 - WTSP 1T	2-Oct-09 (07:30 PM)	>100

4 Emergency Amendments

As required by Amendment 1, the following monitoring was conducted at monitoring site W80:

1) Continuous hydrology via a data logger with weekly manual hydrology to calibrate the logger.
2) One water quality sample prior to Phase 1[1]; daily water quality sampling during Phase 1; weekly water quality sampling during Phase 2; and one water quality sample subsequent to Phase 2.

[1] For a definition of Phase 1 and Phase 2, see Appendix E.

3) Sediment sampling prior to Phase 1, during Phase 2 and post-Phase 2.

4) Benthic invertebrate metal concentration in tissue sampling prior to Phase 1 and post-Phase 2.

Biossays for Rainbow Trout, *Daphnia magna* and *Ceriodaphnia dubia* were also required to be taken at W80 and at the end of the discharge pipe bi-weekly during Phase 2. Results of the water quality monitoring required at the end of the discharge pipe are summarized in Section 3.4.5 above. The results of the monitoring conducted under Amendment 1 of the Licence for 2009 are summarized below.

4.1 Hydrology

Hydrology was taken at site W80 prior to the commencement of the emergency discharge; during Phase 1 and Phase 2 of the emergency discharge; and following to the emergency discharge. The results of the manual discharges are provided in Table 4-1 and Figure 4-1 below. Continuous stream discharge results from the data logger are presented in Figure 4-2.

Table 4-1 W80 Manual Hydrology Results

Date	Stream Discharge (m^3/s)
09-Jul-09	0.531
15-Jul-09	0.391
18-Jul-09	0.373
02-Aug-09	0.239
14-Aug-09	0.188
22-Aug-09	0.306
03-Sep-09	0.187
11-Sep-09	0.305
18-Sep-09	0.413
25-Sep-09	0.361
02-Oct-09	0.269
24-Oct-09	0.195

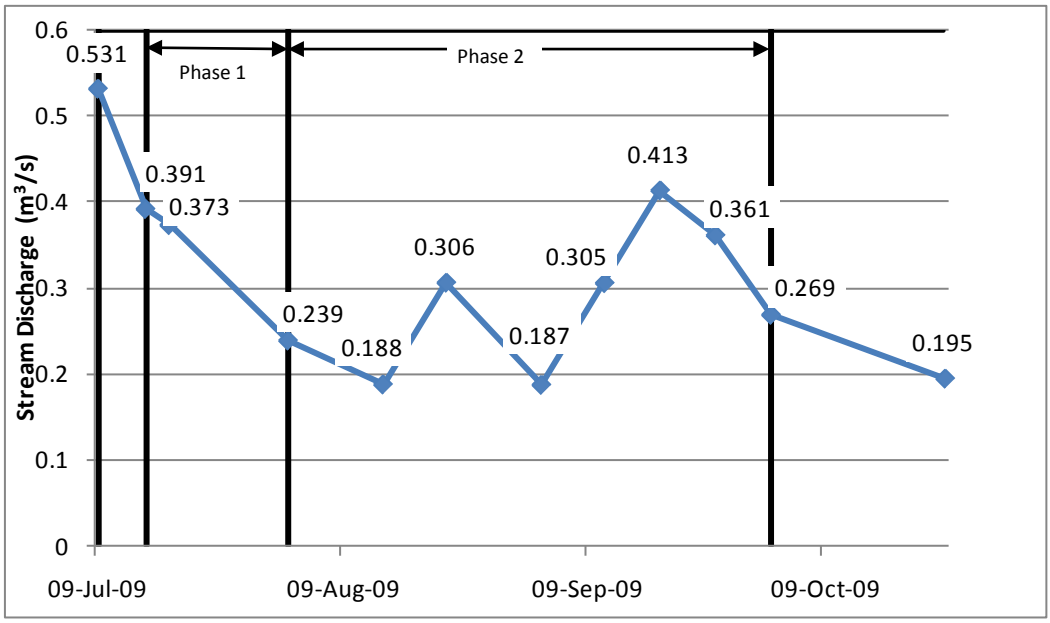


Figure 4-1 W80 Manual Hydrology Results

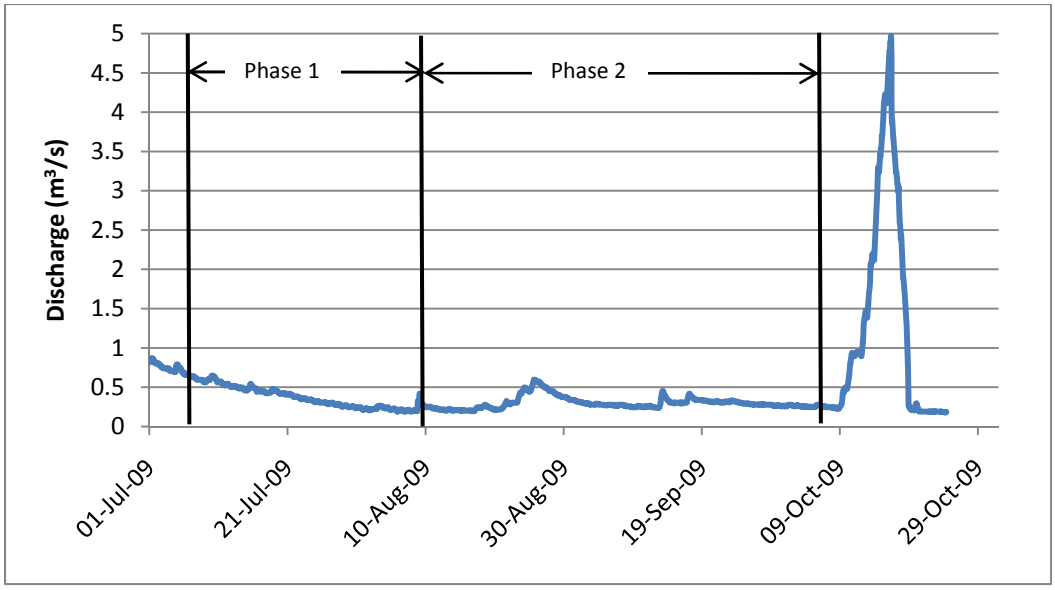


Figure 4-2 W80 Continuous Discharge Results

As shown in Figure 4-2, hydrology at the monitoring site was fairly consistent between approximately 0.2 m^3/s and 0.6 m^3/s throughout the emergency amendment period, and there were high flows due to rain in late October.

4.2 Water Quality

Water quality sampling was conducted at W80 pre-Phase 1 on July 9, daily during Phase 1, weekly during Phase 2, and post-Phase 2. The water quality results are summarized in Table 4-2. Water quality results for amendment limit parameters including ammonia, and total and dissolved concentrations of cadmium, copper, lead and selenium are shown graphically in Figure 4-3 through Figure 4-7, respectively.

With the exception of selenium parameter in the September 11 sample, water quality for the parameters affected by the emergency discharge amendment (ammonia, cadmium, copper, lead, and selenium) remained well below the site specific water quality objective (as defined in the emergency amendment application provided in Appendix F). Ammonia, cadmium and lead were less than the respective site specific water quality objective by at least one order of magnitude.

Table 4-2 W80 Water Quality Results

Sample location		Site Specific	W80	W80	W80	W80	W80	W80	W80	W80	W80
Sampling Date		Water Quality	9-Jul-09	14-Jul-09	15-Jul-09	16-Jul-09	17-Jul-09	18-Jul-09	19-Jul-09	20-Jul-09	2-Aug-09
Lab Report	Units	Objective	A935359	L793547	L793547	A937394	A937394	A937394	A937829	A937829	A940905
Field Physical Parameters											
Temperature	°C	-	8.09	9.36	7.5	8.31	5.63	7.69	6.38		9.49
pH	pH Units	-	7.56	7.49	7.04	6.87	6.8	7.25	6.79		7.69
Laboratory Parameters											
Physical Parameters											
Temperature	°C	-	7	3	3	1.7	1.7	1.7	3	3	6
Conductivity	uS/cm	-	150	154	155	150	160	160	160	160	170
Hardness	mg/L	-	76.7	75.7	76.8	76.7	75.5	79.5	78.8	80	83.3
Total Suspended Solids	mg/L	-	<4	8	7.5	8	10	13	6	6	<4
pH	pH Units	-	8.0	7.7	8.1	7.9	7.9	7.9	8.0	7.9	8.1
DOC	mg/L	-	2.5	2	2.05						3
Major Anions											
Alkalinity-Total	mg/L	-	61	64.1	64.5	65	66	66	65	66	71
Acidity-Total	mg/L	-	0.5	5.8	4.2	0.8	<0.5	0.6	<0.5	<0.5	1
Bromide	mg/L	-	<0.4	<0.25	<0.25	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride	mg/L	-	0.5	<2.5	<2.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
Fluoride	mg/L	-	0.05	<0.10	<0.10	0.05	0.05	0.05	0.04	0.04	0.05
Sulphate	mg/L	100	13	14.1	14.9	13	14	15	15	14	16
Nutrient Parameters											
Ammonial Nitrogen	mg/L	1	<0.005	<0.0050	<0.0050	<0.005	<0.005	0.008	0.013	0.013	<0.005
Nitrate Nitrogen	mg/L	1.3	<0.002	<0.025	<0.025	<0.002	0.008	0.005	0.003	0.002	0.005
Nitrite Nitrogen	mg/L	0.06	<0.002	0.0067	0.0066	<0.002	<0.002	<0.002	0.002	<0.002	<0.002
Total Phosphate	mg/L	-	<0.005	0.01	0.0064	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Ortho-Phosphate	mg/L	-	0.002	0.0025	0.0019	0.001	0.001	0.002	0.001	<0.001	0.001
Total Metals											
Aluminum (Al)	mg/L	0.1	0.0263	0.141	0.0885	0.0264	0.0357	0.033	0.0241	0.0237	0.0115
Antimony (Sb)	mg/L	0.006	0.00004	<0.00010	<0.00010	0.00005	0.00005	0.00006	0.00006	0.00006	0.00004
Arsenic (As)	mg/L	0.005	0.00023	0.00034	0.00031	0.00028	0.00033	0.00044	0.00028	0.00026	0.00036
Cadmium (Cd)	mg/L	0.00015	0.000121	0.00003	0.000025	0.000019	0.000028	0.000025	0.000021	0.000027	0.000018
Calcium (Ca)	mg/L	-	24.1	23.2	22.7	22.6	22.1	24.2	24.6	25	25.9
Chromium (Cr)	mg/L	-	<0.0001	0.00074	<0.00050	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	-	0.000065	0.00013	<0.00010	0.000047	0.000075	0.000062	0.000051	0.000062	0.000055
Copper (Cu)	mg/L	0.002	0.00109	0.00148	0.00125	0.00088	0.00107	0.00116	0.00087	0.00088	0.00088
Iron (Fe)	mg/L	0.3	0.103	0.265	0.196	0.105	0.118	0.111	0.079	0.088	0.108
Lead (Pb)	mg/L	0.002	0.000092	0.000158	0.000098	0.000082	0.000134	0.00021	0.000093	0.00011	0.000076
Magnesium (Mg)	mg/L	-	4.03	3.97	3.9	3.83	3.79	4.14	4.22	4.28	4.49
Manganese (Mn)	mg/L	-	0.0204	0.0296	0.0293	0.0247	0.0266	0.0265	0.0259	0.0278	0.0314
Mercury (Hg)	mg/L	0.000026	<0.00001	<0.000010	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	-	0.00036	0.000495	0.000417	0.00038	0.00036	0.00045	0.0004	0.00036	0.0005
Nickel (Ni)	mg/L	0.065	0.00037	0.0007	0.00054	0.00031	0.00035	0.00042	0.00028	0.00032	0.00085
Phosphorus (P)	mg/L	-	0.013	<0.30	<0.30	0.008	0.009	0.008	0.007	0.008	0.008
Potassium (K)	mg/L	-	0.5	<2.0	<2.0	0.44	0.42	0.52	0.49	0.49	0.61
Selenium (Se)	mg/L	0.002	0.00082	0.00113	0.00113	0.00079	0.00084	0.00081	0.00069	0.00078	0.00076
Silicon (Si)	mg/L	-	3.28	3.13	3.01	3.15	3.1	3.07	2.9	3.32	3.65
Silver (Ag)	mg/L	0.0001	<0.000005	<0.000010	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	-	1.03	<2.0	<2.0	1	0.98	1.17	1.15	1.16	1.08
Strontium (Sr)	mg/L	-	0.0453	0.0499	0.0475	0.0448	0.043	0.0485	0.0466	0.0464	0.0518
Thallium (Tl)	mg/L	-	0.000003	<0.00010	<0.00010	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	-	<0.0002	<0.0010	<0.0010	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.03	0.0024	<0.0040	<0.0040	0.0016	0.0015	0.0041	0.0012	0.0024	0.003
Dissolved Metals											
Aluminum (Al)	mg/L	-	0.0106	0.0068	0.0093	0.0074	0.0072	0.0133	0.0084	0.0063	0.0055
Antimony (Sb)	mg/L	-	0.00006	<0.00010	<0.00010	0.00005	0.00005	0.00006	0.00006	0.00006	0.00004
Arsenic (As)	mg/L	-	0.00022	0.00029	0.00028	0.00026	0.00028	0.00034	0.00024	0.00026	0.00029
Cadmium (Cd)	mg/L	-	0.00113	<0.000017	0.000024	0.000016	0.000012	0.000022	0.000016	0.000013	0.00002
Calcium (Ca)	mg/L	-	24.1	23.7	24.1	23.9	23.4	24.6	25.6	26.6	24.9
Chromium (Cr)	mg/L	-	<0.0001	<0.00050	<0.00050	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cobalt (Co)	mg/L	-	0.000045	<0.00010	<0.00010	0.000037	0.000042	0.000047	0.000035	0.000032	0.000043
Copper (Cu)	mg/L	-	0.00097	0.00071	0.00085	0.00122	0.00082	0.00099	0.0006	0.00063	0.00066
Iron (Fe)	mg/L	-	0.057	0.066	0.059	0.064	0.055	0.069	0.055	0.052	0.073
Lead (Pb)	mg/L	-	0.000034	0.000084	<0.000050	0.000074	0.000034	0.000105	0.000051	0.000027	0.00001
Magnesium (Mg)	mg/L	-	4.06	4	4.03	4.12	4.13	4.39	4.07	4.34	4.61
Manganese (Mn)	mg/L	-	0.0179	0.0227	0.0251	0.0232	0.025	0.0256	0.0243	0.026	0.0272
Mercury (Hg)	mg/L	-	<0.00001	<0.000010	<0.000010	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Mo)	mg/L	-	0.00039	0.000427	0.000443	0.00041	0.00043	0.00052	0.00038	0.00042	0.00049
Nickel (Ni)	mg/L	-	0.00034	<0.00050	<0.00050	0.00031	0.0003	0.00032	0.00026	0.00025	0.00034
Phosphorus (P)	mg/L	-	0.005	<0.30	<0.30	0.003	0.003	0.005	0.004	0.003	0.007
Potassium (K)	mg/L	-	0.5	<2.0	<2.0	0.48	0.48	0.56	0.53	0.58	0.55
Selenium (Se)	mg/L	-	0.00082	0.00074	0.00075	0.0008	0.00084	0.00087	0.00075	0.00076	0.00073
Silicon (Si)	mg/L	-	3.23	3.04	3.06	3.06	3.07	3.08	3.6	3.51	2.97
Silver (Ag)	mg/L	-	<0.000005	<0.000010	<0.000010	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Sodium (Na)	mg/L	-	1.07	<2.0	<2.0	1.09	1.1	1.27	1.12	1.19	1.11
Strontium (Sr)	mg/L	-	0.045	0.0494	0.0502	0.046	0.0472	0.049	0.0463	0.0468	0.0509
Thallium (Tl)	mg/L	-	<0.000002	<0.00010	<0.00010	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002	<0.000002
Vanadium (V)	mg/L	-	<0.0002	<0.0010	<0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	-	0.0015	<0.0010	0.0023	0.0008	0.0008	0.0032	0.0011	0.0009	0.0008

Table 4-2 W80 Water Quality Results cont'd

Sample location		Site Specific	W80	W80	W80	W80	W80	W80	W80	W80	W80
Sampling Date		Water Quality	9-Aug-09	22-Aug-09	26-Aug-09	3-Sep-09	11-Sep-09	18-Sep-09	25-Sep-09	2-Oct-09	24-Oct-09
Lab Report	Units	Objectives	A942402	L811566	L811554	A949310	L819239	A952632	L825163	A956923	L834841
Field Physical Parameters											
Temperature	°C	-	8.79	2.25	5.69	6.59	5.76	4.86	3.76	2.54	7.15
pH	pH Units	-	7.02	7.78	6.90	7.15	6.88	6.52	7.1	-	7.68
Laboratory Parameters											
Physical Parameters											
Temperature	°C	-	6.7			2.7	7	5	3	1.7	3
Conductivity	uS/cm	-	163	165	148	157	162	160	162	162	166
Hardness	mg/L	-	81.3	82.5	72.4	73.8	82.1	75.2	79.6	77.2	85.2
Total Suspended Solids	mg/L	-	<4	<3.0	6.3	<4	<3.0	<4	<3.0	<4	<3.0
pH	pH Units	-	7.9	8.0	8.0	7.9	8.2	7.8	7.4	8.0	8.0
DOC	mg/L	-	2.6	1.63	1.9	1.9	1.59	2.4	1.31	1.7	1.09
Major Anions											
Alkalinity-Total	mg/L	-	71	71.1	64.1	67	67.8	66	62.9	67	69.8
Acidity-Total	mg/L	-	<0.5	1.9	2.2	1.2	<1.0	<0.5	3.9	<0.5	3.7
Bromide	mg/L	-	<0.4	<0.050	<0.050	<0.4	<0.050	<0.4	<0.050	<0.4	<0.050
Chloride	mg/L	-	1.3	<0.50	<0.50	<0.5	<0.50	<0.5	<0.50	<0.5	<0.50
Fluoride	mg/L	-	0.05	0.037	0.036	0.04	0.042	0.04	0.031	0.04	0.043
Sulphate	mg/L	100	14	15.3	13.9	12	15.2	13	15.2	15	17.3
Nutrient Parameters											
Ammonial Nitrogen	mg/L	1	0.01	<0.0050	<0.0050	<0.005	<0.0050	<0.005	<0.0050	<0.005	<0.0050
Nitrate Nitrogen	mg/L	1.3	0.028	<0.0050	0.0055	0.007	<0.0050	<0.002	0.0059	0.012	0.0482
Nitrite Nitrogen	mg/L	0.06	<0.002	<0.0010	<0.0010	<0.002	<0.0010	<0.002	<0.0010	0.003	<0.0010
Total Phosphate	mg/L	-	0.009	0.0054	0.0084	<0.005	0.0045	0.006	0.0033	<0.005	0.0044
Dissolved Ortho-Phosphate	mg/L	-	0.001	0.0032	0.0029	0.001	0.0034	0.001	0.0023	<0.001	0.0027
Total Metals											
Aluminum (Al)	mg/L	0.1	0.0188	0.0327	0.0335	0.0082	0.0141	0.008	0.0076	0.0095	0.0029
Antimony (Sb)	mg/L	0.006	0.00005	<0.00010	<0.00010	0.00004	<0.00010	0.00004	<0.00010	0.00003	<0.00010
Arsenic (As)	mg/L	0.005	0.00034	0.00031	0.00028	0.00027	0.00028	0.00027	0.00025	0.00021	0.00018
Cadmium (Cd)	mg/L	0.00015	0.000022	0.000023	0.000018	0.000019	0.000021	0.000015	<0.000017	0.000022	<0.000017
Calcium (Ca)	mg/L	-	25.6	23.6	23.2	22.1	25.9	21.7	25.2	24.1	26.3
Chromium (Cr)	mg/L	-	<0.0001	<0.00050	<0.00050	<0.0001	<0.00050	<0.0001	<0.00050	<0.0001	<0.00050
Cobalt (Co)	mg/L	-	0.000055	<0.00010	<0.00010	0.00004	<0.00010	0.000039	<0.00010	0.000048	<0.00010
Copper (Cu)	mg/L	0.002	0.00075	0.00089	0.00103	0.00056	0.00085	0.00056	0.00056	0.00066	0.00039
Iron (Fe)	mg/L	0.3	0.132	0.138	0.112	0.087	0.106	0.092	0.084	0.095	0.058
Lead (Pb)	mg/L	0.002	0.000058	0.00006	0.000065	0.000018	0.000054	0.000021	<0.000050	0.000031	<0.000050
Magnesium (Mg)	mg/L	-	4.24	4.12	3.66	3.71	4.27	3.77	4.16	4.15	4.84
Manganese (Mn)	mg/L	-	0.036	0.0355	0.0263	0.0255	0.0346	0.0271	0.0289	0.0321	0.0315
Mercury (Hg)	mg/L	0.000026	<0.00001	<0.000010	<0.000010	<0.00001	<0.000010	<0.00001	<0.000010	<0.00001	<0.000010
Molybdenum (Mo)	mg/L	-	0.00046	0.000447	0.000411	0.00044	0.000507	0.00041	0.000398	0.00041	0.000425
Nickel (Ni)	mg/L	0.065	0.00039	0.00089	<0.00050	0.00025	<0.00050	0.00024	<0.00050	0.00033	<0.00050
Phosphorus (P)	mg/L	-	0.006	<0.30	<0.30	0.006	<0.30	0.003	<0.30	0.009	<0.30
Potassium (K)	mg/L	-	0.55	<2.0	<2.0	0.5	<2.0	0.54	<2.0	0.57	<2.0
Selenium (Se)	mg/L	0.002	0.00064	0.00091	<0.00050	0.00059	**0.004**	0.00066	0.00067	0.0007	0.00093
Silicon (Si)	mg/L	-	3.7	3.32	3.39	3.26	3.25	3.67	3.25	3.1	3.38
Silver (Ag)	mg/L	0.0001	<0.000005	<0.000010	<0.000010	<0.000005	<0.000010	<0.000005	<0.000010	<0.000005	<0.000010
Sodium (Na)	mg/L	-	1.08	<2.0	<2.0	1.01	<2.0	1.01	<2.0	1.07	<2.0
Strontium (Sr)	mg/L	-	0.0495	0.0466	0.0432	0.0448	0.0511	0.0451	0.0458	0.0456	0.0478
Thallium (Tl)	mg/L	-	<0.000002	<0.00010	<0.00010	<0.000002	<0.00010	<0.000002	<0.00010	<0.000002	<0.00010
Vanadium (V)	mg/L	-	<0.0002	<0.0010	<0.0010	<0.0002	<0.0010	<0.0002	<0.0010	<0.0002	<0.0010
Zinc (Zn)	mg/L	0.03	0.0008	0.0014	0.0016	0.0004	0.0019	0.0007	<0.0010	0.0037	<0.0010
Dissolved Metals											
Aluminum (Al)	mg/L	-	0.0059	0.0044	0.0066	0.0071	0.0051	0.0042	0.0035	0.0029	0.0022
Antimony (Sb)	mg/L	-	0.00006	<0.00010	<0.00010	0.00005	<0.00010	0.00005	<0.00010	0.00004	<0.00010
Arsenic (As)	mg/L	-	0.00035	0.00028	0.00021	0.00026	0.00025	0.00025	0.00023	0.0002	0.00018
Cadmium (Cd)	mg/L	-	0.000018	<0.000017	<0.000017	0.000015	<0.000017	0.000016	<0.000017	0.000008	<0.000017
Calcium (Ca)	mg/L	-	25.5	25.8	23	23.1	25.9	23.6	25	24.1	26.2
Chromium (Cr)	mg/L	-	<0.0001	<0.00050	<0.00050	<0.0001	<0.00050	<0.0001	<0.00050	<0.0001	<0.00050
Cobalt (Co)	mg/L	-	0.000044	<0.00010	<0.00010	0.000024	<0.00010	0.000034	<0.00010	0.000036	<0.00010
Copper (Cu)	mg/L	-	0.00066	0.00055	0.00074	0.00071	0.00059	0.00056	0.0005	0.00038	0.00039
Iron (Fe)	mg/L	-	0.072	0.07	<0.030	0.067	0.064	0.055	0.05	0.066	0.045
Lead (Pb)	mg/L	-	0.000017	0.000082	0.000059	0.000017	<0.000050	0.000008	0.000056	<0.000005	<0.000050
Magnesium (Mg)	mg/L	-	4.26	4.41	3.61	3.9	4.26	3.95	4.16	4.15	4.81
Manganese (Mn)	mg/L	-	0.0307	0.0271	0.00421	0.0235	0.0298	0.0242	0.0256	0.0262	0.0316
Mercury (Hg)	mg/L	-	<0.00001	<0.000010	<0.000010	<0.00001	<0.000010	0.00002	<0.000010	<0.00001	<0.000010
Molybdenum (Mo)	mg/L	-	0.00046	0.000427	0.000417	0.00045	0.000507	0.00041	0.000431	0.00039	0.000394
Nickel (Ni)	mg/L	-	0.00033	<0.00050	0.00055	0.00028	<0.00050	0.00026	<0.00050	0.00021	<0.00050
Phosphorus (P)	mg/L	-	0.004	<0.30	<0.30	0.005	<0.30	0.005	<0.30	0.002	<0.30
Potassium (K)	mg/L	-	0.56	<2.0	<2.0	0.53	<2.0	0.6	<2.0	0.55	<2.0
Selenium (Se)	mg/L	-	0.0006	0.00066	0.00053	0.00058	0.0031	0.00064	0.00068	0.00078	0.00085
Silicon (Si)	mg/L	-	3.62	3.6	3.09	3.28	3.24	2.93	3.26	3.34	3.37
Silver (Ag)	mg/L	-	<0.000005	<0.000010	<0.000010	<0.000005	<0.000010	<0.000005	<0.000010	<0.000005	<0.000010
Sodium (Na)	mg/L	-	1.16	<2.0	<2.0	1.07	<2.0	1.09	<2.0	1.08	<2.0
Strontium (Sr)	mg/L	-	0.0489	0.0452	0.042	0.0466	0.0504	0.0483	0.0457	0.0454	0.0471
Thallium (Tl)	mg/L	-	<0.000002	<0.00010	<0.00010	<0.000002	<0.00010	<0.000002	<0.00010	<0.000002	<0.00010
Vanadium (V)	mg/L	-	<0.0002	<0.0010	<0.0010	<0.0002	<0.0010	<0.0002	<0.0010	<0.0002	<0.0010
Zinc (Zn)	mg/L	-	0.0026	<0.0010	<0.0010	0.0008	0.001	0.0016	<0.0010	0.0008	<0.0010

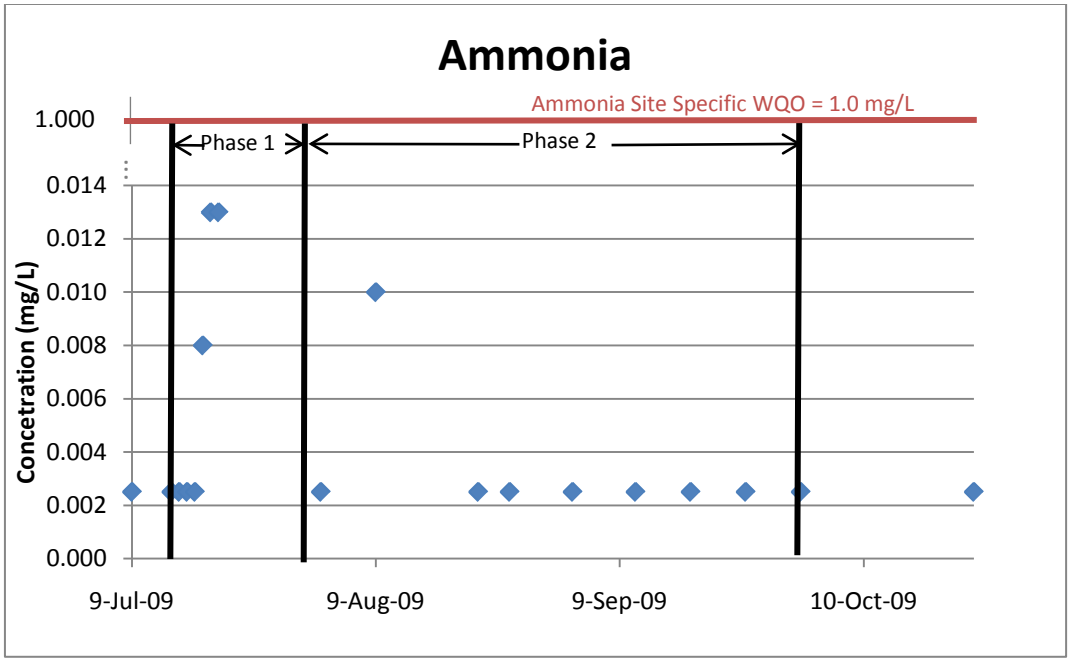


Figure 4-3 W80 Water Quality Results – Ammonia

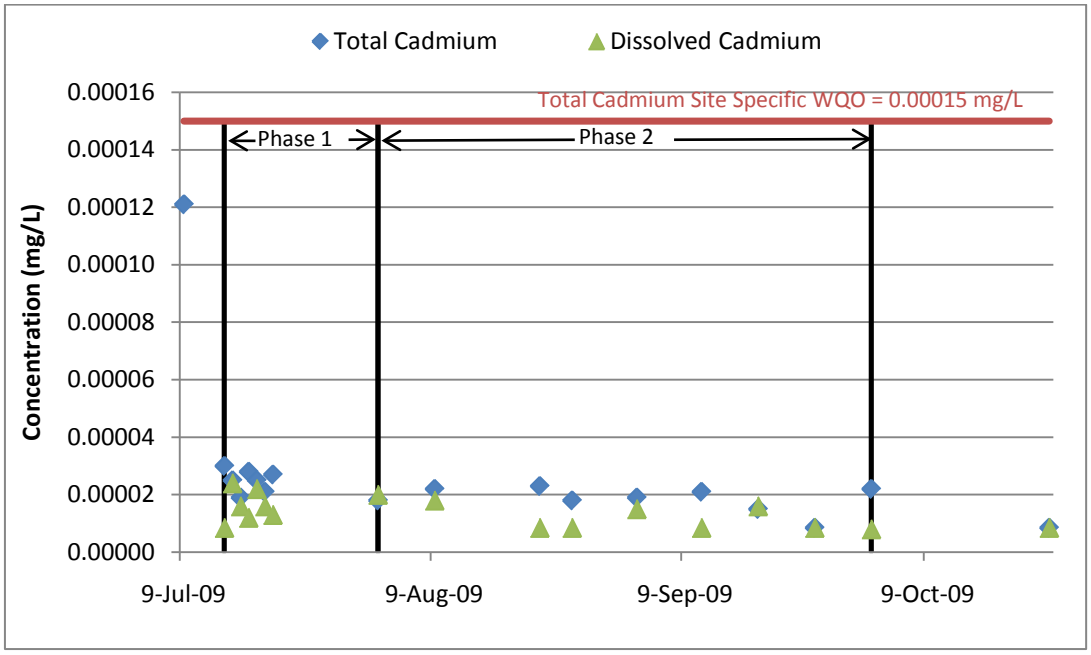


Figure 4-4 W80 Water Quality Results - Cadmium

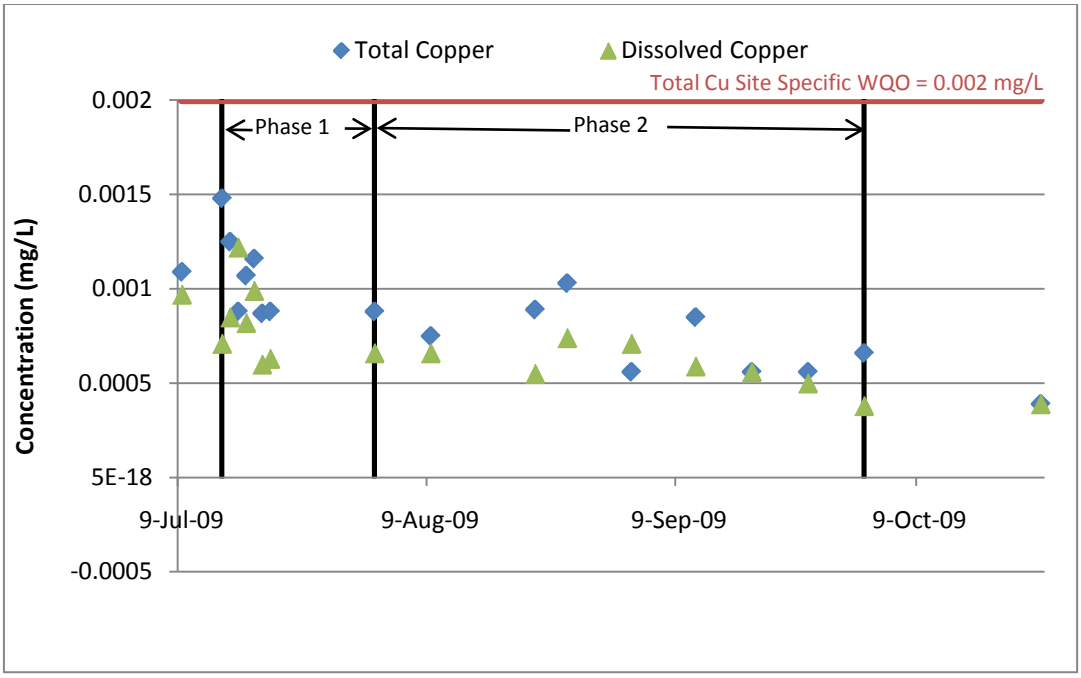


Figure 4-5 W80 Water Quality Results – Copper

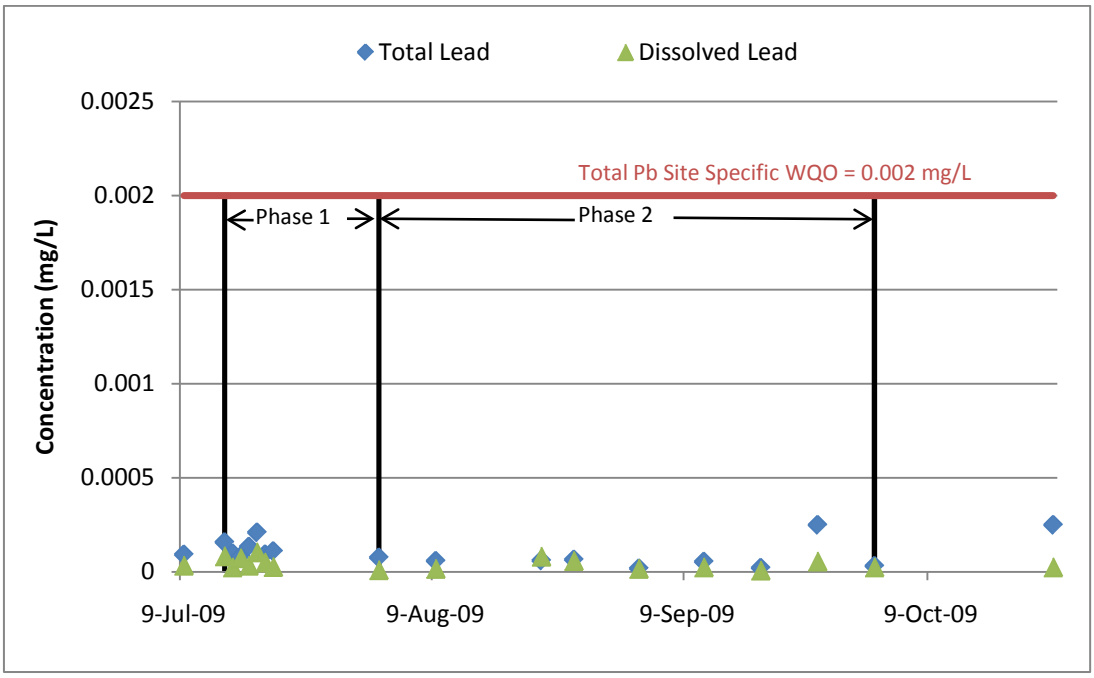


Figure 4-6 W80 Water Quality Results - Lead

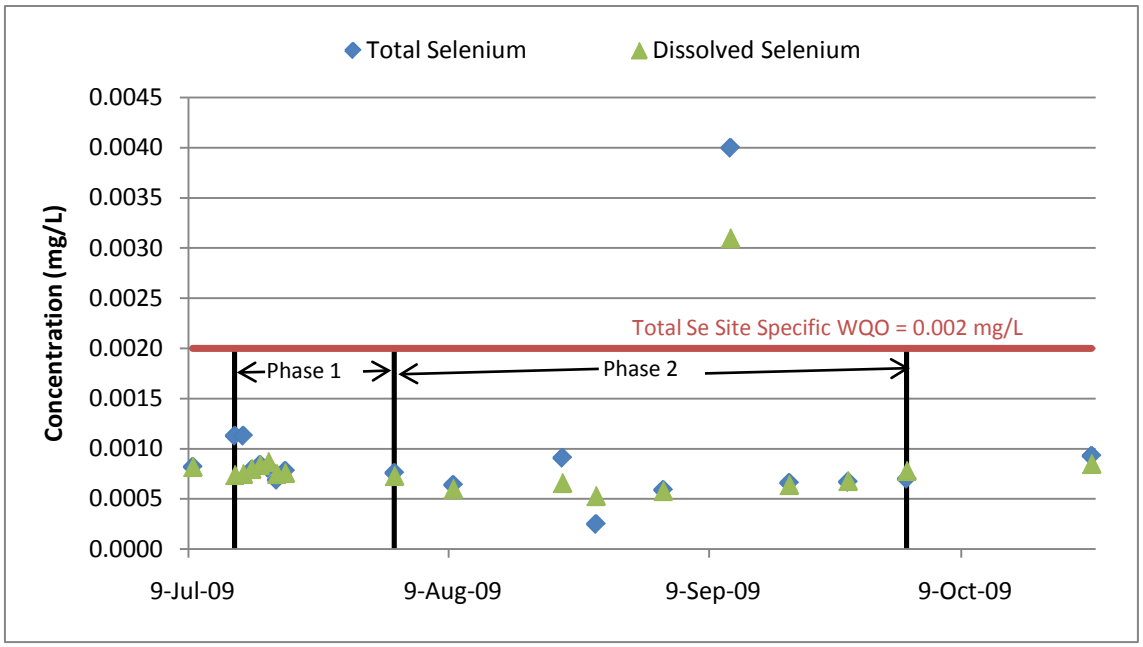


Figure 4-7 W80 Water Quality Results - Selenium

4.3 Sediment

Sediment quality samples were taken prior to Phase 1 on July 12 at 1/3, 2/3 and all of the way across the stream bed (i.e., W80-A, -B, & -C, respectively) and in duplicate (i.e., W80-1A, -2A), and following the completion of the emergency discharge on October 24th at 1/3, 2/3 and all of the way across the stream bed. Sediment sampling was not conducted during Phase 2 as required by Amendment 1 of the Licence. The sediment quality results are presented in Table 4-3, and are compared to the *Interim Freshwater Sediment Quality Guidelines (ISQG) for the Protection of Aquatic Life* (CCME update 2002). The results of parameters with ISQGs are also presented in Figure 4-8 and Figure 4-9.

Cadmium was at or above the ISQGs in the samples taken prior to the emergency discharge, and exceeded the ISQGs following the discharge. Almost all parameters saw an increase in metal concentrations in the samples taken following the discharge (see Table 4-3). Arsenic, chromium, copper and zinc were all in exceedance of the respective ISQGs in the sample taken October 24 (Figure 4-8 and Figure 4-9).

Table 4-3 W80 Sediment Quality Results

Sample location		ISQG	W80-1A	W80-2A	W80-1B	W80-2B	W80-1C	W80-2C	W80 - 1/3	W80 - 2/3	W80 - 3/3
Sampling Date			12-Jul-09	12-Jul-09	12-Jul-09	12-Jul-09	12-Jul-09	12-Jul-09	24-Oct-09	24-Oct-09	24-Oct-09
Lab Report			A936217	A936217	A936217	A936217	A936217	A936217	A961092	A961092	A961092
Physical Properties	**Units**										
<200 mesh (>.075 mm)	%	-	94.3	79	83.5	64.8	87.4	84	82.3	33.4	63.8
>200 mesh (<.075 mm)	%	-	5.7	21	16.5	35.2	12.6	16	17.7	66.6	36.2
Misc. Inorganics											
Soluble (2:1) pH	pH Units	-	7.01	6.95	6.82	7.13	6.91	7.02	7.2	7.22	7.13
Organics											
Total Organic Carbon	g/kg	-	10	28	17	12	14	7.9	14	81	13
Total Metals by ICPMS											
Total Aluminum (Al)	mg/kg	-	11200	12200	12400	11500	11800	10800	16200	17100	17700
Total Antimony (Sb)	mg/kg	-	0.4	0.3	0.3	0.2	0.3	0.3	0.5	0.3	0.5
Total Arsenic (As)	mg/kg	5.9	5	3.5	3.7	2.7	4.4	4.2	**18.4**	**11**	**15.9**
Total Barium (Ba)	mg/kg	-	182	192	171	165	153	222	687	532	544
Total Beryllium (Be)	mg/kg	-	<0.1	0.2	0.1	0.2	0.2	0.1	0.3	0.3	0.3
Total Bismuth (Bi)	mg/kg	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2
Total Cadmium (Cd)	mg/kg	0.6	0.6	**1.21**	**1.15**	**0.66**	0.62	**0.84**	**2.5**	**1.66**	**3.04**
Total Calcium (Ca)	mg/kg	-	4120	4560	4670	4010	3950	3770	8280	6670	8690
Total Chromium (Cr)	mg/kg	37.3	32	33	31	32	34	30	**47**	**46**	**48**
Total Cobalt (Co)	mg/kg	-	10.6	11	9.4	9.7	10.3	10.4	20.7	18.1	21.7
Total Copper (Cu)	mg/kg	35.7	30.3	**42.7**	35	29.4	28.5	27.8	**62.9**	**54**	**61**
Total Iron (Fe)	mg/kg	-	23500	22700	22000	21600	24100	22000	38100	33800	37300
Total Lead (Pb)	mg/kg	35.0	7.7	8.3	8	8.5	7.6	7.4	14.1	12.4	13.2
Total Magnesium (Mg)	mg/kg	-	7220	7660	7790	7170	7850	7040	8660	9280	9820
Total Manganese (Mn)	mg/kg	-	475	446	388	476	487	787	5180	3640	3490
Total Mercury (Hg)	mg/kg	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.070	0.060	0.090
Total Molybdenum (Mo)	mg/kg	-	0.4	0.5	0.3	0.3	0.4	0.5	2.5	2.4	1.5
Total Nickel (Ni)	mg/kg	-	26	28	25.6	25	26.9	24.5	47	41.9	48.2
Total Phosphorus (P)	mg/kg	-	762	700	671	761	776	757	1100	1060	1270
Total Potassium (K)	mg/kg	-	436	420	438	399	380	386	846	736	972
Total Selenium (Se)	mg/kg	-	1	1	1.2	0.6	0.7	0.8	3.5	2.8	3.7
Total Silver (Ag)	mg/kg	-	0.11	0.15	0.14	0.1	0.09	0.1	0.35	0.29	0.37
Total Sodium (Na)	mg/kg	-	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total Strontium (Sr)	mg/kg	-	15.8	15.4	14.6	15.8	13.8	14.7	30.4	25.1	30
Total Thallium (Tl)	mg/kg	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	0.08	0.11
Total Tin (Sn)	mg/kg	-	0.2	0.1	0.1	0.1	<0.1	<0.1	0.5	0.3	0.4
Total Titanium (Ti)	mg/kg	-	545	527	626	617	600	507	331	433	329
Total Vanadium (V)	mg/kg	-	31	30	30	30	32	29	48	43	46
Total Zinc (Zn)	mg/kg	123	96	103	98	92	97	97	**166**	**144**	**199**
Total Zirconium (Zr)	mg/kg	-	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.6

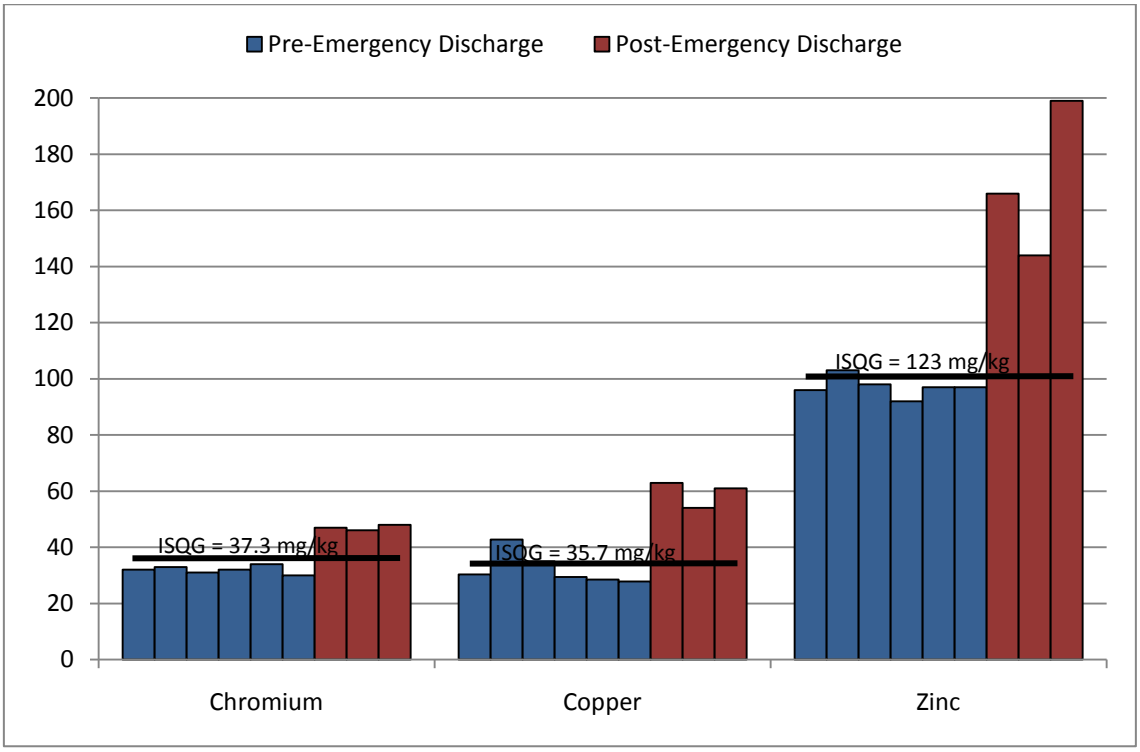


Figure 4-8 W80 Sediment Quality Results – Chromium, Copper, Zinc

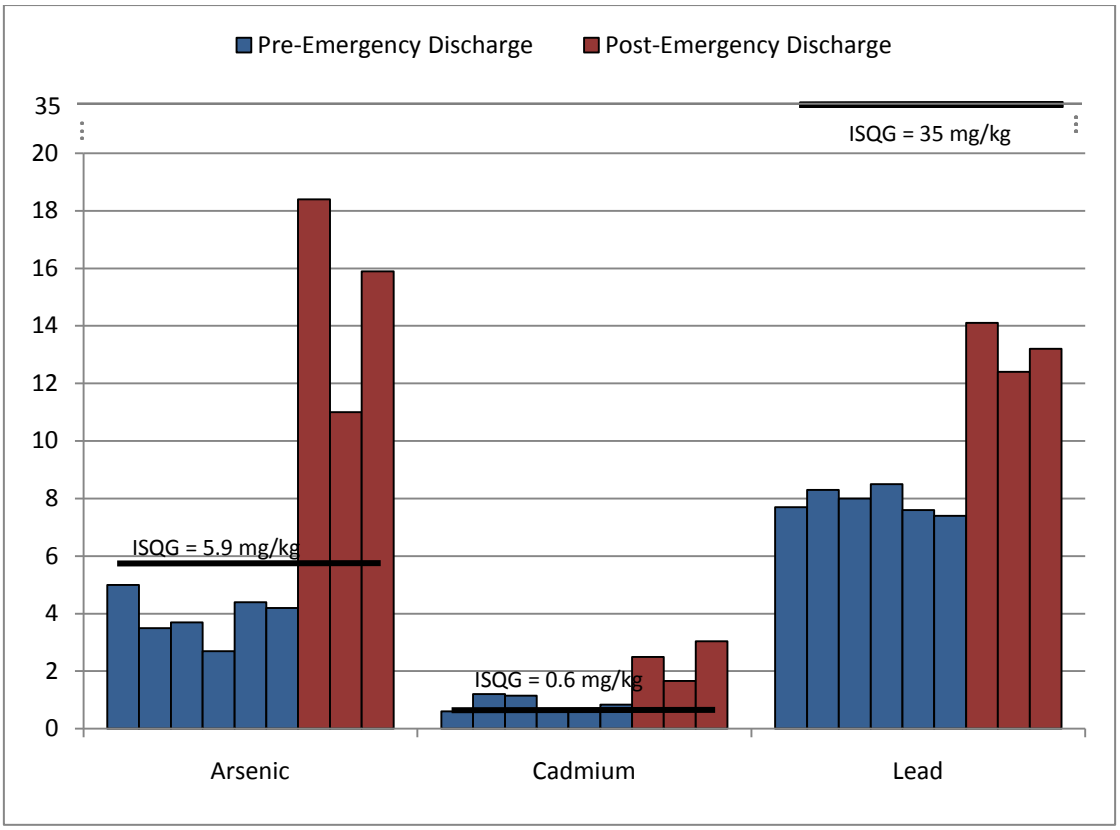


Figure 4-9 W80 Sediment Quality Results – Arsenic, Cadmium, Lead

4.4 Benthic Invertebrates

Sampling for the purposes of metal concentration analysis from benthic invertebrate tissue was conducted July 15 and October 24. Although a duplicate analysis from each sample was required in Amendment 1, there was not enough sample to collect to allow for duplication. The results of the analysis are presented in Table 4-4, and Figure 4-10 presents the metal parameters limited by the B Licence. Most parameters analyzed decreased in the October 24 sample from the July 15 sample, with the exception of antimony, mercury, molybdenum, selenium and zinc. Beryllium, bismuth, thallium, and tin were below laboratory detection limits for both sample periods. The full lab reports for results presented in Table 4-4 are provided in Appendix C.

Table 4-4 W80 Benthic Invertebrate Tissue Quality Results

Sample location	W80	W80
Sampling Date	L793531	L834837
Lab Report	15-Jul-09	24-Oct-09
Parameter (mg/kg wwt)		
Aluminum	1550	125
Antimony	0.016	0.039
Arsenic	0.594	0.272
Barium	35.6	14
Beryllium	<0.10	<0.10
Bismuth	<0.030	<0.030
Cadmium	0.596	0.47
Calcium	932	418
Chromium	4.86	0.61
Cobalt	1.24	0.211
Copper	6.01	4.84
Lead	0.658	0.199
Lithium	1.4	0.1
Magnesium	1140	322
Manganese	149	64.9
Mercury	0.0079	0.0128
Molybdenum	0.238	0.253
Nickel	4.6	0.5
Selenium	0.86	1.88
Strontium	3.7	1.63
Thallium	<0.010	<0.010
Tin	<0.050	<0.050
Uranium	0.156	0.075
Vanadium	3.33	0.49
Zinc	38.2	62.9

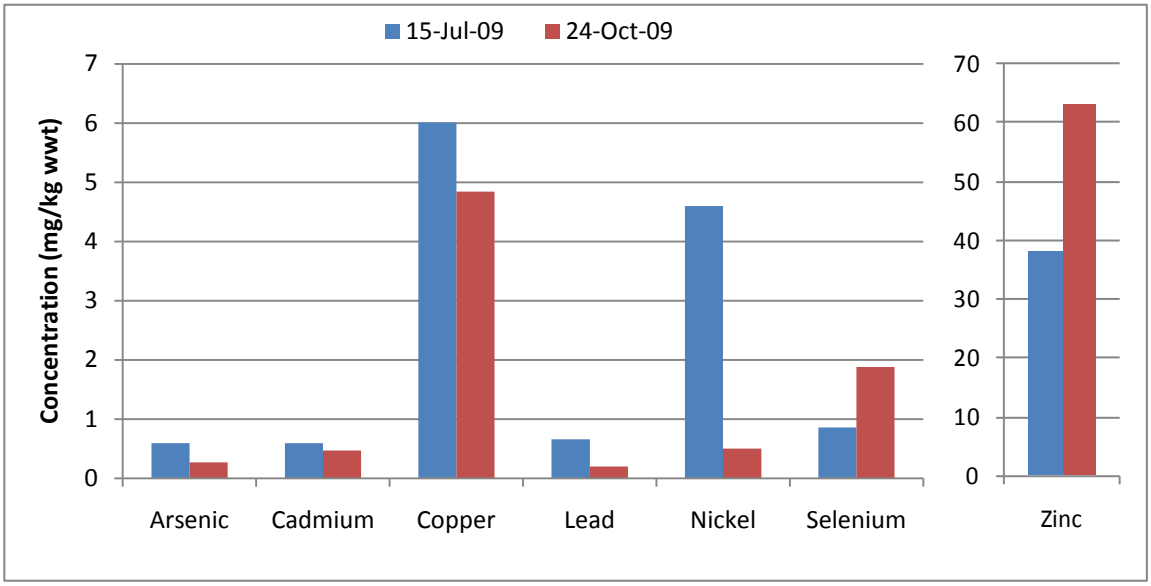


Figure 4-10 W80 Benthic Quality Results

4.5 Bioassays

Rainbow trout, *Daphnia magna*, and *Ceriodaphnia dubia* bioassays were taken bi-weekly at the end of the discharge pipe and at station W80 during Phase 2 of the emergency discharge, and at the end of the discharge pipe at the mid-point of Phase 1, as required. Results of the Rainbow trout bioassays were presented above in Section 3.4.5, and results for the *Daphnia magna* and *Ceriodaphnia dubia* bioassays are presented in Table 4-5 and Table 4-6, respectively. The full lab reports are provided in Appendix D. The sample taken on September 21 was the only sample that did not pass for *Daphnia magna* and *Ceriodaphia dubia* testing.

Table 4-5 *Daphnia magna* Bioassay Results

Lab Report	Sample Identification	Sample Collection Date (Time)	*Daphnia magna* 48-h LC_{50} [% vol/vol]
2-11-263-219-09-001	UTMD4	20-Jun-09 (10:00 AM)	>100
2-11-263-219-09-002	UTMD4 - WTSP 5T	24-Jun-09 (05:15 PM)	>100
2-11-263-219-09-003	UTMD4 - WTSP 2T	29-Jun-09 (09:00 PM)	>100
2-11-263-219-09-004	UTMD4 - WTSP 1T + 5T	3-Jul-09 (09:00 PM)	>100
2-11-263-219-09-005	UTMD4 - WTSP 1T	7-Jul-09 (10:00 AM)	>100
2-11-263-219-09-006	UTMD4	10-Jul-09 (08:00 AM)	>100
2-11-263-219-09-007	UTMD4 - WTSP 4T	16-Jul-09 (08:20 AM)	>100
2-11-263-219-09-008	UTMD4 - WTSP 4T + 5T	14-Jul-09 (02:00 PM)	>100
2-11-263-219-09-011	UTMD4 - WTSP 4T	31-Jul-09 (05:50 PM)	>100
2-11-263-219-09-012	UTMD4 - WTSP 1T	17-Aug-09 (12:03 AM)	>100
2-11-263-219-09-013	UTMD4 - WTSP 5T	1-Sep-09 (08:00 AM)	>100
2-11-263-219-09-014	UTMD4 - WTSP 4T	21-Sep-09 (01:00 PM)	**<100**
2-11-263-219-09-015	W80	2-Oct-09 (02:30 PM)	>100
2-11-263-219-09-016	UTMD4 - WTSP 1T	2-Oct-09 (07:30 PM)	>100

Table 4-6 *Ceriodaphnia dubia* Bioassay Results

Lab Report	Sample Identification	Sample Collection Date (Time)	7-day IC_{25} or EC_{25} [% vol/vol]	7-day IC_{50} [% vol/vol]	7-day LC_{50} [% vol/vol]
2-11-0691	UTMD 4 - WTSP5T	1-Sep-09 (08:00 AM)	>100	-	>100
909230433	UTMD4 - WTSP 4T	21-Sep-09 (01:00 PM)	**14.6 (13.4 - 14.9)**	**17.5 (16.6 - 17.7**	**17.7 (14.2 - 22.0)**

5 Discharges under Schedule 3

Other discharges conducted under Schedule 3 of the *Waters Act: Waters Regulation* in 2009 were conducted from the land treatment facility (LTF) and from the temporary waste rock storage pad (runoff collected within the lined pad) following submissions to Yukon Environment Environmental Programs and Water Resources (Table 5-1). The discharges, including location, date discharged, volume discharged and submission date are summarized in Table 5-1, and the notices of discharge (*Schedule 3: Waste Deposit without Licence* forms) were provided in the respective monthly SNM Reports. The total volume discharged in 2009 from the LTF sump and the waste rock pad was ~1050 m^3.

Table 5-1 2009 Discharges for Infrastructure not outlined in the Licence

Location	Submission Date	Date of Discharge (2009)	Volume Discharged
Waste rock pad	1-May-09	2-3 May	150 m^3
LTF sump	20-May-09	29-31 May	300 m^3
LTF sump	15-Jul-09	24-26 July	300 m^3
LTF sump	9-Sept-09	18 September	300 m^3

6 Summary

The activities that occurred in 2009 that pertain to the Licence include:

- The use of water from Go Creek, Wolverine Lake, and intercepted water from underground workings,
- Care and maintenance of the underground test mine constructed in 2005 through to April 2009,
- Water treatment of underground test mine discharge prior to discharge to Go Creek,
- Water quality monitoring of surface water treatment sumps, waste rock storage area collection sump, underground test mine discharge and Wolverine and Go Creeks,
- Use of Wolverine Lake water for exploration camp consumption, and
- Deposition and storage of waste rock and ore within a lined area.

Discharges under Schedule 3 of the Waters Act from the land treatment facility collection sump and waste rock storage area pad were also conducted in 2009.

The overall 2009 flow rate from the underground mine was ~176 m^3/day, with a maximum of 277 m^3/day achieved in summer 2009, and a low flow of ~92 m^3/day prior to the commencement of mining in April 2009.

45,472 m^3 of treated effluent was discharged to the headwaters of Go Creek following successful treatment using sulphuric acid and ferric sulphate. No more discharges to the environment will be conducted under this Licence, as the majority of the water management and treatment infrastructure (with the exception of the temporary waste rock and ore storage facility) is now covered under Type A Water Licence QZ04-065.

Two emergency amendments under the Licence were issued to the Licence in 2009, and the amendments were completed October 7th 2009 once the discharge pipeline to the tailings storage facility was operational. Monitoring for water quality, sediment quality, benthic tissue quality and acute and chronic bioassay studies were conducted under the emergency amendment.

1050 m^3 was discharged from infrastructure not covered in the Licence, as allowed by the *Waters Act: Waters Regulation*, *Schedule 3: Waste Deposit without Licence*.

In 2010, the surveillance network monitoring program will be continued, and the results presented in monthly *Surveillance Network Monitoring* Reports, with annual results summarized in early 2011.

Appendix A Water Quality Results Full Lab Reports 2009

See attached disk.

Appendix A includes the following full lab reports:

Maxxam Analytics Lab Reports

A902628	A949299
A906233	A949310
A910072	A952632
A913452	A956923
A914684	A959421
A916243	A961093
A917065	A964560
A919550	A965984
A923809	A965987
A928455	A967526
A930270	A969041
A935359	A969045
A936094	A971785
A937394	A973030
A937829	A973034
A940905	A973517
A942402	

ALS Environmental Lab Reports

L723950	L756210	L776250	L794085	L817281
L724976	L757507	L776269	L795112	L819238
L726992	L758505	L776271	L796785	L819239
L728876	L758856	L777015	L798602	L822121
L731399	L760126	L777724	L800385	L822123
L733412	L760127	L777732	L802424	L825161
L734993	L761082	L779229	L803137	L825163
L737019	L761912	L781062	L804460	L826455
L737864	L761917	L781375	L805528	L826458
L739201	L764400	L783091	L807605	L828801
L741201	L764798	L784053	L808970	L832293
L744455	L767672	L786325	L811554	L834841
L745996	L767674	L786906	L811564	L837071
L748223	L769270	L787793	L811566	L847377
L750482	L770935	L790447	L813565	L849078
L752466	L772029	L790698	L814703	L851757
L754901	L774016	L792238	L814805	
L756017	L776247	L793547	L816256	

Appendix B Sediment Quality Results Lab Reports 2009

See attached disk.

Appendix B includes the following full lab reports:

A936217

A942363

A961092

Appendix C Benthic Tissue Lab Reports 2009

See attached disk.

Appendix C includes the following full lab reports:

L793531

L834837

Appendix D Bioassay Results 2009

See attached disk.

Appendix D includes the following full lab reports:

Rainbow Trout	***Daphnia magna* and *Ceriodaphnia dubia***
2-11-200-219-09-001	2-11-263-219-09-001
2-11-200-219-09-002	2-11-263-219-09-002
2-11-200-219-09-003	2-11-263-219-09-003
2-11-200-219-09-004	2-11-263-219-09-004
2-11-200-219-09-005	2-11-263-219-09-005
2-11-200-219-09-006	2-11-263-219-09-006
2-11-200-219-09-009	2-11-263-219-09-007
2-11-200-219-09-010	2-11-263-219-09-008
2-11-200-219-09-011	2-11-263-219-09-011
2-11-200-219-09-012	2-11-263-219-09-012
2-11-200-219-09-013	2-11-263-219-09-013
2-11-200-219-09-014	2-11-263-219-09-014
2-11-200-219-09-015	2-11-263-219-09-015
2-11-200-219-09-016	2-11-263-219-09-016
2-11-200-219-09-017	2-11-0691
2-11-200-219-09-018	909230433
2-11-200-219-09-019	
2-11-200-219-09-020	
2-11-200-219-09-021	
2-11-200-219-09-022	
2-11-200-219-09-031	
2-11-200-219-09-032	
2-11-200-219-09-033	
2-11-200-219-09-034	
2-11-200-219-09-035	
2-11-200-219-09-036	

Appendix E Yukon Environment letter – May 22, 2009

See attached disk.

Appendix F Emergency Amendment Application – July 9, 2009

See attached disk.

Appendix G Amendment 1 to Licence QZ01-051 (including typographical correction)

See attached disk.

Appendix H Emergency Amendment Application – August 11, 2009

See attached disk.

Appendix I Amendment 2 to Licence QZ01-051

See attached disk.

Appendix D: Humidity Cell Update Reports

- MEA – 2009 Tailings Humidity Cell Testwork
- AMEC – 2009 Ore, Waste, Paste Humidity Cell Testwork

Marsland Environmental Associates

March 8, 2010

Yukon Zinc Corp.
#701, 475 Howe St.,
Vancouver, BC, V6C 2B3

Ms. Pamela O'Hara, R.P.Bio.
Manager, Environment and Community Affairs

Dear Ms. O'Hara:

Wolverine Tailings Humidity Cells Update

The following provides a summary of the Wolverine tailings humidity cells to December 29, 2009. The Overall Ore Composite (OC) and Overall Diluted ore composite (OD) tailings humidity cells have run an additional 34 weeks since the last update in May 2009 at approximately weeks 205 and 199, respectively. Testing has now reached weeks 238 and 232, respectively.

1. SUMMARY OF HUMIDITY CELL RESULTS

At last update, the pH range for both cells had narrowed to between pH 6.5 and pH 6.9 and appeared to be stabilizing within this range. Since then, the pH of both cells dropped slightly and has begun to show more scatter with ranges between pH 6.3 and pH 7.0 for Cell OC and between pH 6.4 and pH 6.7 for Cell OD (see Figure 1.1).

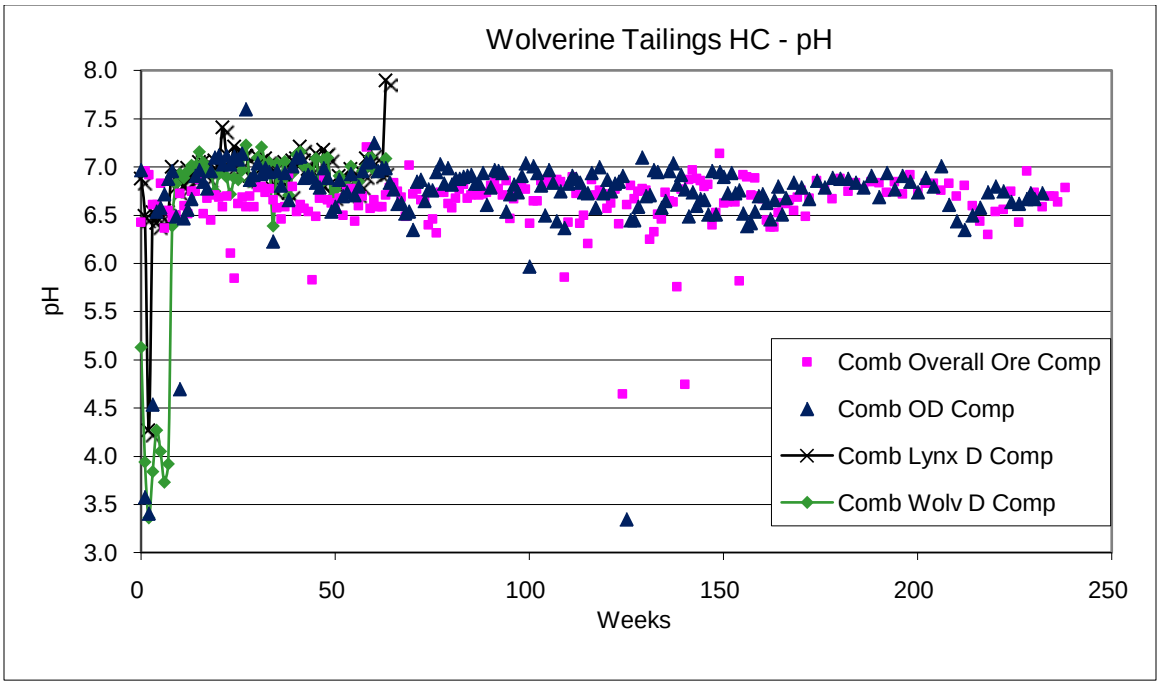


Figure 1.1 Wolverine Tailings Humidity Cells - pH

Acidity and alkalinity production rates remain low in both cells, consistent with the near-neutral pH and limited by calcite solubility. However, the alkalinity production rate in Cell OC has shown a decline since the last update.

The Sulphate production rate for Cell OD has shown a slight decline over the entire testing period. However, this decline has become more evident since week 113 dropping from 232 mg/kg/wk to 116 mg/kg/wk at week 162. Cell OC shows the sulphate production rate remaining relatively constant (fluctuating around 100 mg/kg/wk) from week 70 through week 141. Since approximately week 142, both cells have shown less overall noise week to week. Between week 145 and 200, the sulphate production in Cell OC remained above 100 mg/kg/wk while in the most recent testing period (between weeks 203 and 237) the sulphate production has dropped to below 100 mg/kg/wk and generally remained at about 65 mg/kg/wk. Cell OD continues the trend noted at last update bouncing around 150 mg/kg/wk sulphate production.

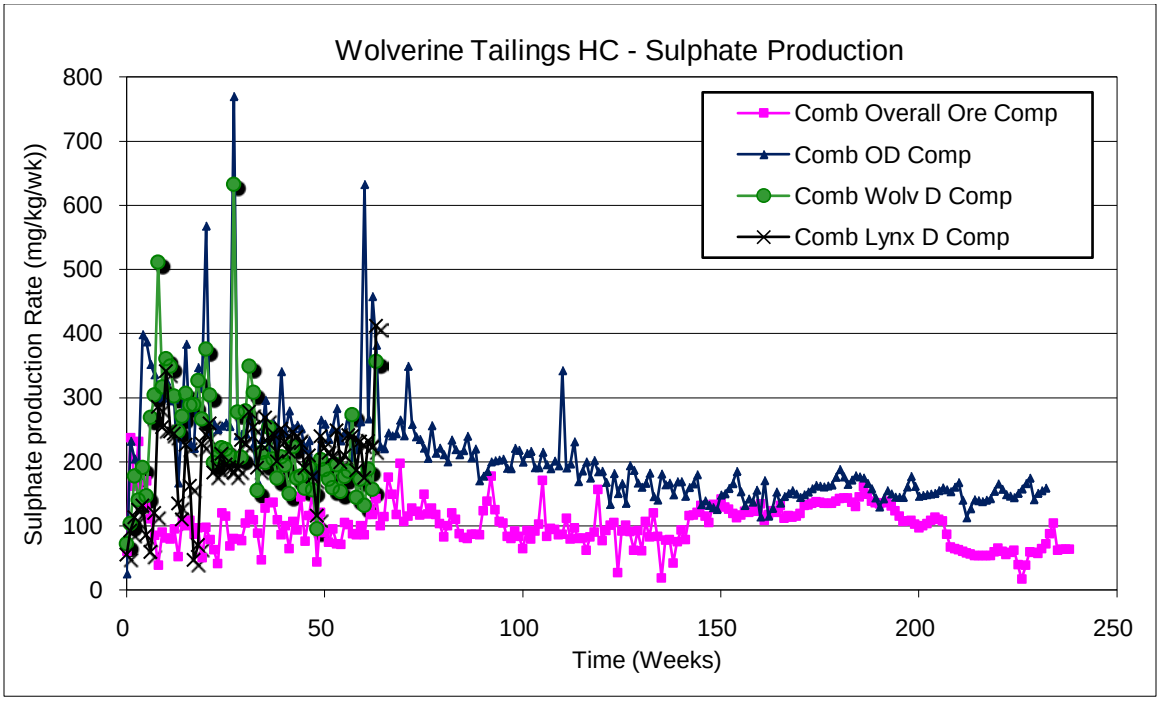


Figure 1.2 Wolverine Tailings Humidity Cells – Sulphate Production

Both cells show an abundance of total sulphur remaining (97.2% and 94.0% for cells OC and OD, respectively) with initial sulphate sulphur contents of 67.7% and 22.1% remaining for cells OC and OD, respectively. Sulphate flushing is occurring at a slow rate given that 34 weeks ago sulphate sulphur remaining was 70.6 % and 30.5% for Cells OC and OD, respectively.

Table 1.1 summarizes the range in loading rates for Cu, Se and Zn for the 34 cycles leading up to the latest data collection on December 29, 2009.

Table 1.1 Range in Leachate Elemental Loading Rate over past 34 weeks

Element	Cell OC Loading Rate (mg/kg/wk)	Cell OD Loading Rate (mg/kg/wk)
Cu	0.0015 - 0018	0.002 – 0.019
Se	0.012 – 0.039	0.10 – 0.15
Zn	0.80 – 2.1	1.6 – 4.0

The current Zn loading rate of 2.1 mg/kg/wk in Cell OC is well below the initial flush value of 8.9 mg/kg/wk. Since the last update at week 202 where the zinc loading rate was 3.3 mg/kg/wk, Cell OC has shown zinc loading rates at or below 2.1 mg/kg/wk with the lowest rate of 0.8 mg/kg/wk. Cell OD however, shows zinc loading rates of 4.0 mg/kg/wk, nearly equivalent to the initial flush rate of

4.3 mg/kg/wk. There has been a definite increasing trend in loading rates since the last update at week 190 (see Figure 1.3).

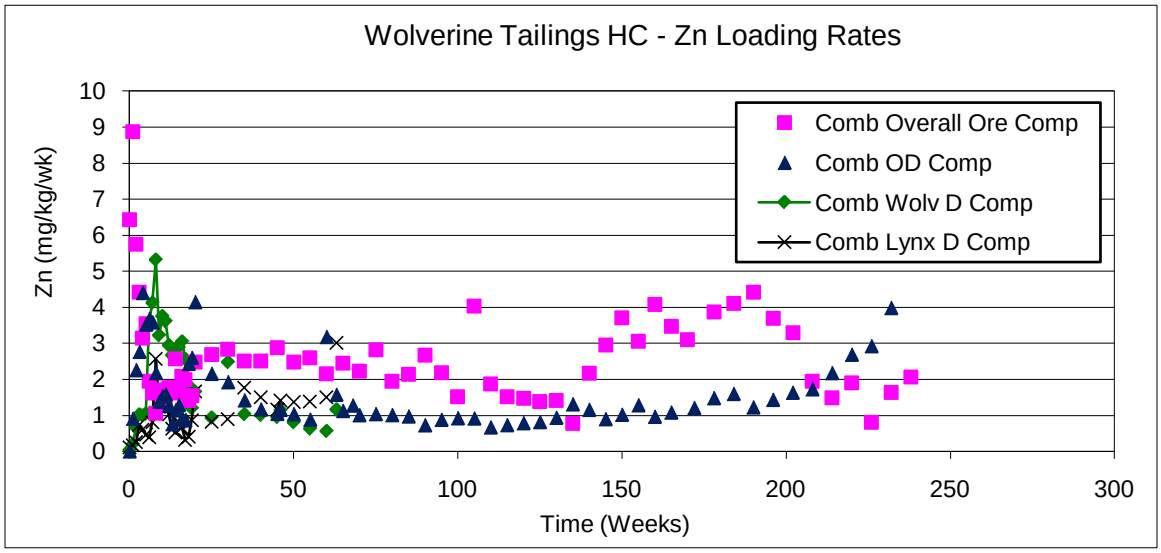


Figure 1.3 Wolverine Tailings Humidity Cells - Zn Loading Rates

Se loadings have remained relatively constant over the testing period for both cells since the initial flush (see Figure 1.4). Cell OD is currently showing a slight increasing trend in Se loading rates since the last update; however, without additional data it is unclear how long this increase will be sustained and to what maximum.

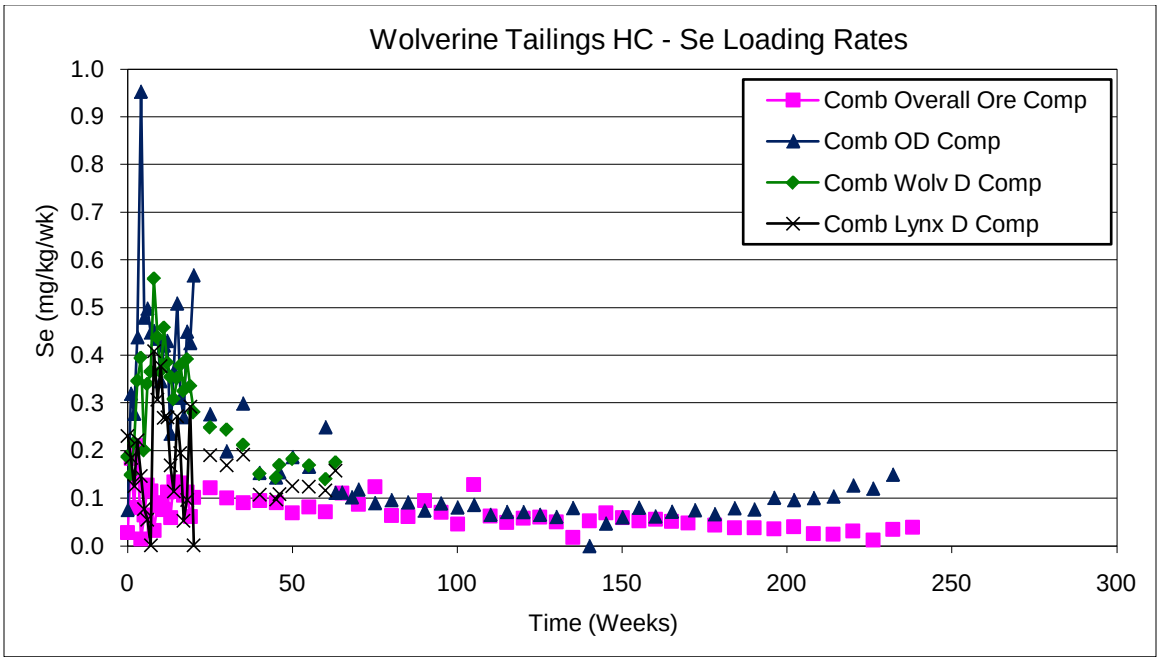


Figure 1.4 Wolverine Tailings Humidity Cells - Se Loading Rates

The most striking change over the past 8 months is the dramatic increase in copper loading rates in the OD cell leachate (see Figure 1.5). Despite any apparent change in leachate pH, the copper loading rate has risen from around 0.0015 mg/kg/wk to 0.019 mg/kg/wk, with a steady upwards trend over the last 7 samples (42 weeks). The timing of this trend is consistent with the change in Zn loading over the same time period. The trend in Cu loadings is even more pronounced, since the values are well outside the historic range, where the previous maximum had been 0.0048 mg/kg at initial flush. The Cu loadings are still well below the levels seen for Se and Zn since cell inception.

Copper loading in Cell OC remains stable within a narrow range at a low level.

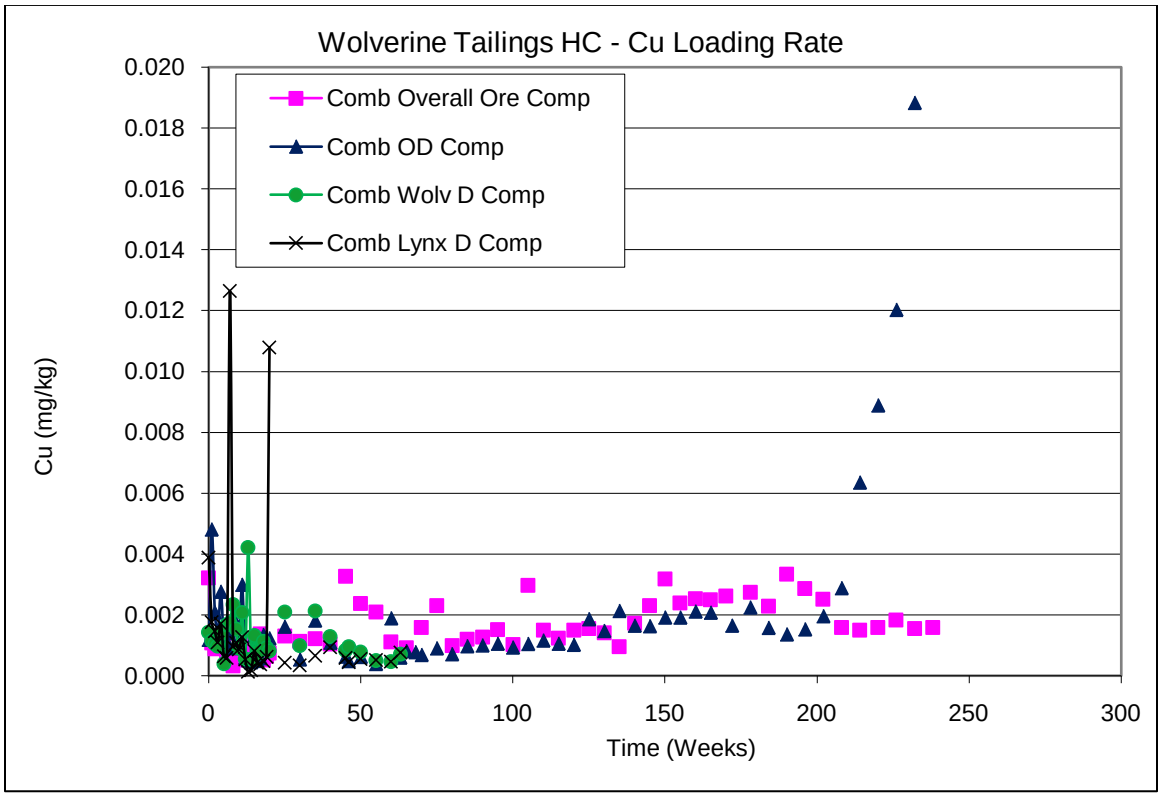


Figure 1.5 Wolverine Tailings Humidity Cells - Cu Loading Rates

Table 1.2 shows that in the OC cell, of the original Se and Zn contained within the sample used to charge the humidity cell, 4% and 3%, respectively have been flushed out. While, for the OD cell, 12% and 6% of the Se and Zn, respectively have been removed through weekly cell flushing. These low percentages at this stage in the program suggest that Se and Zn leaching will continue for an extended period.

Table 1.2 Percent Removal of Original Se and Zn

	HEAD ICP Se (mg/kg)	Total Se Released Over Humidity Cell Period (mg/kg)	% Se Removed	Head ICP Zn (mg/kg)	Total Zn Released Over Humidity Cell Period (mg/kg)	% Zn Removed
OC	364	15	4	19,000	608	3
OD	261	32	12	5,500	344	6

1.1 Time to Onset of ARD

In humidity cell testing, it is commonly assumed that sulphide oxidation is not taking place at a substantial rate until flushing of all of the original sulphate measured during the pre-test ABA characterization is complete. Cells OC and

OD are showing measurable sulphate in the leachate collected weekly. It is likely that a majority of the sulphate measured is due to flushing of the original sulphate within the sample with some sulphate produced due to sulphide oxidation. It is difficult to assess, however, what portion of the sulphate produced is due to sulphide oxidation. Therefore, the assumption is made that all sulphate is from flushing as explained above.

The time to sulphate sulphur depletion has been estimated to be 2 and 14 years for Cells OD and OC, respectively. Approximately 80% of the initial sulphate has been removed from the OD cell; however, only 30% has been removed from the OC cell. As mentioned, this assumes that all the sulphate measured in the solution is due to flushing of the original sulphate. It is expected that eventually the sulphide oxidation rate would begin to increase with NP depletion and the onset of acidic conditions.

The time to Neutralization Potential (NP) depletion is required to estimate the time to onset of ARD within a laboratory humidity cell. However, the initial sulphate is still flushing from the cells, so it is not possible to ascertain what portion of the sulphate released is from sulphide oxidation. This renders the Carbonate Molar Ratio calculations invalid and precludes an accurate calculation of the time for NP depletion. Even if all the current sulphate production in Cell OC from the last 34 weeks (the point where sulphate production dips below the 100 mg/kg/wk rate and appears to stabilize at an average of 65 mg/kg/wk), were to have been from sulphide oxidation, it would take another 18 years for the NP to become depleted in the laboratory while sulphide oxidation would continued.

Based on these estimates, acid generation would not occur in the Wolverine tailings for many years. Nevertheless, elevated concentrations of selenium and zinc can be expected in any water contacting the tailings solids.

2. RECOMMENDATIONS FOR TESTWORK CONTINUATION

It is not expected that acidic drainage will occur within these cells for a considerable period (>3 years) after which time the magnitude of associated elemental leaching rates could be used in further modeling and mitigation planning at the Wolverine site.

Recent changes in the behavior of both Cells OC and OD suggest that continuing to run both cells will be valuable. Both cells have shown the pH to become less stable with a more undefined trend. The sulphate production rate, alkalinity production rate and zinc loading rates in Cell OC have all decreased. Cell OD shows stable sulphate production rates, decreasing alkalinity production rates and increasing trends in copper and zinc production rates. It also appears more

likely to flush the initial sulphate sooner and thus is more likely to achieve NP depletion sooner. Consequently, both of the cells are recommended to continue for at least an additional year to monitor the current trends in sulphate and especially zinc production.

The measurement of physical parameters (including pH, alkalinity, acidity, conductivity and SO_4 were reduced to bi-weekly and elemental analysis now takes place every sixth cycle. Further reduction in analysis could consider reducing the intermediate parameters to every fourth cycle (with leachate collection measured weekly) and the elemental analysis reduced to every eighth cycle. However, with the recent changes in zinc loading rates for both cells as well as the change in copper in the Cell OD, it is recommended that the sampling frequency remain as is, until the next update.

Yours truly,
Marsland Environmental Associates Ltd.



Bevin Harrison, M.A.Sc., P.Geo.
Senior Environmental Geoscientist

/attach – digital version only of data compilation spreadsheet

March 17, 2010
TC53920

Ms. Pamela O'Hara
Yukon Zinc Corporation
701-475 Howe Street
Vancouver BC
V6C 2B3

Dear Ms. O'Hara:

Re: Wolverine Project Update: Shutdown of 17 Humidity Cells and Update of Continuing Humidity Cells

1.0 INTRODUCTION

This report summarizes the final leach data of 17 humidity cells from the Wolverine Project humidity cell testing program and the most recent update of the 7 humidity cells still in operation. Results from the humidity cells were last reported in August 2008 (AMEC, 2008a). Following recommendations made in November of 2008 (AMEC, 2008b) 17 cells were shut down on February 19, 2009 and operation of seven cells was continued (Table 1).

Samples of Wolverine Project mine rock, ore, neutralization potential depleted ore (NP-depleted ore), Dense Media Separation (DMS) float, and cemented paste backfill have been tested as part of the program. A total of 24 humidity cells were operated during the course of the investigation; 8 were initiated in December 2005, 5 in January 2006, 6 in February 2006, and 5 in May 2006. Descriptions of each humidity cell including static test results and test duration are summarized in Table 1.

Release rates for all cells were calculated based on the measured concentrations and volumes of leachate produced weekly by each cell. Long-term rates were determined for steady-state conditions that excluded the initial 20 weeks of data to account for the flushing of oxidation products in the samples that may have accumulated prior to testing. Results for pH, and calculated loadings for sulphate, alkalinity, acidity and regulated metals, plus $(Ca+Mg)/SO_4$ molar ratios for each material type are discussed in the following sections and shown in Figures 1 to 96.

Termination of the 17 cells followed standard procedures as outlined in the document Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia (Price, 1997).

The resulting calculated loading rates were assessed to estimate the anticipated flux of metals from the mine materials and the length of time for NP depletion and sulphide exhaustion.

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2.0 HUMIDITY CELL SHUTDOWN RESULTS

2.1 Static Testing – ABA and Elemental Analysis

Initial acid-base accounting (ABA) analyses were conducted at the ALS Chemex laboratory in Burnaby, BC. Humidity cells were operated by SGS CEMI of Burnaby, BC. For consistency, after the final rinse of the humidity cells by SGS CEMI, subsamples of the humidity cell solids were sent to ALS Chemex for final ABA analyses and the results are provided in Table 2. The following section describes the results of the final ABA analyses in comparison to the initial test results.

Paste pH

Measured paste pH of the sample materials at the commencement and closedown of the humidity cell testing period remained fairly constant and circum-neutral in most of the cells. The exception was mine wall rock sample HC 3 (Footwall rhyolite-2). The initial measured paste pH of HC 3 was 7.8, while the final measured paste pH of the humidity cell material was 4.6. Acidic conditions formed in this cell during the testing period.

Forms of Sulphur

Analyses of the initial humidity cell samples indicated that the dominant form of sulphur in the samples was sulphide sulphur, generally occurring as pyrite. However, sulphur in the form of barite ($BaSO_4$) was also reported in two of the rock types; calcite-pyrite exhalites (HC 5 and HC 6) and magnetite iron formations (HC 2 and HC 11) (AMEC, 2006).

Total sulphur, sulphate and sulphide values for both the initial and final analyses are presented in Table 2. Values of sulphate from the final humidity cell samples were generally at or below method detection limit (0.01%).

In general, the quantity of sulphide present in the final humidity cell material was similar to the initial humidity cell material. An exception was sample HC 3. The initial concentration of sulphide in sample HC 3 was 7.55%, while the final sample concentration was 3.72%. The difference in initial and final measured sulphide in the sample may reflect the relatively high average release rate of sulphate from this cell (902 mg/kg/wk).

The acid potential (AP) in the final humidity cell material was similar to the initial humidity cell material for most of the humidity cell samples. Exceptions include HC, 1, 2, 5, 11, 17, 18 and 19 where final ABA analyses reported higher AP values, which may reflect lower sulphate release rates, as well as the heterogeneity of the sample material and/or analytical variability.

Due to the substantial loss of sulphide material from HC 3, the AP of the final analysis was lower than the initial AP analysis.

Forms of Neutralization Potential

Analyses of the initial humidity cell samples indicate that the dominant forms of carbonate in the samples are ankerite ($Ca(Fe^{2+},Mg,Mn)(CO_3)_2$) and calcite ($CaCO_3$) which contribute most of the neutralizing potential (NP) in the rock (AMEC, 2006).

In general the NP of the initial ABA analyses was higher than the reported NP for the final analyses on the test residues (Table 2). Samples with higher final NP compared to the initial NP may be a result of the as well as the heterogeneity of the sample and low release rate of NP from these samples.

Acid Base Accounting (ABA)

Initial and final NP to AP ratios were compared in Table 2. In general, NP to AP ratios between initial and final samples were similar.

Elemental Analyses of Solids

The concentrations of elements of the initial analyses have been presented and compared to the final analyses in Table 3. In general, the concentrations of major elements, including aluminium, calcium, magnesium, sodium and potassium decreased in the final analyses relative to the initial analyses. Relative differences of other elements between the initial and final analyses are more difficult to generalize. Often the concentrations in the final analyses were greater than those of the initial analyses. This observation is likely a result of the very low initial concentrations of the elements present, particularly of non-ore samples, as well as the heterogeneity of the sample materials.

2.2 Kinetic Testing

Humidity cell testing was conducted at SGS CEMI (formerly Canadian Environmental and Metallurgical Inc.) according to standard humidity cell procedures outlined in the document Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia (Price, 1997). Following the last cycle of the humidity cell operation, the closedown procedure included a high volume final rinse of the cells to remove any weathering products that may have been retained in the sample. Calculated loads of retained products in the final rinse were then distributed evenly over the testing period to revise the weekly loading rates.

Calculated loads from humidity cells can be used to estimate the time to onset of ARD, calculate mass loads of various parameters, determine the rate of acid generation and to determine the release rate of metals and other parameters as a function of time. Humidity cells generally operate for a minimum period of 20 weeks, but commonly operate for periods of many months to years. Recovery and testing of the leachates commonly occurs on a weekly basis, but can be carried out at monthly or longer periods as the experimental design dictates.

pH

Measured leachate pH values throughout the testing period remained fairly constant and circum-neutral in most of the cells. The exception was sample HC 3 (Footwall rhyolite-2). The measured pH of HC 3 was below 6 since week 20, and decreased rapidly from approximately weeks 17 through 30, and maintained approximately pH 2 since week 97. The final pH of this cell was 2.4.

Sulphate

Sulphate loads from the cells remained relatively consistent during the testing period. Cell HC 3 was the exception, increasing its loading from approximately 150 mg/kg/wk to 2,000 mg/kg/wk as acidic conditions began in the cell.

Alkalinity and Acidity

Alkalinity loads were generally in the range of 10 to 50 mg/kg/wk from the tests with the exception of a few cells (HC 3, HC 4 and HC7).

Acidity loadings were also generally consistent in the cells falling between 1 to 4 mg/kg/wk, with the exception of HC 3, which showed steadily increasing acidity loads from weeks 10 to 120.

Molar Ratio of $(Ca+Mg)/SO_4$

Molar ratios of $(Ca+Mg)/SO_4$ generally were consistent or decreased over the course of the investigation, ranging from less than one to about 2. Exceptions include the DMS float samples with $(Ca+Mg)/SO_4$ ratios ranging from five to seven, and the mine rock samples with exceptionally variable $(Ca+Mg)/SO_4$ ratios ranging from less than one to ten in isolated incidences.

Metals

In general, the average metal release rates for the rock types did not change notably from the 2008 reporting period to termination of the cells. In most cells the release rates decreased in the final reporting period relative to the previous reporting period.

3.0 UPDATE ON OPERATING HUMIDITY CELLS

Release rates from the operating humidity cells were last reported on August 28, 2008. A subsequent memorandum (issued November 19, 2008, AMEC, 2008b) recommended the continuation of four mine rock humidity cells (HC 4, HC 6, HC 7 and HC 10), one NP-depleted ore cell (HC 21) and the two tailings paste backfill cells (T1 and T2).

Release rates have been calculated based on the weekly measured concentrations and volumes of leachate produced weekly by each cell. For the humidity cells that are currently in operation, the results for pH, and calculated loadings for sulphate, alkalinity, acidity and regulated metals, plus $(Ca+Mg)/SO_4$ molar ratios for each material type are discussed in the

following sections. The discussion excludes the initial 20 weeks of data to account for cell stabilization and the flushing of accumulated oxidation products from the samples.

pH

Measured pH values for the majority of the mine rock samples have remained circum-neutral to alkaline throughout the humidity cell testing period. Measured pH values for HC 7 have continued to decrease since approximately week 130 (Figure 81). The most recent measured pH level for HC 7 was 4.6.

Since the last update, the pH level of NP-depleted ore sample (HC 21) has continued to decrease (Figure 33). The leachate has gone acidic; the most recent pH value is 4.4.

The pH values of the two paste backfill humidity cell samples have remained circum-neutral throughout the test period, ranging from 6.7 to 8.2 (Figure 65).

Alkalinity and Acidity

Alkalinity loads from the mine rock samples, HC 6 and HC 10, have remained relatively steady throughout the test period, ranging from 13.8 to 43.4 mg/kg/wk (Figure 82). Since the last update, alkalinity loads from HC 4 and HC 7 have continued to decrease, reaching loads of 4.0 and 0.54 mg/kg/wk, respectively.

Alkalinity loads from the NP-depleted ore sample (HC 21) have continued to decrease during the test period (Figure 34). The most recent alkalinity load was 0.05 mg/kg/wk.

Alkalinity release rates from the paste backfill samples have slowly continued to increase since the last update showing little variability in the weekly testing (Figure 66).

Acidity release rates from mine rock samples have generally slowly increased since the initial 20 week decrease in acidity release rates. Since the last update, acidity release rates in cells HC 4, 6 and 10 have varied from 0.7 to 6.0 mg/kg/wk, with an average of 1.8 mg/kg/wk (Figure 83).

Acidity release rates from the NP-depleted ore cell (HC 21) have continued to increase since the last update, with the most recent acidity release rate at 58 mg/kg/wk (Figure 35).

Acidity release rates from the paste backfill humidity cell samples showed little variability throughout testing, ranging since the last update between 0.9 to 6.7 mg/kg/wk with an average release rate of 2 mg/kg/wk (Figure 67).

Sulphate

Sulphate release rates for the majority of the mine rock cells have increased slowly since week 150 while remaining below approximately 50 mg/kg/wk. The exception was sulphate release rates from HC 6 have remained consistently higher than the other humidity cells still in operation, ranging from 24.7 to 75.1 mg/kg/wk, with an average of 52.5 mg/kg/wk (Figure 84).

Sulphate release rates for the NP-depleted ore cell (HC 21) have steadily increased since week 135. Sulphate release rates from this cell are currently on the order of 100 mg/kg/wk (Figure 36).

At the time of the last humidity cell update in August 2008, sulphate release rates from the paste backfill humidity cells (T1 and T2) had decreased to below 100 mg/kg/wk. With the exception of a few irregularities, sulphate release rates have remained below 100 mg/kg/wk, since around week 100 (Figure 68).

Molar Ratio of $(Ca+Mg)/SO_4$

Molar ratios of $(Ca+Mg)/SO_4$ for most of the mine rock humidity cells have been relatively steady since about week 170 ranging from 0.7 to 1.9 (Figure 96). The exception is HC 10, with ratios of $(Ca+Mg)/SO_4$ ranging from 1.9 to 3.3 since week 170.

The $(Ca+Mg)/SO_4$ ratio steadily decreased since week 116 from NP-depleted HC 21 (Figure 48). The last reported week of analyses recorded a ratio of 0.31.

Since the last update, the molar ratio of $(Ca+Mg)/SO_4$ from the paste backfill cells has ranged from 0.18 to 2.6 (Figure 80).

Metals

In general, metal release from the mine rock samples occurred at relatively steady release rates or at method detection limit concentrations (Figures 85 through 95). Exceptions were observed for humidity cells HC 4 and HC 7.

Metal release rates were observed to increase in HC 7 for aluminum, cadmium, copper, iron, lead, nickel and zinc.

Metal release rates were observed to increase in HC 4 for cadmium, nickel, zinc and a small increase in aluminum.

Release rates for aluminum, cadmium, copper, nickel, lead and zinc continued to increase from the NP-depleted ore cell HC 21 (Figures 37 through 47). The release rate of arsenic in this cell decreased to approximately 0.0001 mg/kg/wk since week 179.

Metal release rates from the paste backfill humidity cells continue to slowly decrease or appear to have reached a steady state for the eight most recent weeks of analyses (Figures 69 through 79). Arsenic loads decreased significantly (to below method detection limit values) in the last few weeks of testing.

4.0 ESTIMATES OF SULPHIDE AND NP DEPLETION

Estimates of sulphide and NP depletion are used to assist in the prediction of whether or not a particular mine material may generate net acidity in the future. Net acid generation is assumed to begin once the available NP in a sample is exhausted. Results from humidity cell testing are

used to determine the rates of depletion and time to exhaustion. Generally, extrapolation of these laboratory results to a mine setting cannot be done directly; laboratory testing tends to overestimate the rates of sulphide and NP depletion compared to the underground environment. However, the results of this exercise can be used to provide a general sense of the possible duration and relative time difference of sulphide and NP exhaustion.

Estimates of sulphide and NP exhaustion were calculated for all 24 humidity cells (Table 4). Time to sulphide exhaustion was calculated using the sulphate release rates from each of the humidity cells and the amount of total sulphur as determined by the initial ABA static testing analyses. Time to sulphide exhaustion for the terminated cells was calculated based on release rates for the period ending February 19, 2009. Time to sulphide exhaustion for the cells still in operation was calculated based on release rates for the period ending January 28, 2010. Estimates calculated on the most recent period include release rates incorporating the high volume final rinse for those cells that were terminated. Estimates of sulphide exhaustion times for each humidity cell are presented in Table 4.

Estimates of NP exhaustion were based on the calculated calcium plus magnesium depletion rates (based on the measured and predicted loss of calcium and magnesium, and assuming that all NP consists of calcium and magnesium carbonates) and the initial amount of NP measured in each sample. NP depletion calculations accounted for unavailable-NP, where applicable. Estimates calculated on the most recent period include release rates incorporating the final rinse for the terminated cells.

In general, the majority of the humidity cell samples were predicted to exhaust NP prior to the exhaustion of AP. The mine rock samples and ore samples had predicted NP exhaustion times on the order of a decade to several decades.

An exception to this was cell HC 3, with a predicted NP exhaustion of less than one year. Exposure of this type of material within the mine could result in the formation of acidic conditions. However, current information from the mine suggests that this type of material is limited in volume and distribution.

The NP-depleted ore samples (HC 20, 21, and 22) were calculated to have NP exhaustion periods of less than one year to two and half years.

The cemented tailings backfill cells (T1 and T2) have an estimated NP exhaustion period of approximately 5 years.

5.0 SUMMARY

- Comparison of the initial ABA analyses and the final rinse on the terminated cells suggest that there was not appreciable residue retention in the cells during their operation.

- Sulphate release rates of most of the cells have remained generally constant and below 100 mg/kg/wk after the initial 20 weeks. Exceptions included mine rock cell HC 3, NP-depleted ore cells HC 20 and HC 22 and the paste backfill cells before week 100.

- Metals released during acidic conditions, from the samples in this study included aluminum, cadmium, copper, iron, lead, nickel and zinc.

- The majority of humidity cells were estimated to exhaust their NP prior to the exhaustion of sulphide, suggesting that acidic conditions could form within these materials over time.

- However, mine rock and ore humidity cell samples had predicted NP exhaustion times on the order of a decade to several decades, suggesting that acidic conditions likely will not occur in the mine within that timeframe.

- Mine rock cell HC 3 was an exception to this with a measured time to acidification of less than one year.

- The NP-depleted ore samples (HC 20, 21, and 22) were calculated to have NP exhaustion periods of less than one year to two and half years. These results suggest that under acidic conditions ore materials may release elevated levels of aluminum, cadmium, copper, nickel, lead and zinc.

- The cemented tailings backfill cells (T1 and T2) have an estimated NP exhaustion period of approximately 5 years.

6.0 RECOMMENDATIONS

Based on these results, AMEC recommends the following:

1. Operation of the two mine rock cells (HC 6 and HC 10) should be terminated, as pH, sulphate alkalinity and acidity release rates are steady and metal release rates have stabilized, or have continued to decrease.

2. Operation of two mine rock cells (HC 4 and HC 7) should be continued for another 20 weeks to observe the notable decreases in pH, alkalinity, and increases in sulphate and metals loading. The cells should continue to be flushed on a weekly cycle as per current procedures. The leachate should be analyzed every fourth cycle for the same water quality parameters as per the current procedure. The results should be reviewed after 20 weeks' time.

3. The one remaining NP-depleted ore cell (HC 21) should be continued for another 20 weeks to observe the development of acidic conditions. The cells should continue to be flushed on a weekly cycle as per current procedures. The leachate should be analyzed every fourth cycle for the same water quality parameters as per the current procedure. The results should be reviewed after 20 weeks' time.

4. Paste backfill cells (T1 and T2) should be terminated, as oxidation and metal release rates have stabilized, or have continued to decrease during the monitoring period.

7.0 REFERENCES

AMEC, 2008a. Wolverine Project Humidity Cell Update. Prepared by AMEC Earth & Environmental, August 2008.

AMEC, 2008b. Wolverine Project: Recommendations for Continued Humidity Cell Testing. Prepared by AMEC Earth & Environmental, November 2008.

AMEC, 2006. Wolverine Project. Acid Rock Drainage and Metal Leaching Assessment of Mine Rock and Predicted Water Quality of the Underground Workings at Closure. Prepared by AMEC Earth & Environmental, February 2006.

Price, W.A., 1997. Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

8.0 CLOSURE

This memo was prepared exclusively for Yukon Zinc Corporation (Yukon Zinc) by AMEC Americas Limited (AMEC). The quality of information, conclusions and estimates contained herein are consistent with the level of effort involved in AMEC's services and based on: i) information available at the time of preparation, ii) data supplied by outside sources and iii) the assumptions, conditions and qualifications set forth in this memo. This memo is intended to be used by Yukon Zinc only, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

Yours truly,
AMEC Earth & Environmental,
a Division of AMEC Americas Limited





Catherine Daniels, M.Sc., G.I.T.
Environmental Geoscientist

Steve Sibbick, M.Sc., P. Geol.
Senior Associate Geochemist
Senior Review

Table 1: Mine Rock, Ore, Dense Media Separation (DMS) and Backfill Humidity Cell Descriptions

Cell No.	Sample ID	Sample Type	Method Reference	Column Packing			Total Volume of Initial Flushings (mL)	Flushing Rate/Weekly Input* (mL)	Temp (°C)	Start-up date	Status	Duration (weeks)
				Dry Wt. of Sample (kg)	Other Materials Used	Column Material						
1	Siliceous Siltstone-2	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Terminated	(166)
2	EXMT	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Terminated	(166)
3	Footwall Rhyolite-2	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Terminated	(166)
4	Footwall Rhyolite-3	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Ongoing	217
5	Excp-2	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Terminated	(166)
6	Excp-3	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Ongoing	217
7	Argillite-2	wasterock	MEND	0.90	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Ongoing	217
8	Argillite-4	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	22-Dec-05	Terminated	(166)
9	A083503	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	12-Jan-06	Terminated	(163)
10	A083529	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	12-Jan-06	Ongoing	214
11	A083504	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	12-Jan-06	Terminated	(163)
12	A083505	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	12-Jan-06	Terminated	(163)
13	A083511	wasterock	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	12-Jan-06	Terminated	(163)
14	Wolverine Feed Ore	ore	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	16-Feb-06	Terminated	(158)
15	Hump Feed Ore	ore	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	16-Feb-06	Terminated	(158)
16	Lynx Feed Ore	ore	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	16-Feb-06	Terminated	(158)
17	Wolverine Float	DMS	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	23-Feb-06	Terminated	(157)
18	Hump Float	DMS	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	23-Feb-06	Terminated	(157)
19	Lynx Float	DMS	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	23-Feb-06	Terminated	(157)
20	Wolverine Feed Ore NP Removed	ore	MEND	0.585	PVC perforated disk & nylon mesh	Plexiglas	440	295	20-22 °C	23-May-06	Terminated	(144)
21	Hump Feed Ore NP Removed	ore	MEND	0.541	PVC perforated disk & nylon mesh	Plexiglas	410	270	20-22 °C	23-May-06	Ongoing	196
22	Lynx Feed Ore NP Removed	ore	MEND	0.519	PVC perforated disk & nylon mesh	Plexiglas	390	260	20-22 °C	23-May-06	Terminated	(144)
T1	Backfill A	paste backfill	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	23-May-06	Ongoing	196
T2	Backfill B	paste backfill	MEND	1.00	PVC perforated disk & nylon mesh	Plexiglas	750	500	20-22 °C	23-May-06	Ongoing	196

Table 2: Initial and Final ABA Summary

Initial	Paste pH		Total Sulphur		Sulphate-S		Sulphide-S		MPA		NP		NP/AP ratio	
Sample			(%)		(%)		(%)		(kg $CaCO_3$/tonne)					
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
HC 1	8.3	8.5	0.6	0.73	0.01	<0.01	0.59	0.73	18.8	22.8	22.0	19.0	1.17	0.83
HC 2	8.1	8.3	3.2	3.37	1.82	0.28	1.38	3.09	100	105.3	99.0	78.0	0.99	0.74
HC 3	7.8	4.6	7.6	3.74	0.05	0.02	7.55	3.72	238	116.9	7.0	2.00	0.03	0.02
HC 5	8.0	8.0	4.43	4.52	0.01	0.01	4.42	4.51	138	141.3	227.0	232	1.64	1.64
HC 8	8.1	8.4	1.69	1.60	0.02	0.01	1.67	1.59	52.8	50.0	32.0	28.0	0.61	0.56
HC 9	8.1	8.4	0.53	0.48	0.01	0.01	0.52	0.47	16.6	15.0	15.0	11.0	0.91	0.73
HC 11	7.8	8.2	0.95	1.79	<0.01	0.31	0.95	1.48	55.9	55.9	89.0	76.0	1.59	1.36
HC 12	8.2	8.2	0.91	0.86	0.04	<0.01	0.87	0.86	28.4	26.9	21.0	19.0	0.74	0.71
HC 13	7.9	8.3	0.95	0.9	0.04	<0.01	0.91	0.9	29.7	28.1	67.0	43.0	2.26	1.53
HC 14	8.0	7.9	16.8	16.2	0.03	<0.01	16.7	16.2	523	506	58.0	50.0	0.11	0.10
HC 15	8.0	8.3	13.2	13.4	0.03	0.01	13.2	13.4	413	419	113.0	93.0	0.27	0.22
HC 16	7.9	8.1	28.8	28.0	0.07	0.01	28.7	28.0	900	875	100.0	92.0	0.11	0.11
HC 17	7.9	8.4	1.17	1.11	0.07	<0.01	0.90	1.11	28.1	34.7	84.4	122	3.00	3.52
HC 18	8.3	8.5	1.94	2.12	0.06	<0.01	1.77	2.12	55.3	66.3	240.9	240	4.36	3.62
HC 19	8.4	8.7	1.78	2.06	0.06	<0.01	1.62	2.06	50.6	64.4	120.9	130	2.39	2.02
HC 20	n/a (derived from HC 14)	4.5		15.8		0.1		15.7		494		5.00		0.01
HC 22	n/a (derived from HC 16)	4.6		30.3		0.1		30.2		947		5.00		0.01

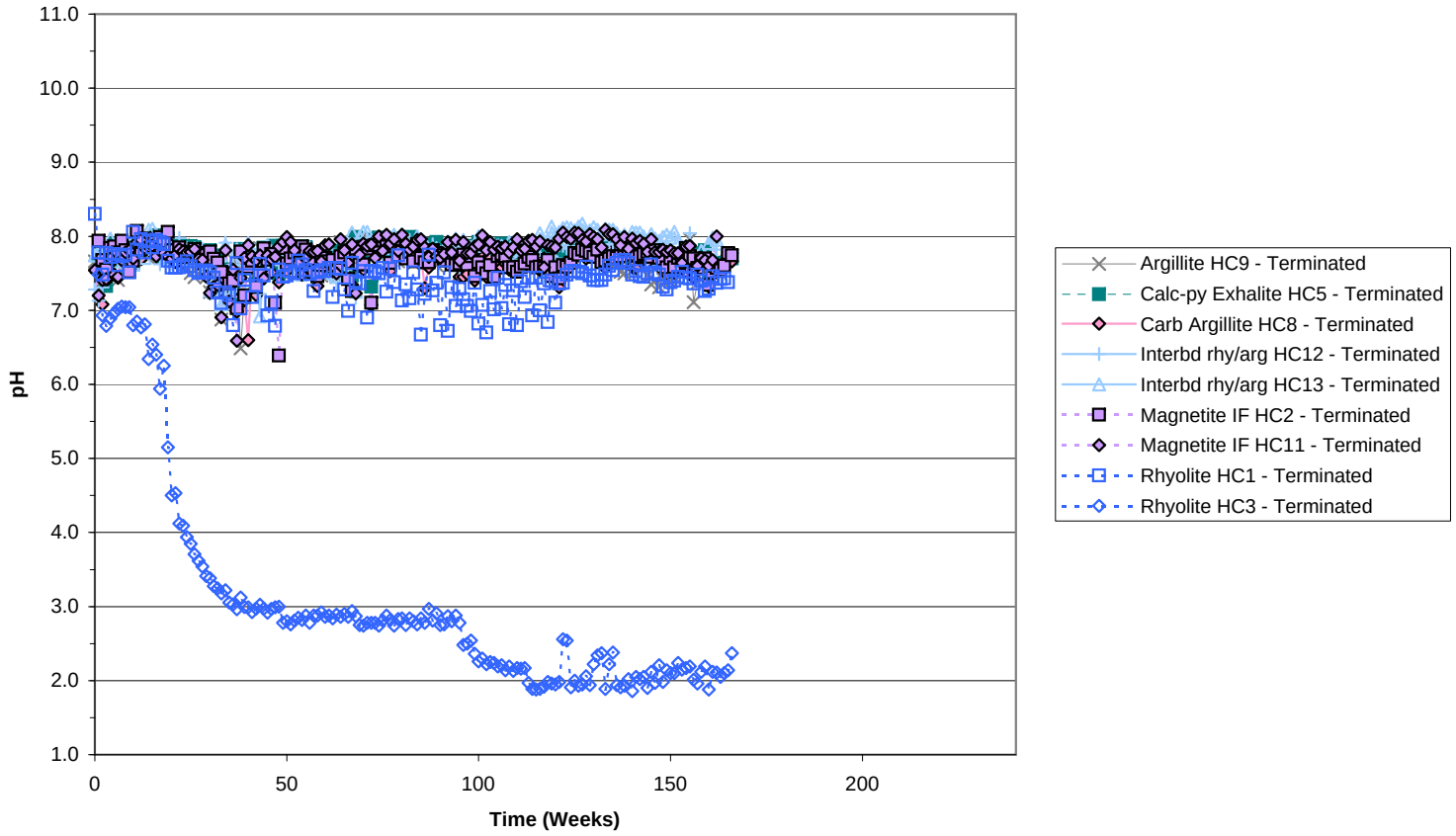
Table 3: Summary of Metals Analyses of Initial and Final Humidity Cell Samples

	Concentration (ppm)																											
Initial Analyses	**Sb**		**As**		**Cd**		**Cr**		**Co**		**Cu**		**Pb**		**Mn**		**Hg**		**Mo**		**Ni**		**Se**		**Ag**		**Zn**	
Sample	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**
HC 1	1.52	1.66	18	17.5	0.32	0.56	11	141	6.40	6.8	75	73.1	8.2	11.8	179	180	0.03	0.04	0.77	1.03	54	50.7	1.9	1.9	0.29	0.37	128	172
HC 2	13	14.4	11	12.2	37	34.5	22	89	3.70	3.1	29	35.9	334	359	885	860	0.43	0.44	17	16	9.0	10.1	13.3	9.3	3.55	2.69	3390	3220
HC 3	5.57	5.32	47	35.6	1.68	0.07	3	76	5.70	1.6	166	99.1	63.4	34	168	127	0.05	0.04	2.33	1.92	5.3	3.1	40.2	27.3	1.69	1.21	202	77
HC 5	8.05	8.57	30	27.1	0.73	0.68	13	73	5.30	4.7	75	76.3	256	234	2160	2250	0.06	0.05	8.27	7.38	28	28.8	2.8	2.3	0.37	0.36	239	233
HC 8	6.00	6.22	8.50	10.9	0.35	0.32	11	101	4.20	3.8	44	43.2	34.9	32.1	429	409	0.03	0.03	0.48	0.62	22	21.8	2.7	2.3	0.51	0.47	40	45
HC 9	1.56	1.61	4.80	4.7	0.15	0.14	58	102	7.30	6	69	71.9	16.1	16.7	170	168	0.07	0.07	1.1	1.01	33	33.7	1.2	1.2	0.19	0.21	132	131
HC 11	1.52	1.81	2.60	2.8	0.04	0.15	71	95	6.10	4.5	70	64	18.8	19.7	4020	3920	0.08	0.07	3.36	2.11	35	28.6	4.3	3.7	1.52	0.42	106	122
HC 12	3.50	4.56	3.90	6.6	0.08	1.72	103	105	9.60	9.3	68	84.6	10.4	38.7	281	256	0.07	0.13	1.14	0.90	58	54.4	2.3	4.3	0.36	1.07	159	312
HC 13	2.38	2.66	8.30	6.3	0.24	0.2	81	89	9.40	7.3	68	80.9	11.9	8.7	440	418	0.03	0.02	2.48	1.51	75	64.7	4.4	3.7	0.63	0.6	153	146
HC 14	357	395	1610	1515	500	566	224	64	26	19.4	6090	5680	6560	6080		504	15.4	15.3	28	22	41	32	760	630	>100	>100	>10000	>10000
HC 15	290	344	808	893	308	343	198	56	23	20.8	6430	7330	3760	4040	0.066	707	10.4	12.15	27	24	41	40.1	540	530	97	>100	>10000	>10000
HC 16	448	524	1555	1455	500	739	146	53	44	32.7	9670	>10000	6480	6830		590	14.5	15.4	34	20	50	43.1	>1000	>1000	>100	>100	>10000	>10000
HC 17	37	44.7	93	103	14	15.55	198	83	4.60	3.8	568	678	140.8	147	688	722	0.67	0.79	41	28	66	51.8	37.2	37.9	14.7	11.8	1248	2450
HC 18	39	43.2	84	110.5	15	17.05	195	72	4.60	5.5	158	335	130.1	124	1334	1155	1.16	1.62	18	15	45	54	26.5	30.3	7	8	1229	1560
HC 19	39	42.5	72	106.5	16	16.1	290	100	5.10	5.4	755	595	198.5	195.5	660	611	0.74	0.87	28.6	25	49	47.9	39.6	38.6	10.7	8.34	1577	1680
HC 20	n/a (derived from HC 14)	332		1580		427		64		22.7		5130		1995		154		16.55		25		25.2		620		>100		>10000
HC 22	n/a (derived from HC 16)	483		1420		759		56		40.2		>10000		2290		49		17.9		21		35.7		>1000		>100		>10000

	Concentration (%)									
Initial Analyses	**Al**		**Ca**		**Fe**		**Mg**		**Na**	
Sample	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**
HC 1	0.58	0.55	0.58	0.57	0.58	1.12	0.58	0.07	0.58	<0.01
HC 2	1.45	1.39	1.45	2.79	1.45	9.92	1.45	0.21	1.45	0.01
HC 3	1.32	0.95	1.32	0.09	1.32	4.32	1.32	0.79	1.32	0.02
HC 5	0.78	0.69	0.78	7.53	0.78	6.55	0.78	0.32	0.78	0.01
HC 8	0.23	0.21	0.23	0.88	0.23	2.09	0.23	0.12	0.23	<0.01
HC 9	0.55	0.5	0.44	0.31	1.42	1.49	0.21	0.18	0.01	0.01
HC 11	0.89	0.8	2.62	2.36	4.92	4.71	0.44	0.37	0.02	0.01
HC 12	0.46	0.32	0.46	0.39	2.37	2.24	0.31	0.21	0.01	0.01
HC 13	1.18	0.96	1.48	1.17	2.60	2.48	0.69	0.56	0.02	0.01
HC 14	1.58	1.33	1.58	1.47	1.58	13.25	1.58	1.02	1.58	0.01
HC 15	1.09	0.96	1.09	3.37	1.09	11.35	1.09	1.12	1.09	0.01
HC 16	0.49	0.44	0.49	2.69	0.49	20.2	0.49	0.39	0.49	0.01
HC 17	1.24	1.3	1.24	3.56	1.24	2.55	1.24	1.13	1.24	0.01
HC 18	0.42	0.43	0.42	7.34	0.42	2.59	0.42	0.81	0.42	0.01
HC 19	0.58	0.53	0.58	4.06	0.58	2.46	0.58	0.77	0.58	0.01
HC 20		1.33		0.13		13.7		0.91		0.01
HC 22		0.35		0.15		20.3		0.15		0.01

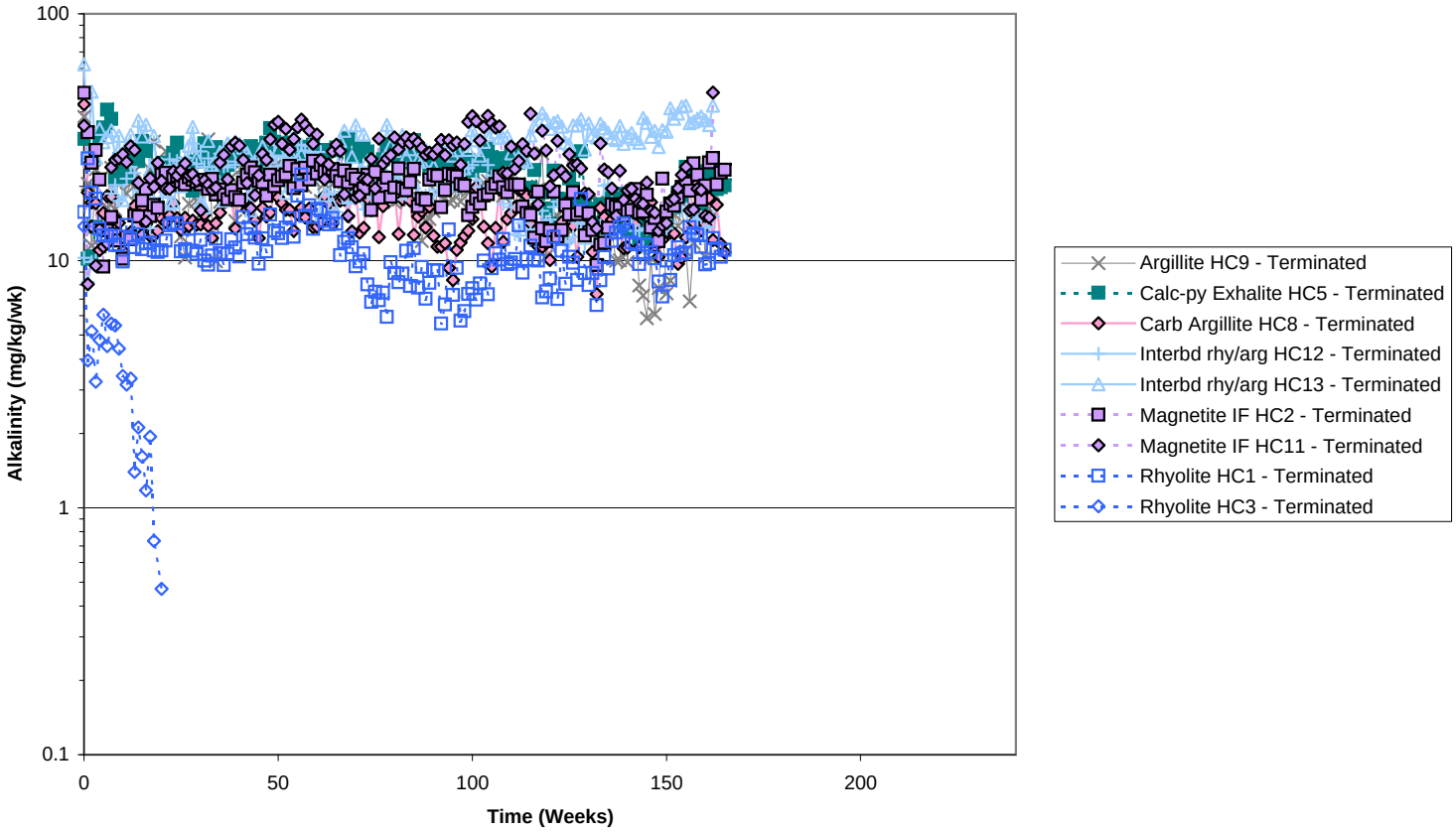
Table 4: Estimates of Sulphide and Neutralization Potential Exhaustion

Cell	Sample ID	Rock Type	Years to Exhaustion		Status
			NP	Sulphide	
Discontinued Cells			**March 2009 (includes high volume final rinse)**		
HC1	Siliceous Siltstone-2	Rhyolite	26	112	Potentially acid generating
HC2	EXMT	Magnetite iron formations and Silica-pyrite exhalite	69	273	Potentially acid generating
HC3	Footwall Rhyolite-2	Rhyolite and Rhyolite Fragmental	0	1	Acidic after 20 weeks
HC5	EXCP-2	Calcite-pyrite exhalite	93	120	Potentially acid generating
HC8	Argillite-4	Carbonaceous argillites	20	92	Potentially acid generating
HC9	A083503	Argillites	7.5	37	Potentially acid generating
HC11	A083504	Magnetite iron formations and Silica-pyrite exhalite	35	50	Potentially acid generating
HC12	A083505	Interbedded rhyolite/argillites	10	55	Potentially acid generating
HC13	A083511		25	31	Potentially acid generating
HC14	Wolverine Feed Ore	Ore	19	206	Potentially acid generating
HC15	Hump Feed Ore		35	165	Potentially acid generating
HC16	Lynx Feed Ore		22	222	Potentially acid generating
HC17	Wolverine Float	Dense Media Separation (DMS)	66	29	Expected to be non-acidic
HC18	Hump Float		202	69	Expected to be non-acidic
HC19	Lynx Float		101	58	Expected to be non-acidic
HC20	Wolverine Ore	NP-Depleted Ore	1.6	31	Acidic after 3 weeks
HC22	Lynx Ore		2.6	64	Acidic after 4 weeks
Continued Humidity Cells			**March 2010**		
HC4	Footwall Rhyolite-3	Rhyolite and Rhyolite Fragmental	6.6	85	Potentially acid generating
HC6	EXCP-3	Calcite-pyrite exhalite	85	44	Expected to be non-acidic
HC7	Argillite-2	Carbonaceous argillites	11	34	Acidic after 198 weeks
HC10	A083529	Argillites	5.7	39	Potentially acid generating
HC21	Hump Ore	NP-Depleted Ore	0	103	Acidic after 146 weeks
T1	Backfill Tailings	Tailings Backfill	5.7	44	Potentially acid generating
T2	Backfill Tailings		6.2	14	Potentially acid generating



pH Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 1

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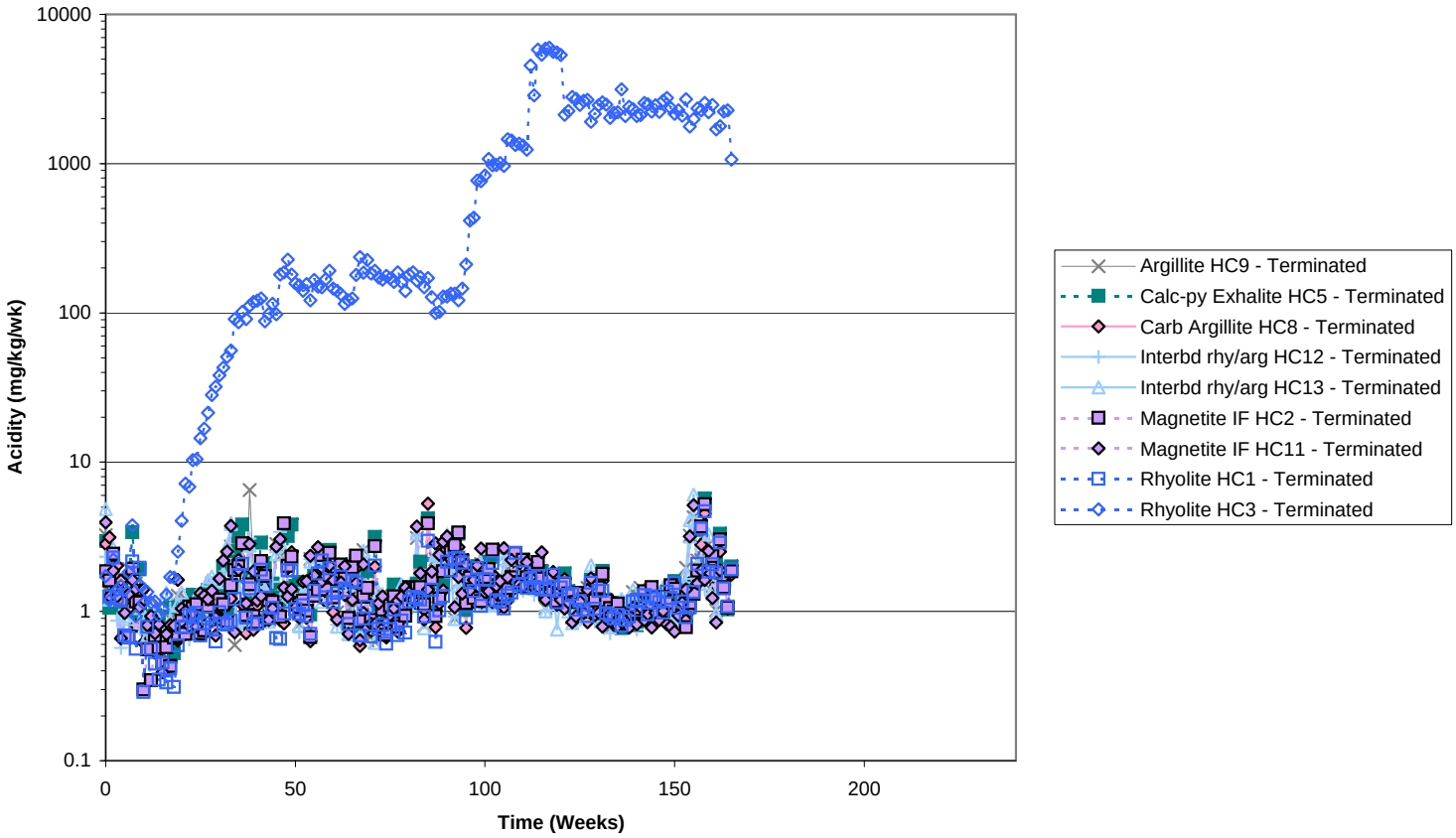


Alkalinity Load
Terminated Cells
Wolverine Mine, YK

Mine Rock

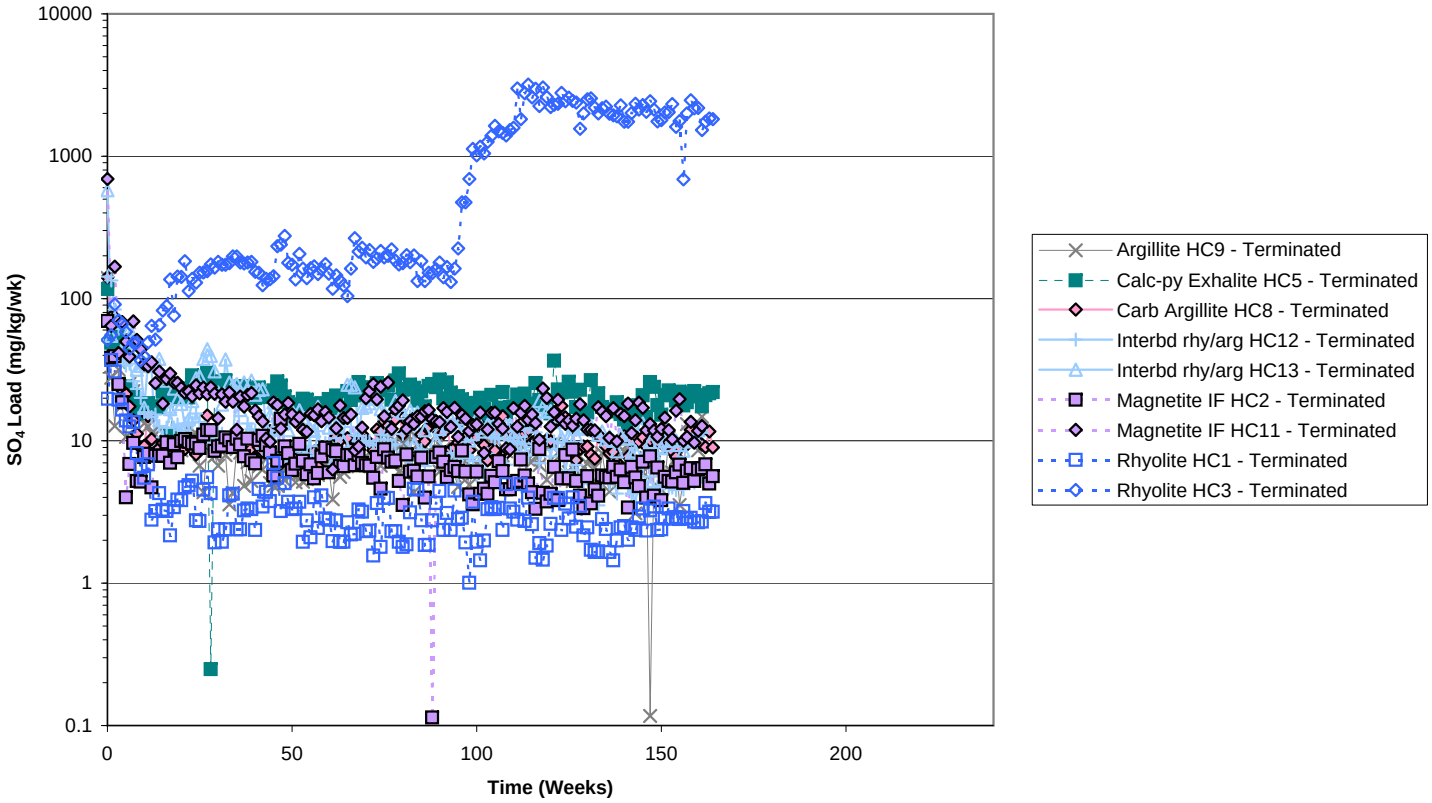
March 2010 | FIGURE 2

TC 53920



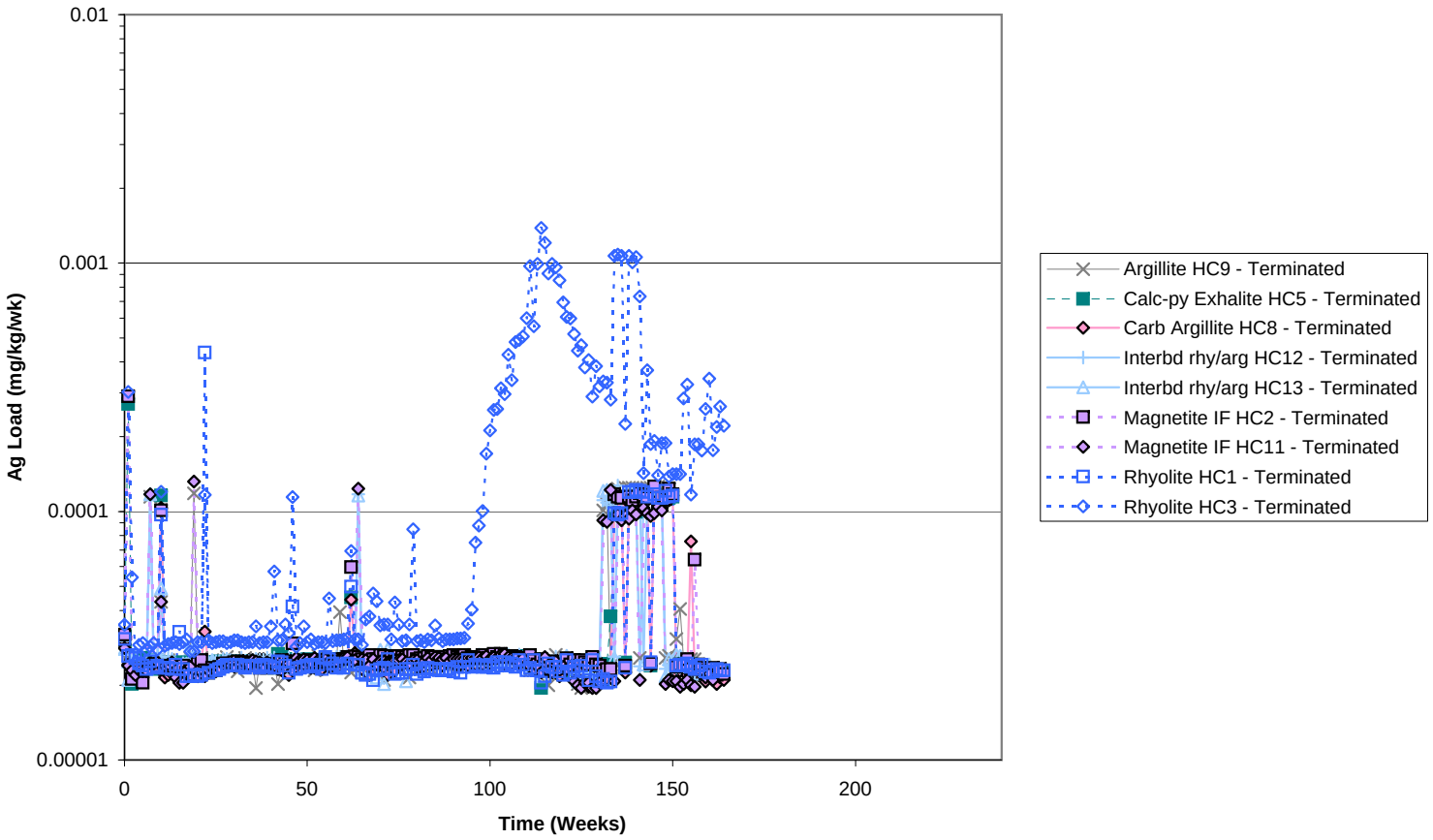
Acidity Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 3

TC 53920



Sulphate Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 4

TC 53920

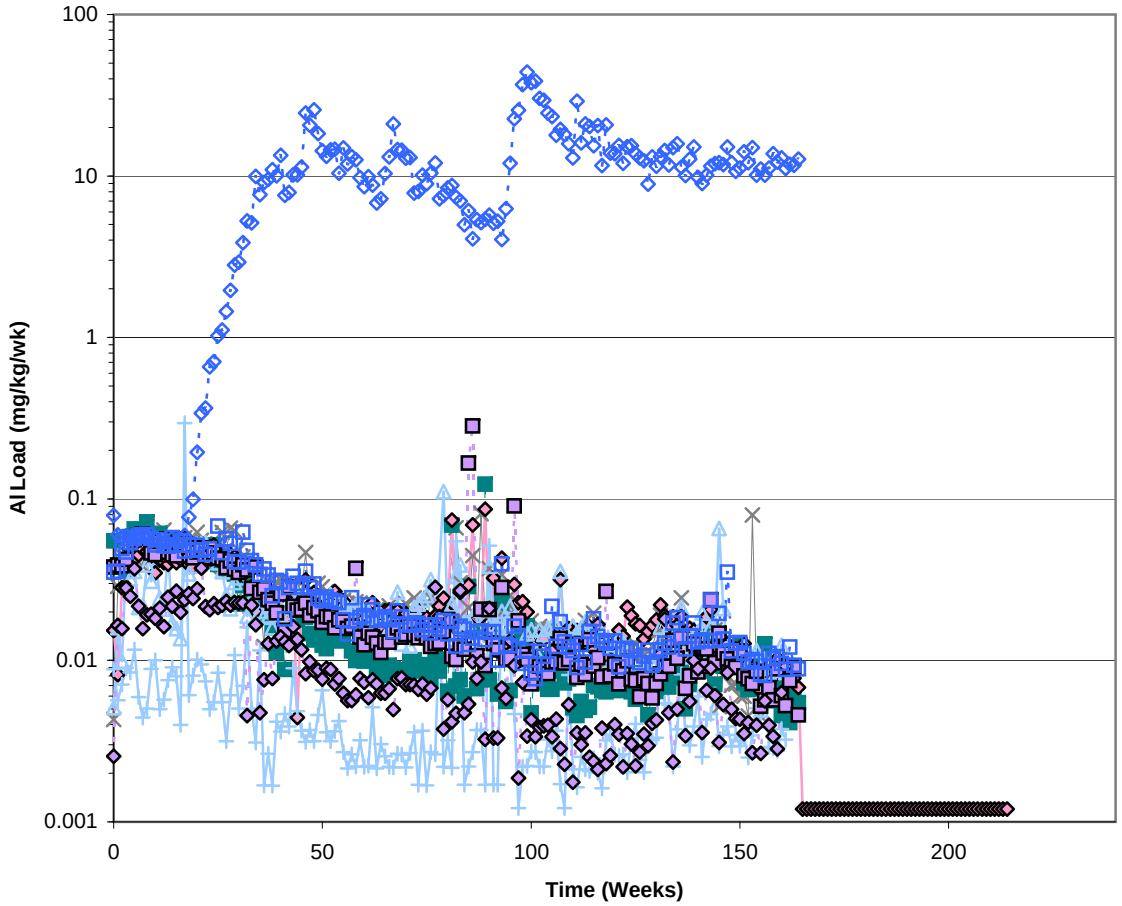


Silver Load
Terminated Cells
Wolverine Mine, YK

Mine Rock

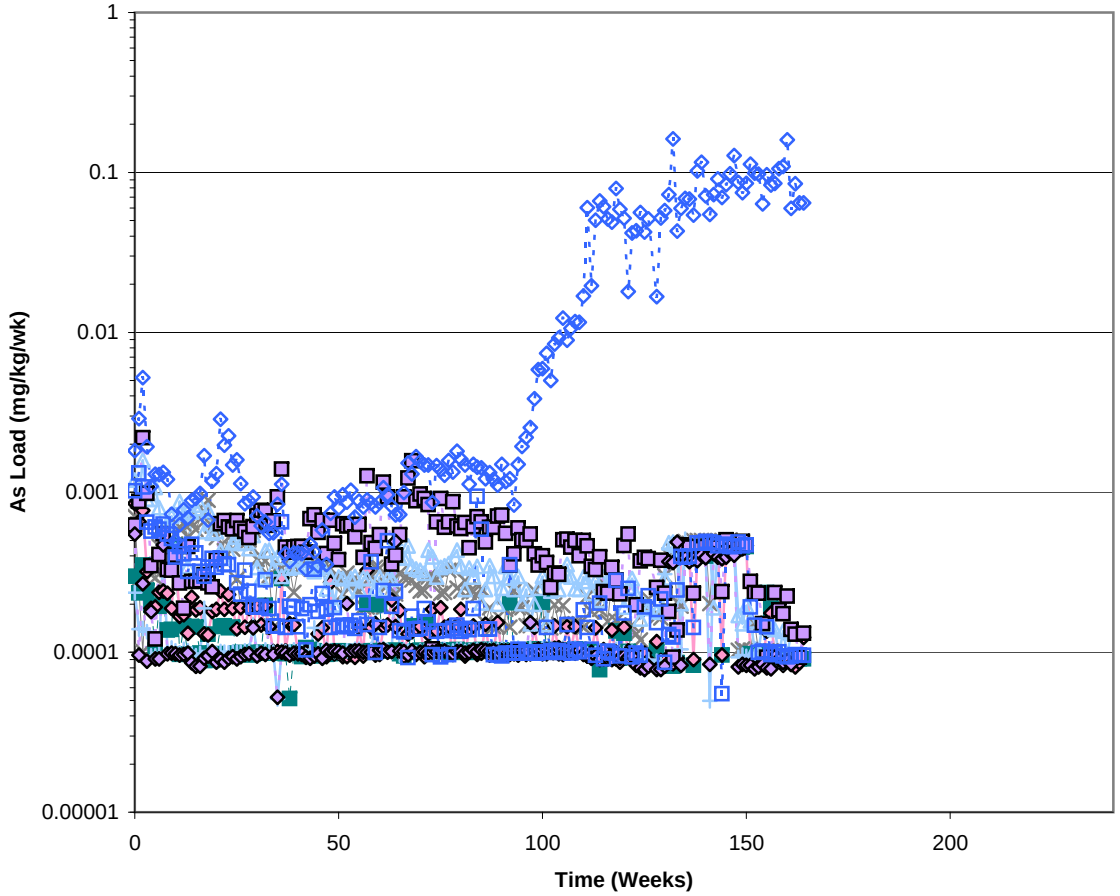
March 2010 | FIGURE 5

TC 53920



Aluminium Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 6

TC 53920

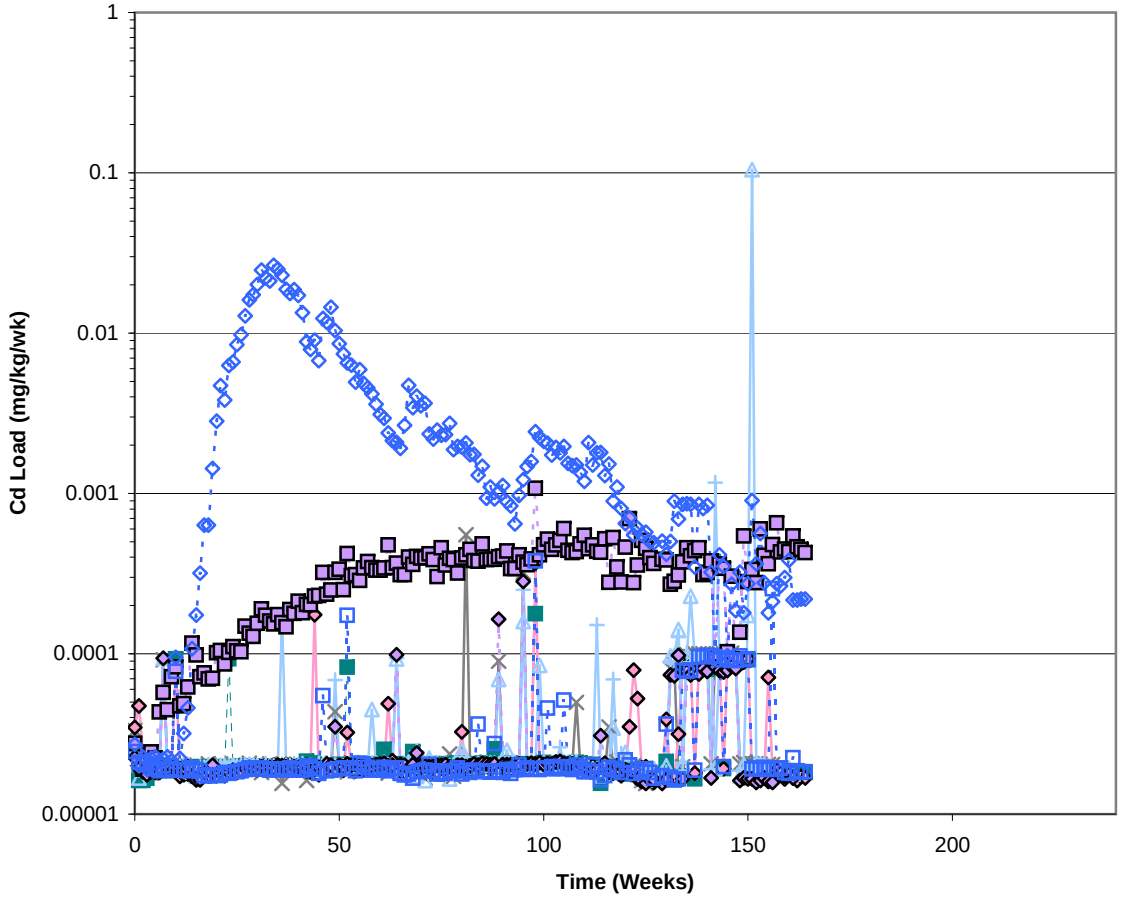


Arsenic Load
Terminated Cells
Wolverine Mine, YK

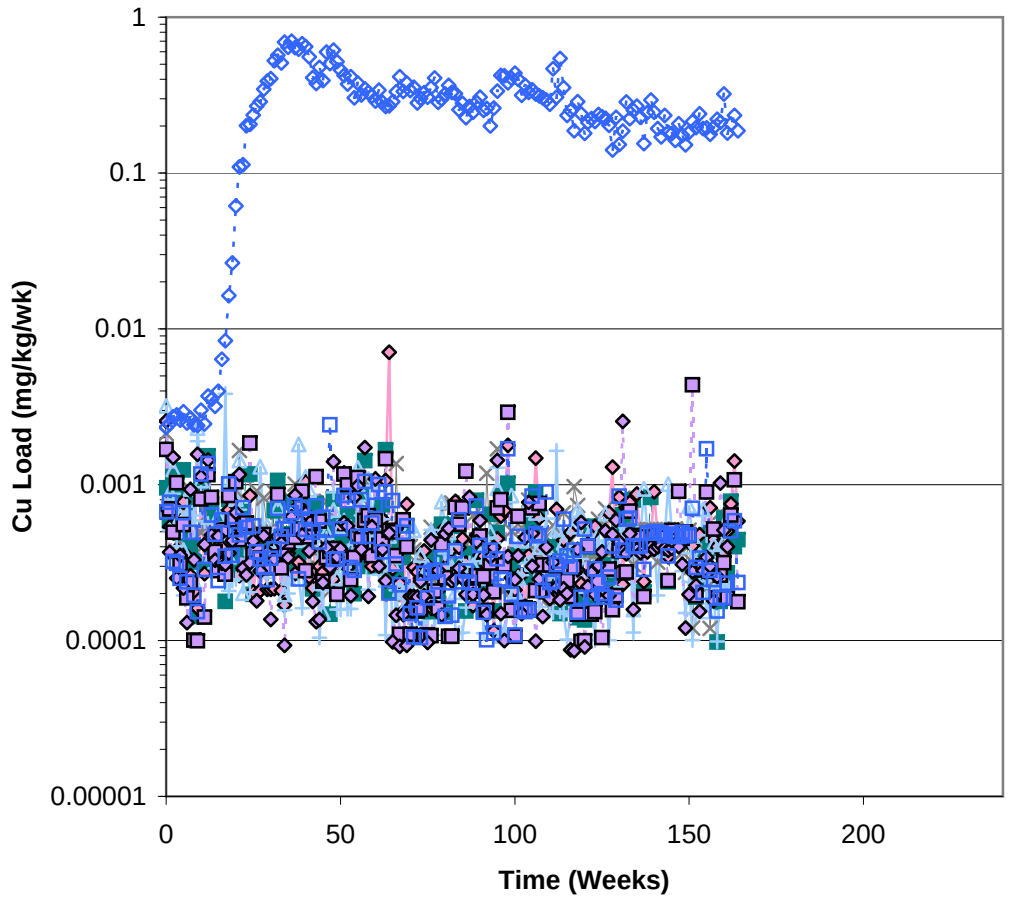
Mine Rock

March 2010 | FIGURE 7

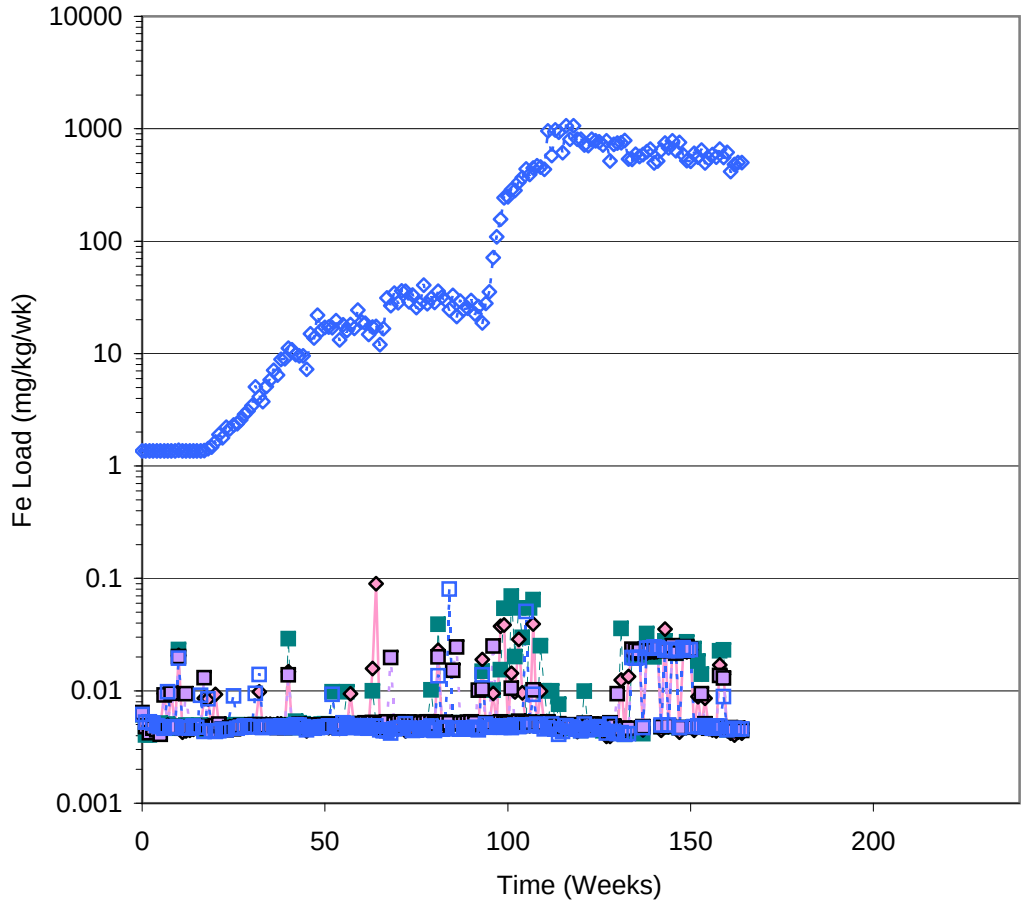
TC 53920

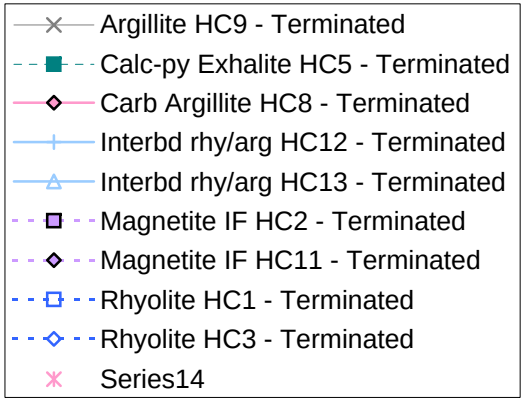


Cadmium Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 8



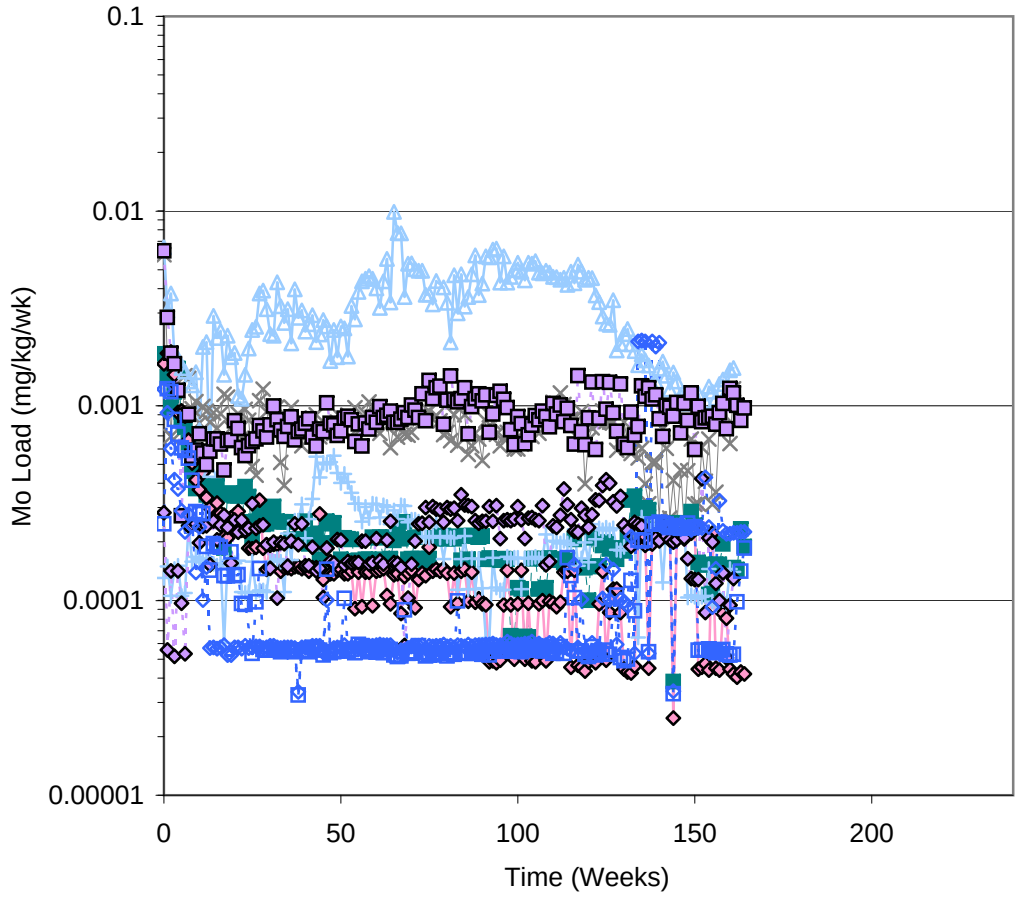
Copper Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 9





Iron Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 10

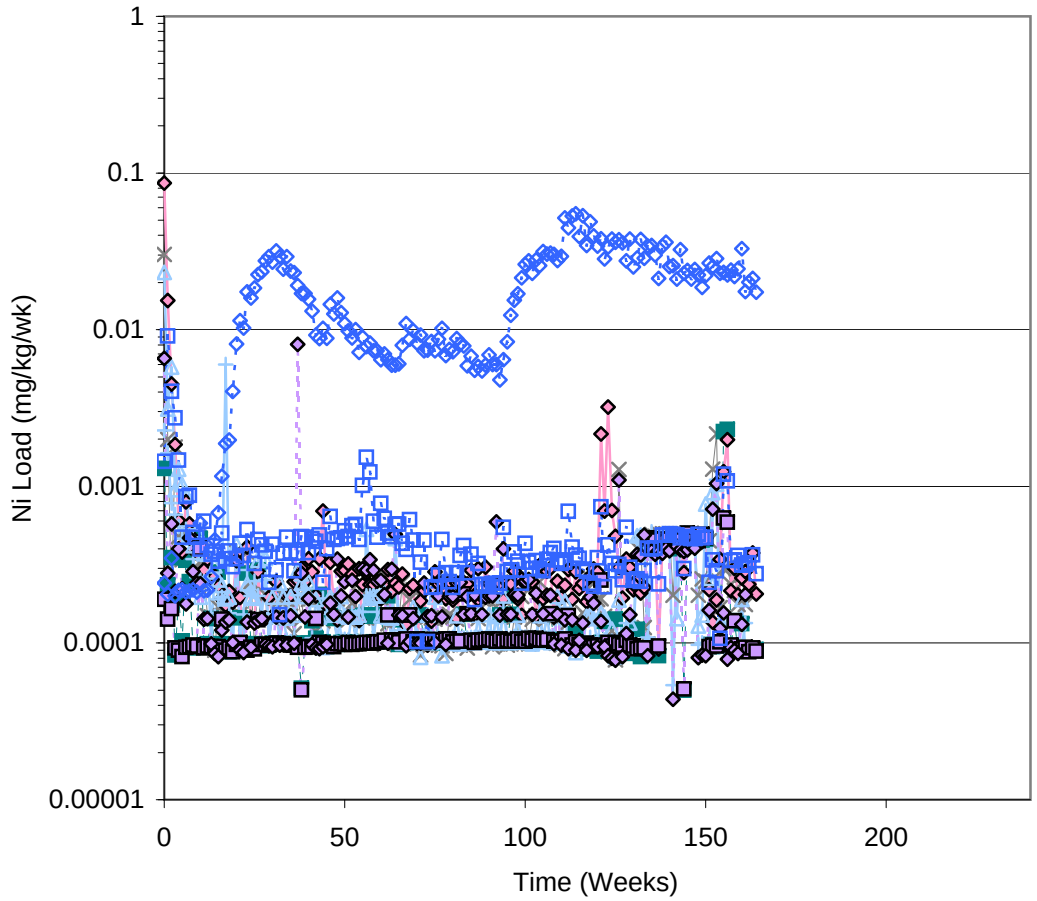
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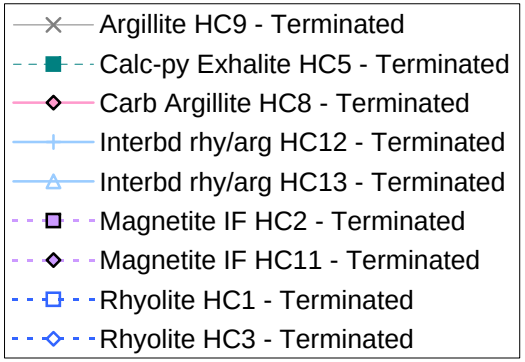


Molybdenum Load
Terminated Cells
Wolverine Mine, YK

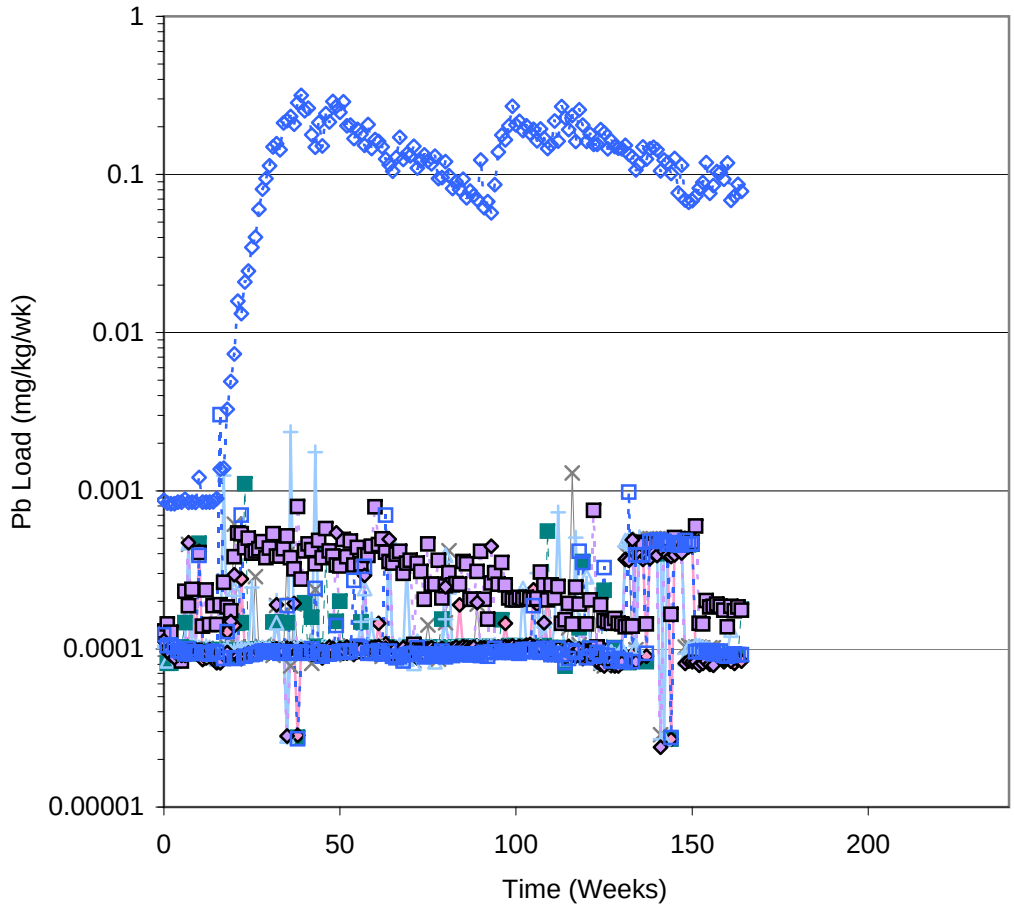
Mine Rock

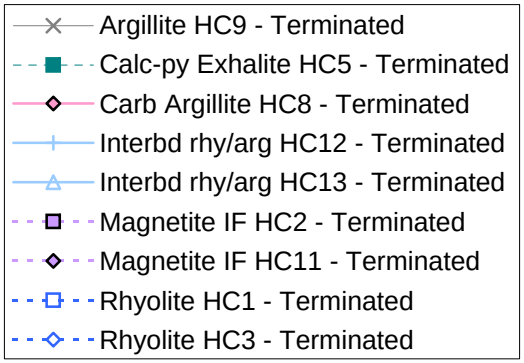
March 2010 | FIGURE 11





Nickel Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 12



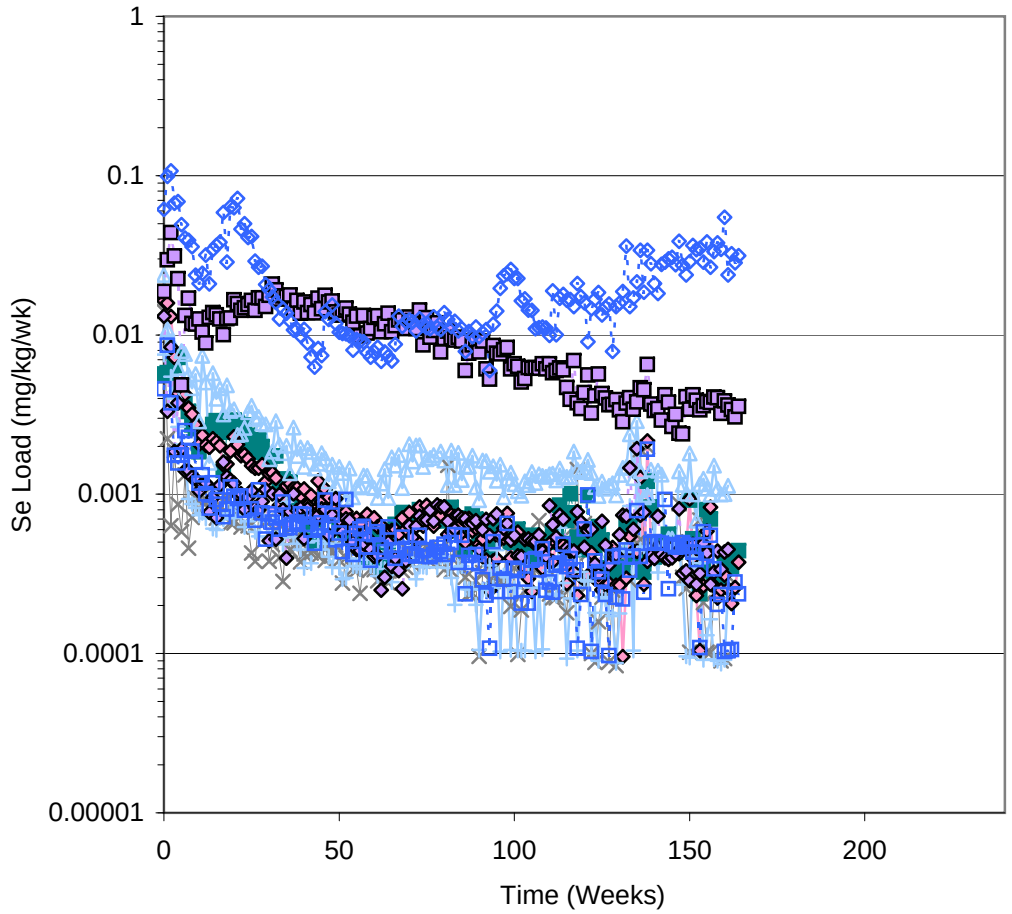


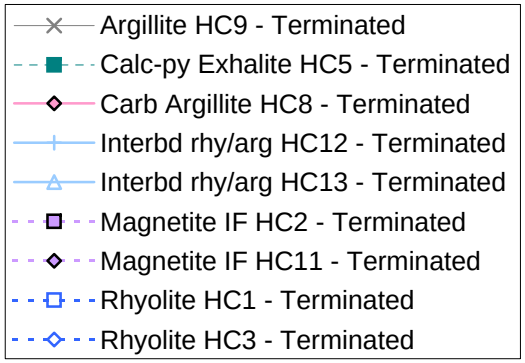
Lead Load
Terminated Cells
Wolverine Mine, YK

Mine Rock

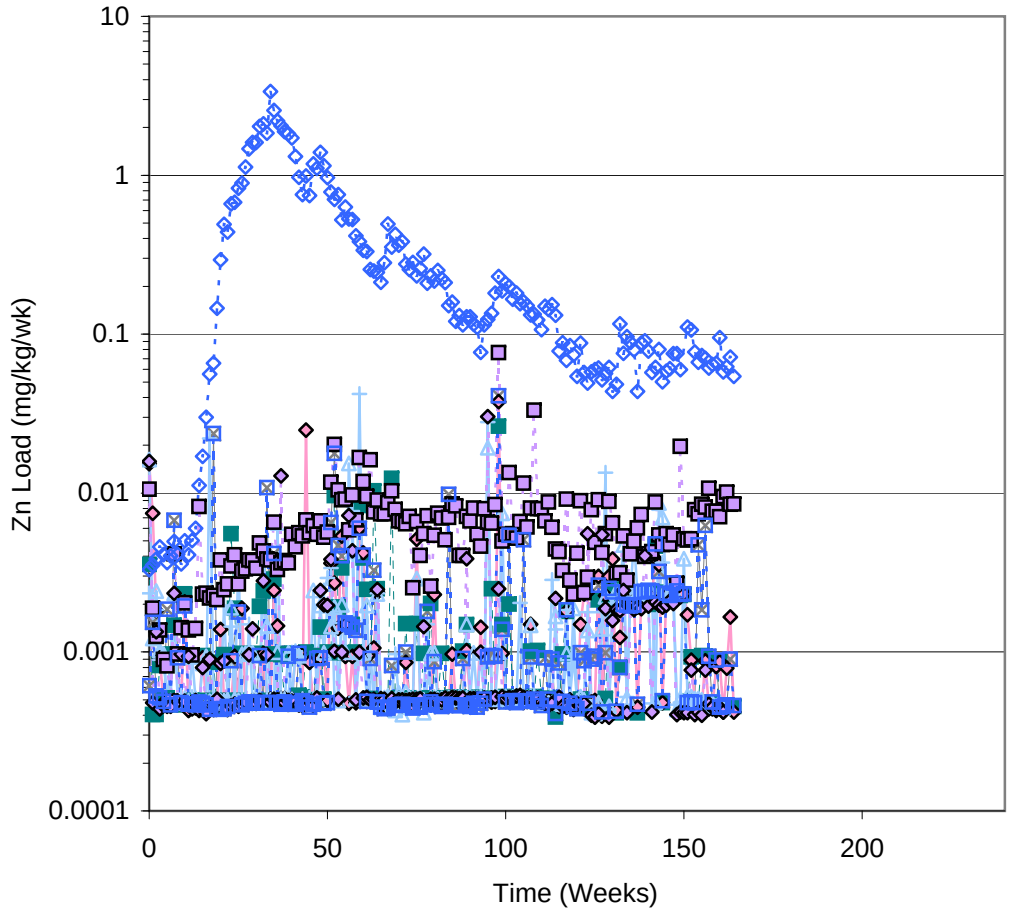
March 2010 | FIGURE 13

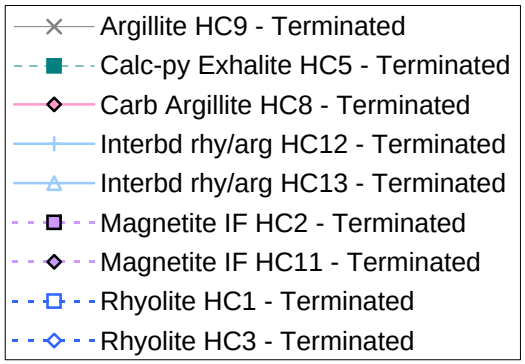
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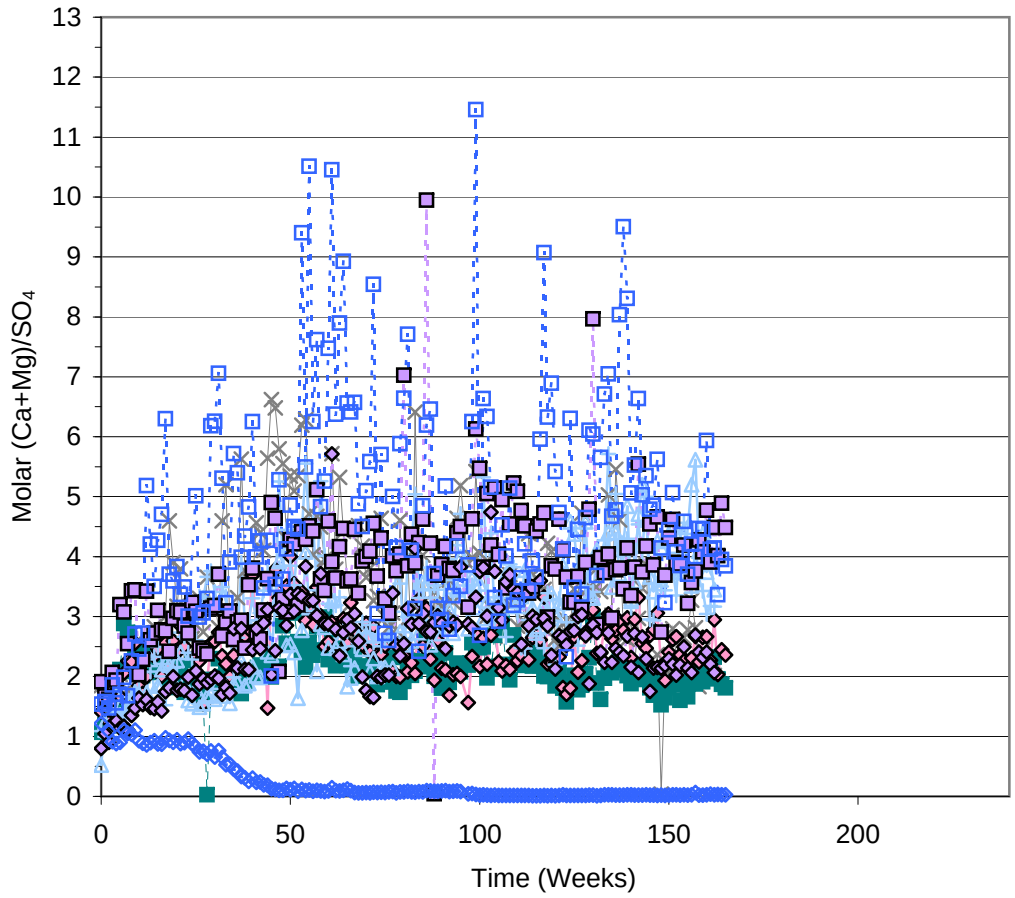


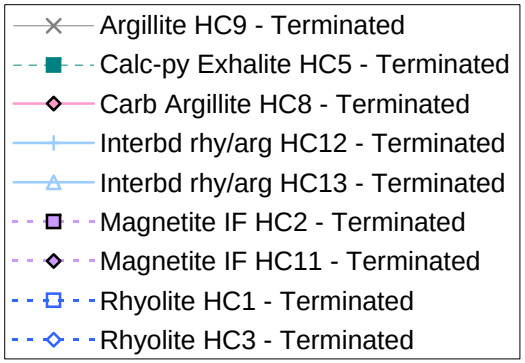
Selenium Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 14



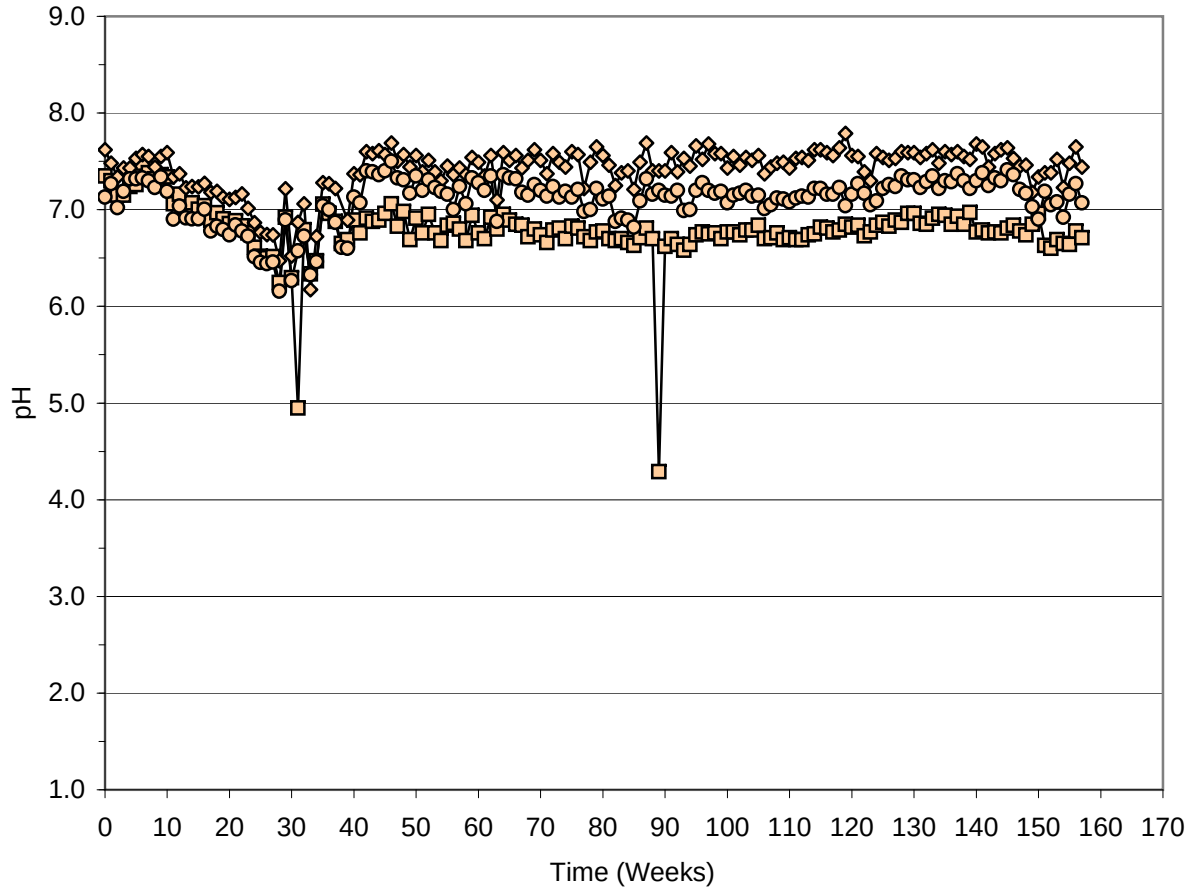


Zinc Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 15





Molar (Ca+Mg)/SO_4 Load Terminated Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 16

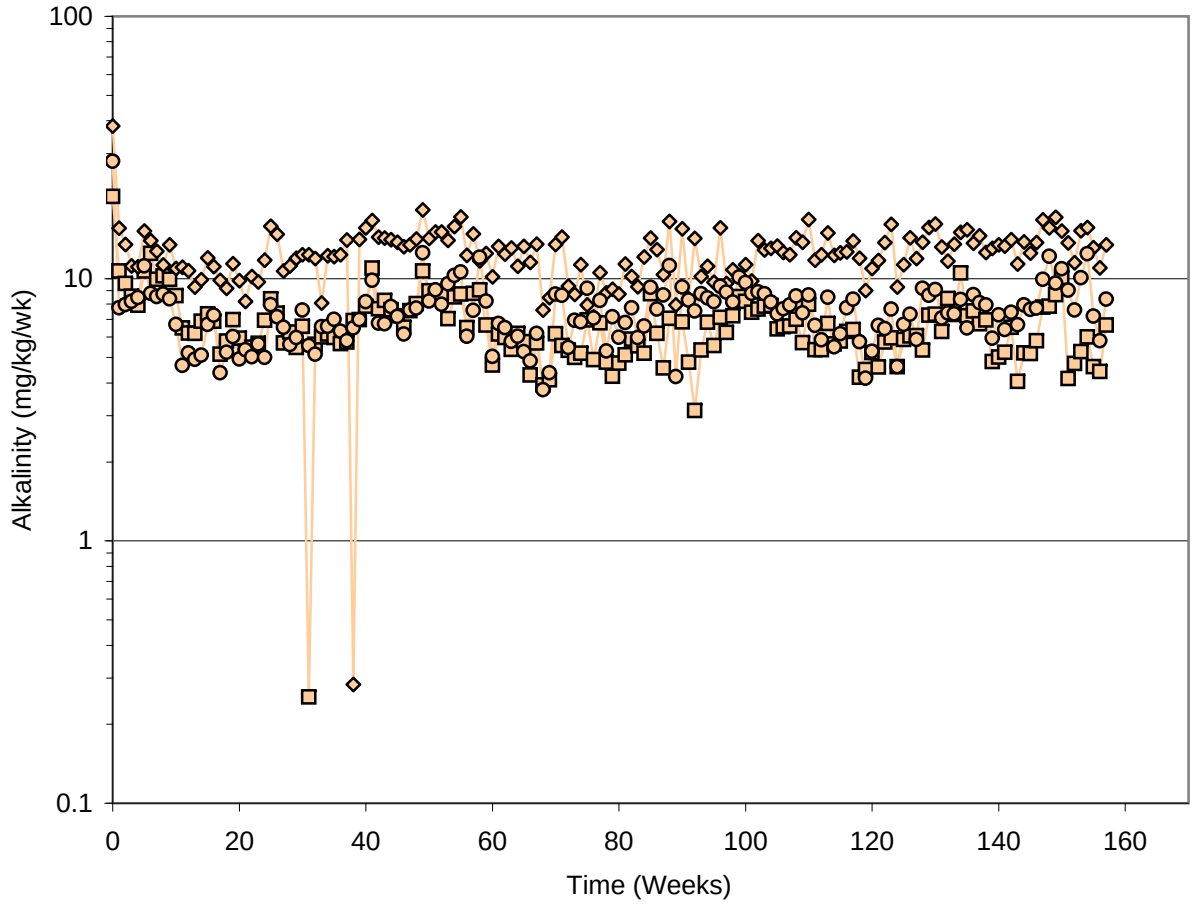


pH
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 17

TC 53920

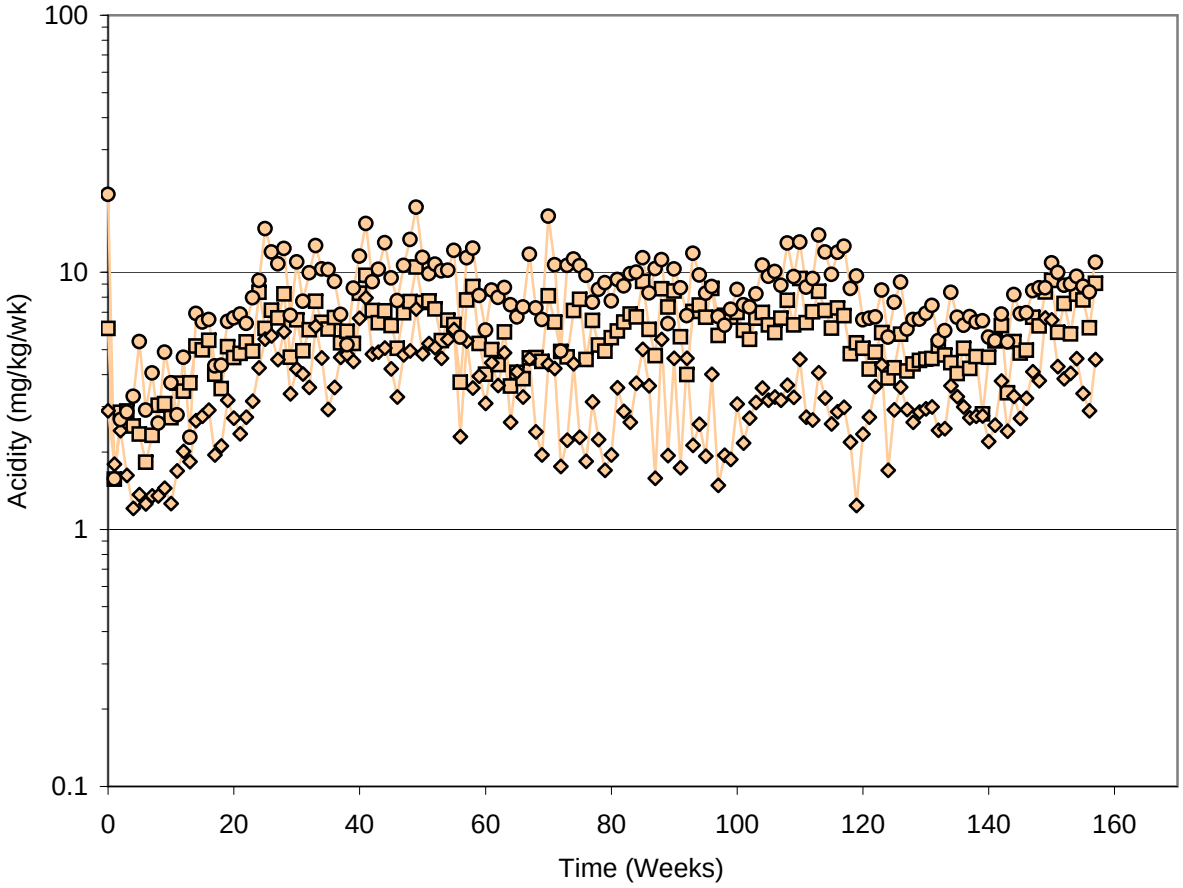


Alkalinity Load
Terminated Cells
Wolverine Mine, YK

Ore

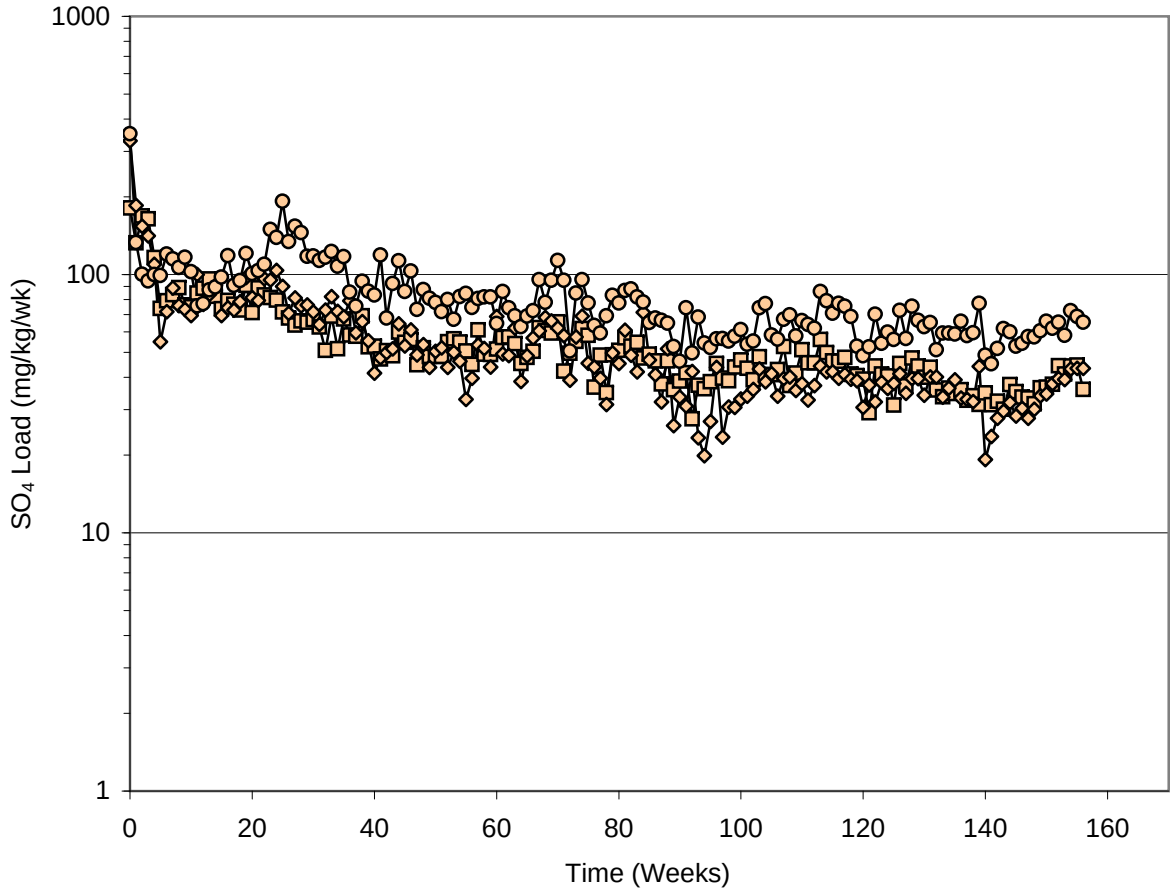
March 2010 | FIGURE 18

TC 53920



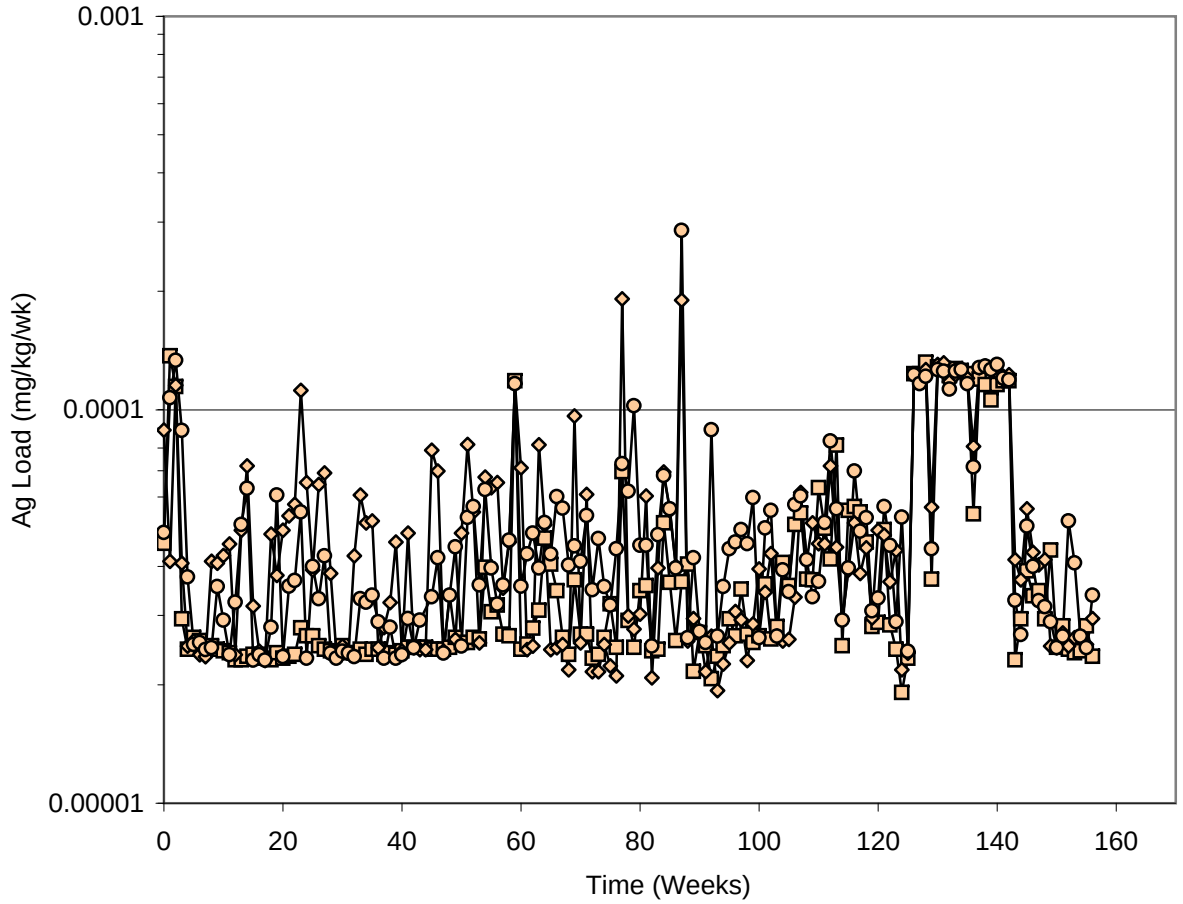
Acidity Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 19

TC 53920

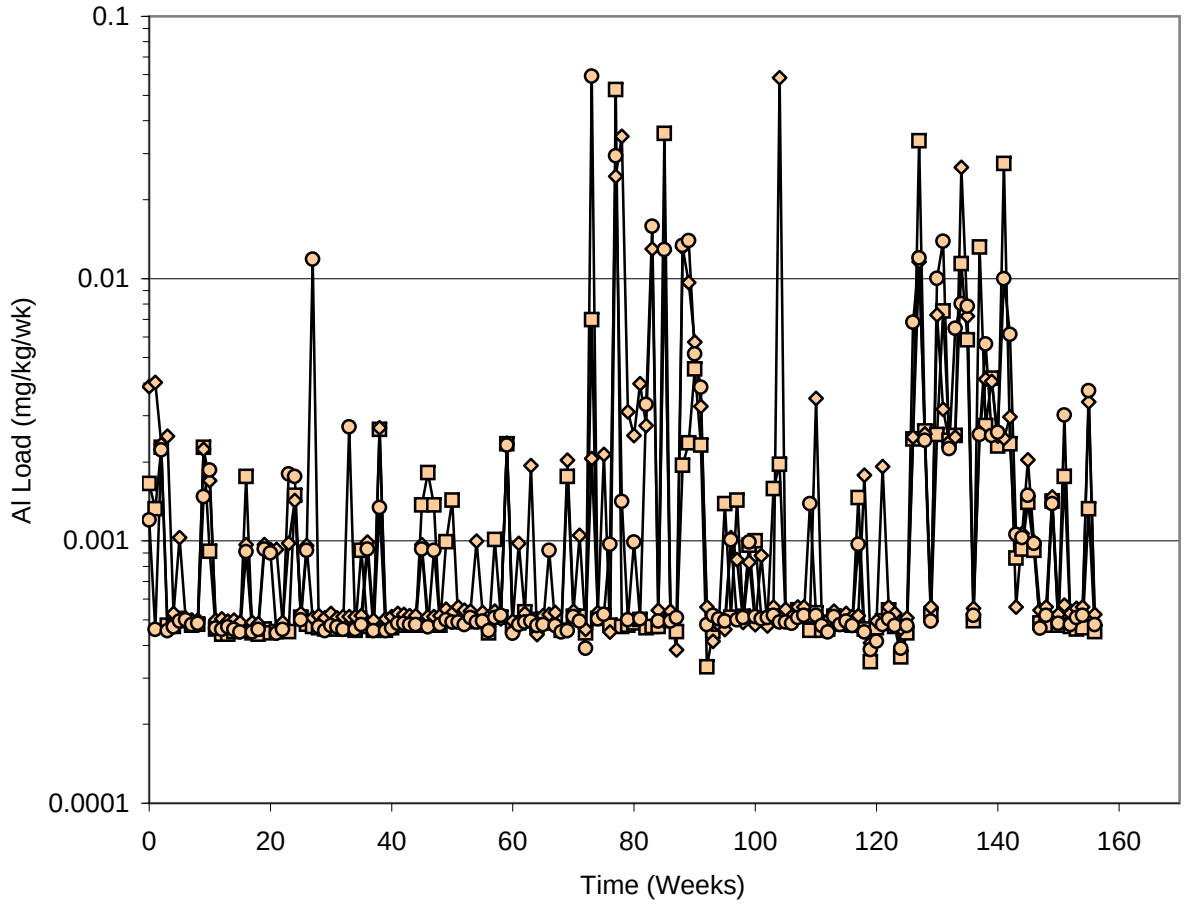


Sulphate Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 20

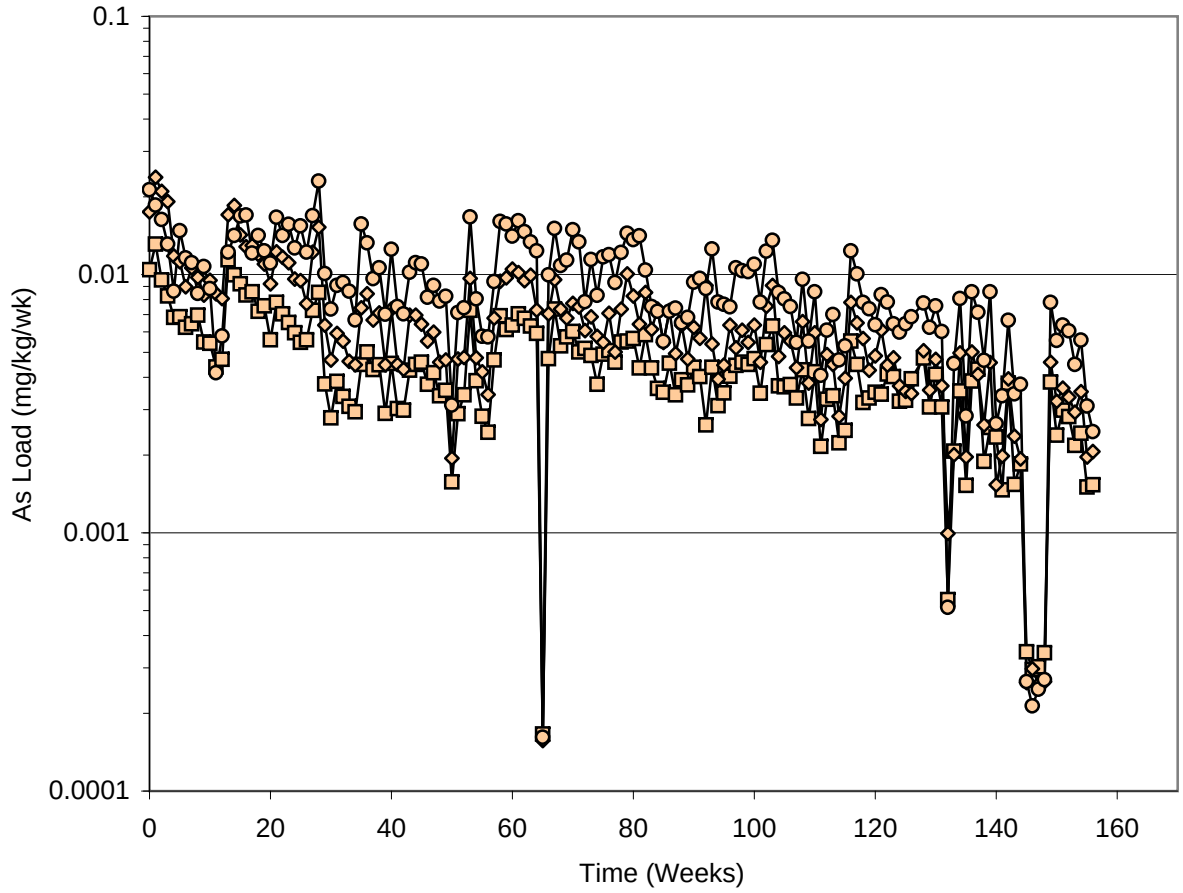
TC 53920



Silver Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 21



Aluminium Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 22

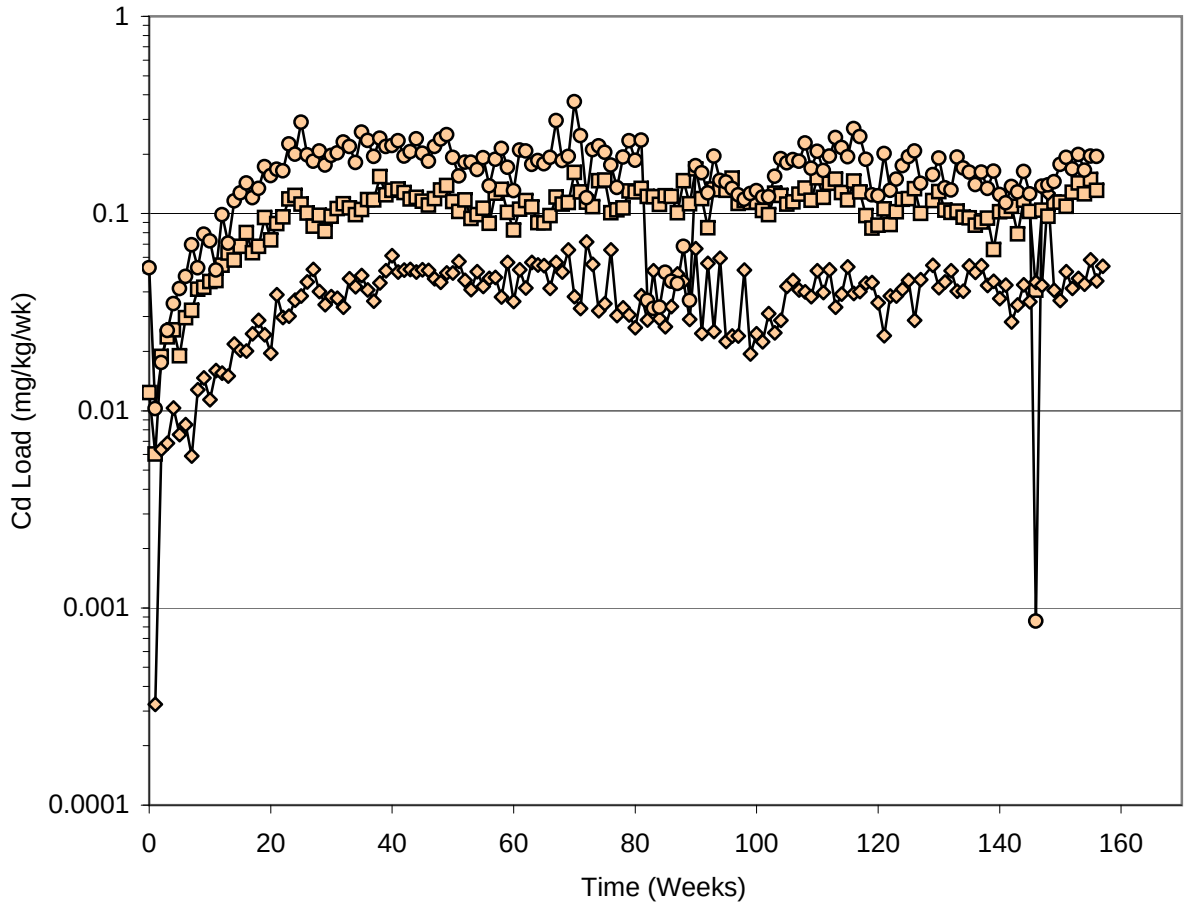


Arsenic Load
Terminated Cells
Wolverine Mine, YK

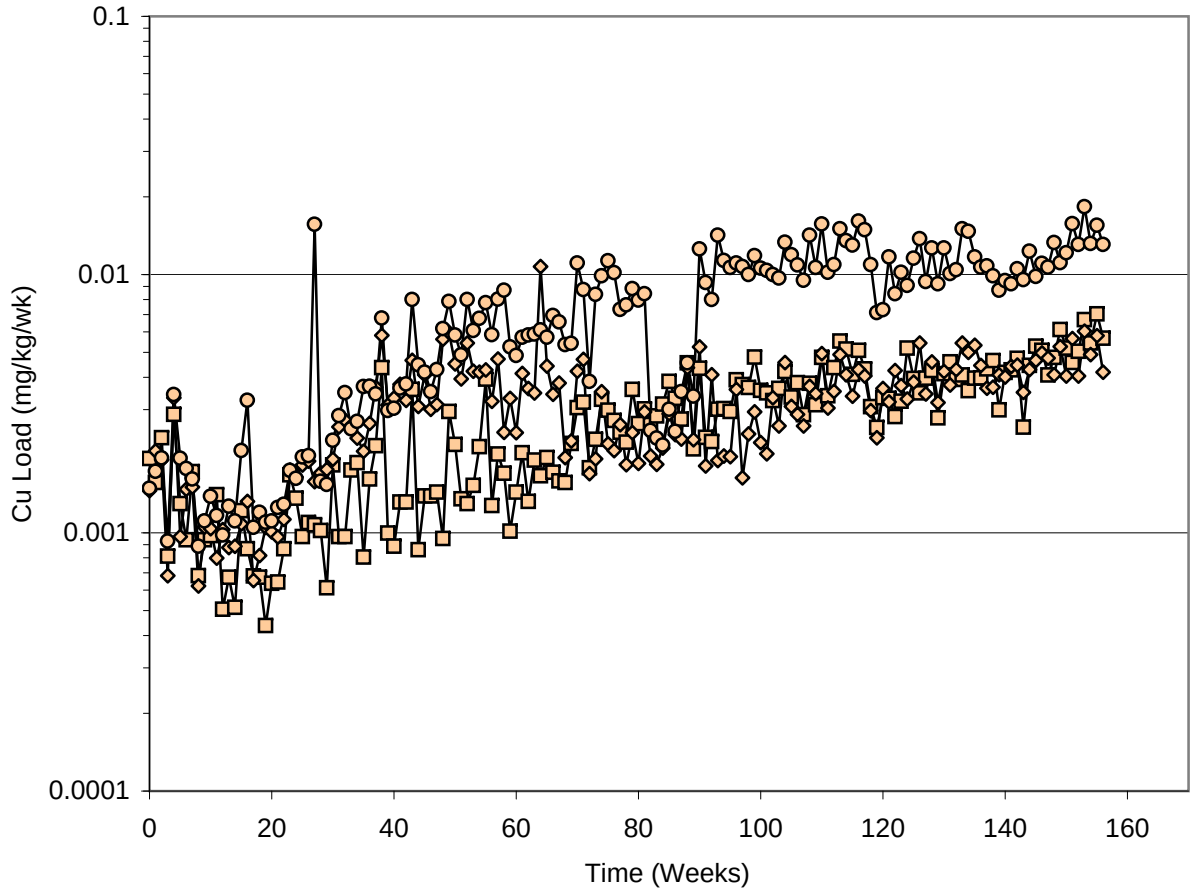
Ore

March 2010 | FIGURE 23

TC 53920



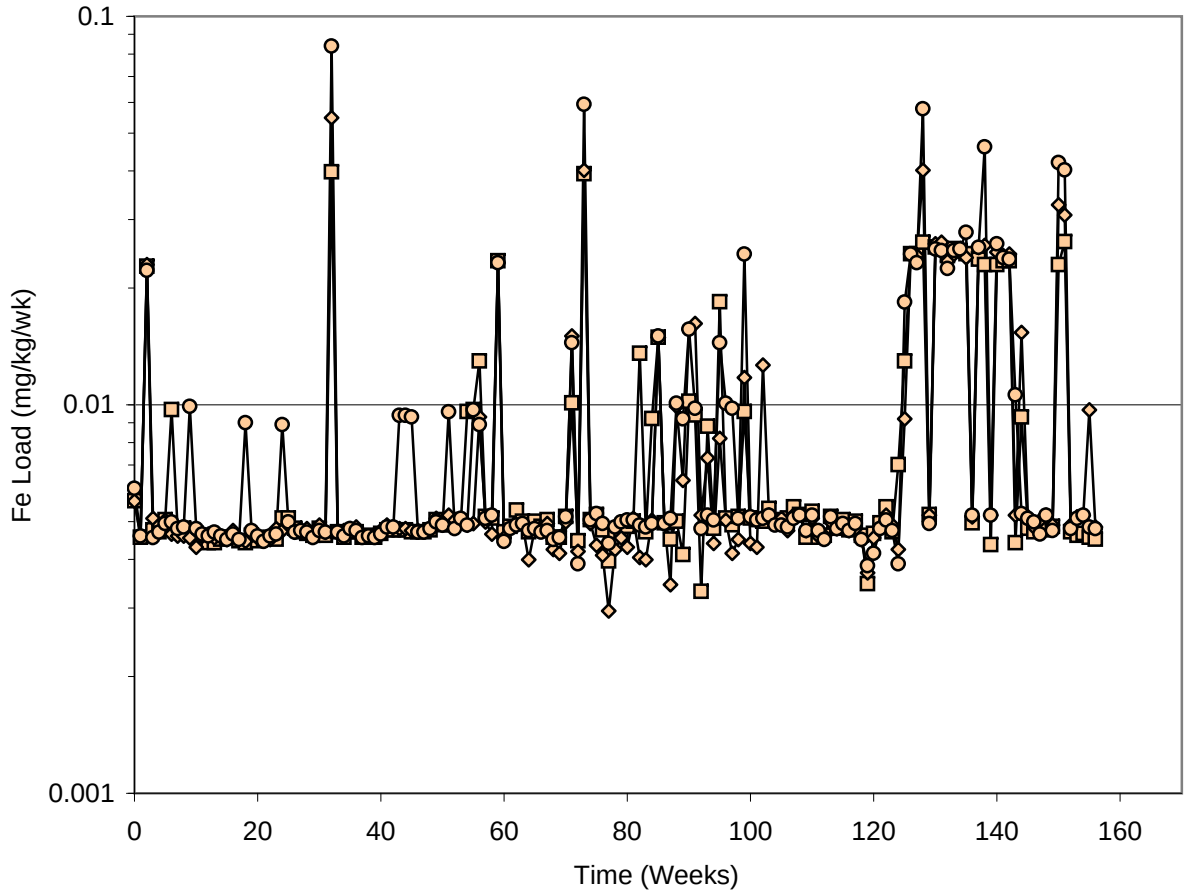
Cadmium Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 24



Copper Load
Terminated Cells
Wolverine Mine, YK

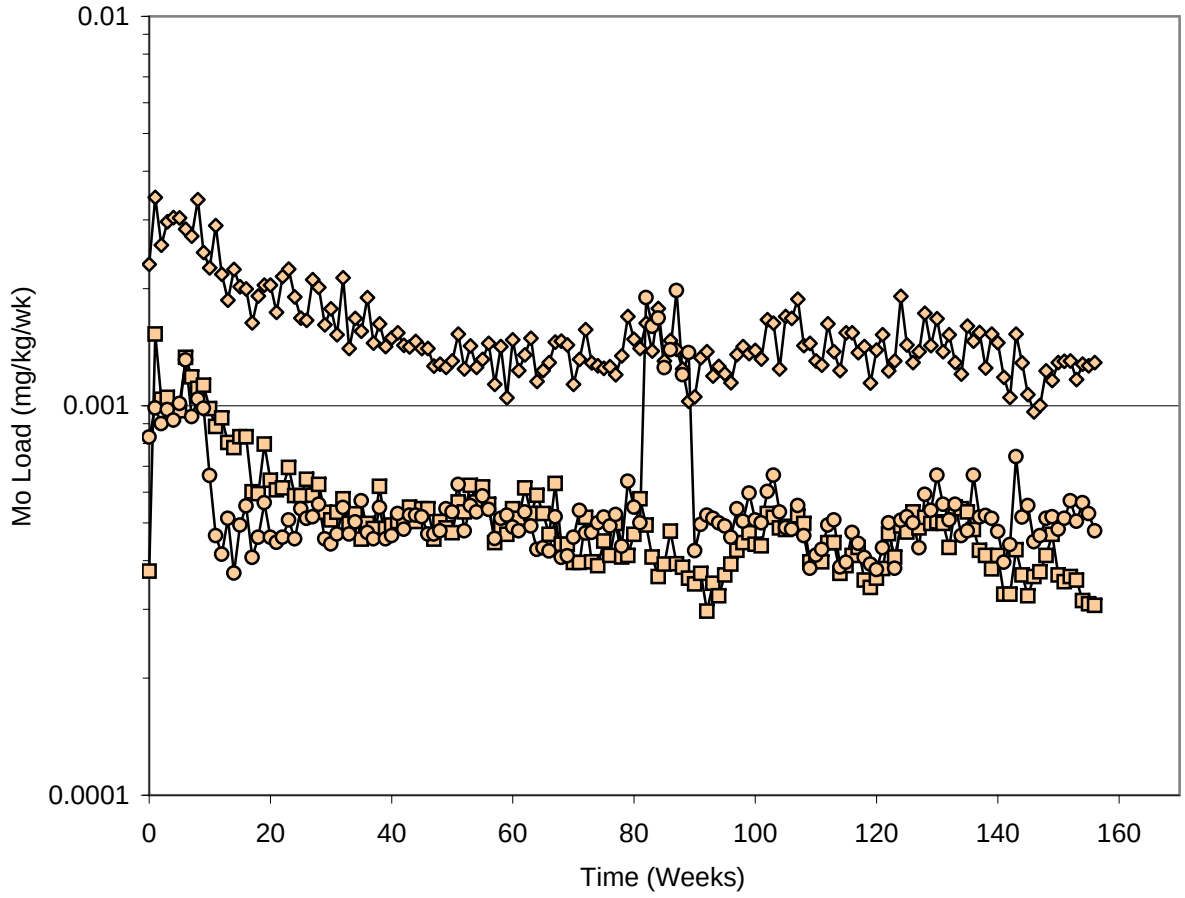
Ore

March 2010 | FIGURE 25



Iron Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 26

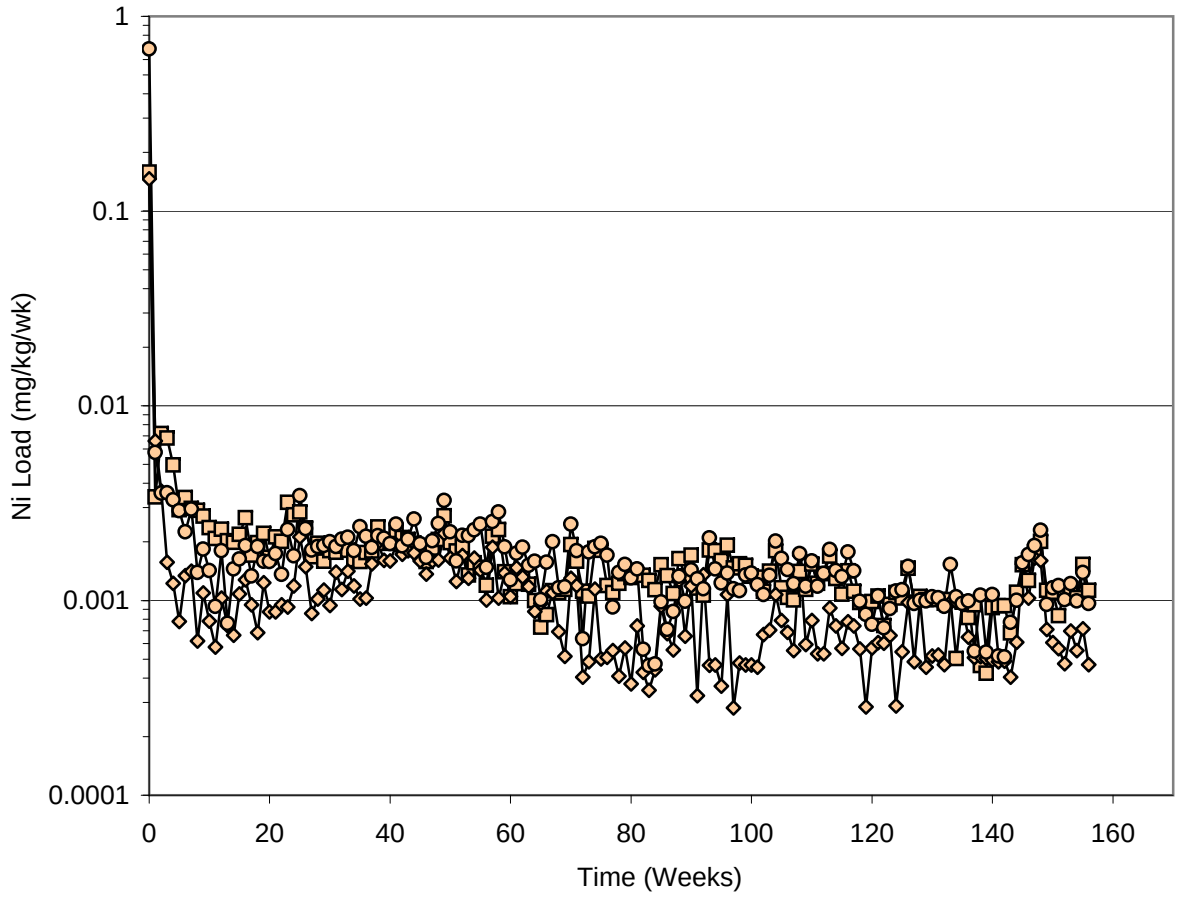
TC 53920



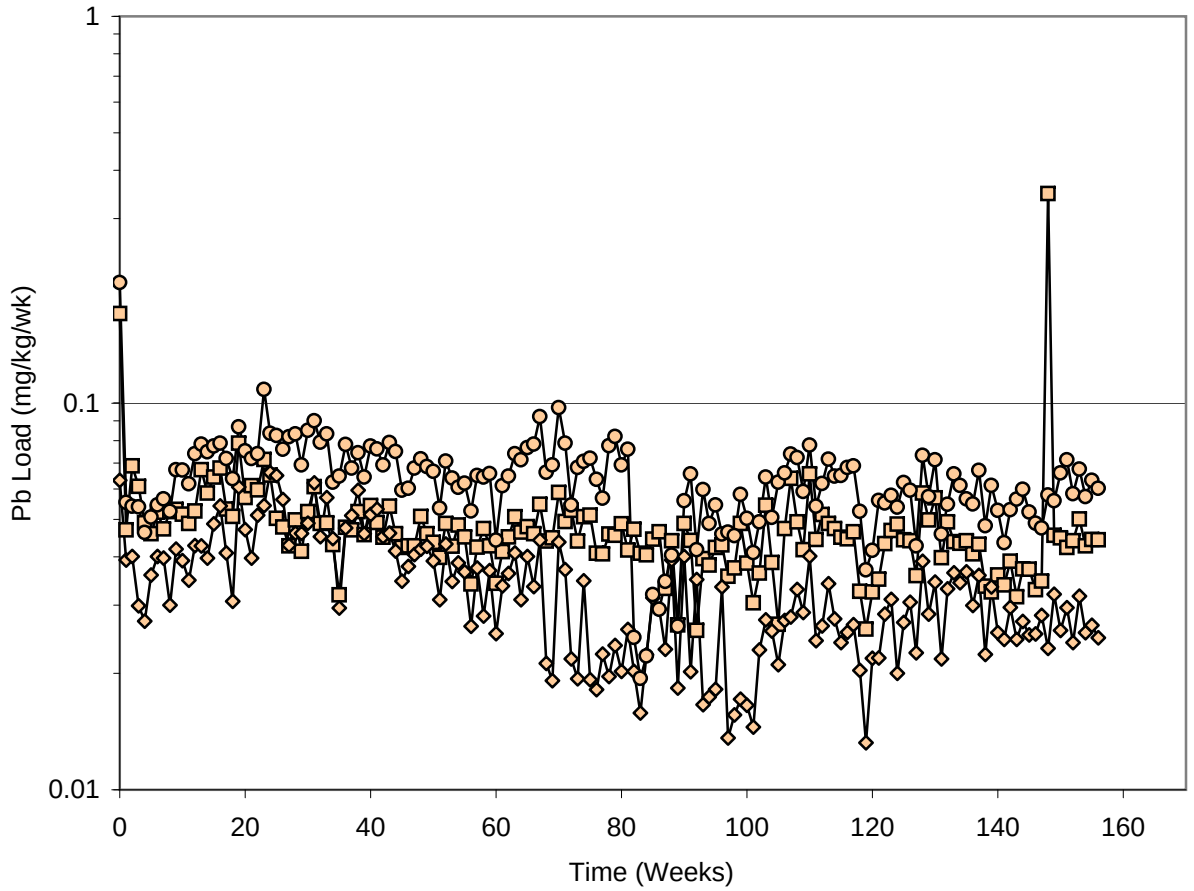
Molybdenum Load
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 27



Nickel Load Terminated Cells Wolverine Mine, YK	
Ore	
March 2010	FIGURE 28

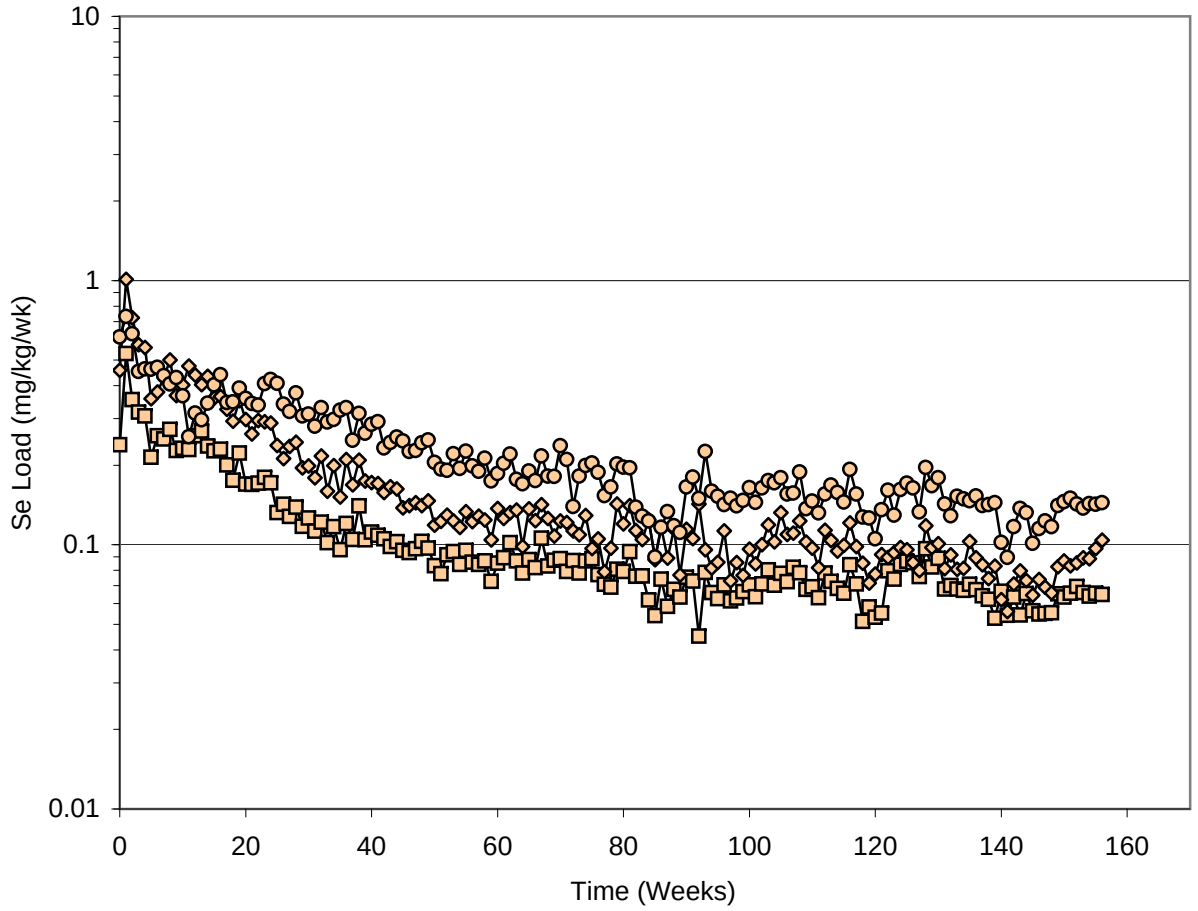


Lead Load
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 29

TC 53920

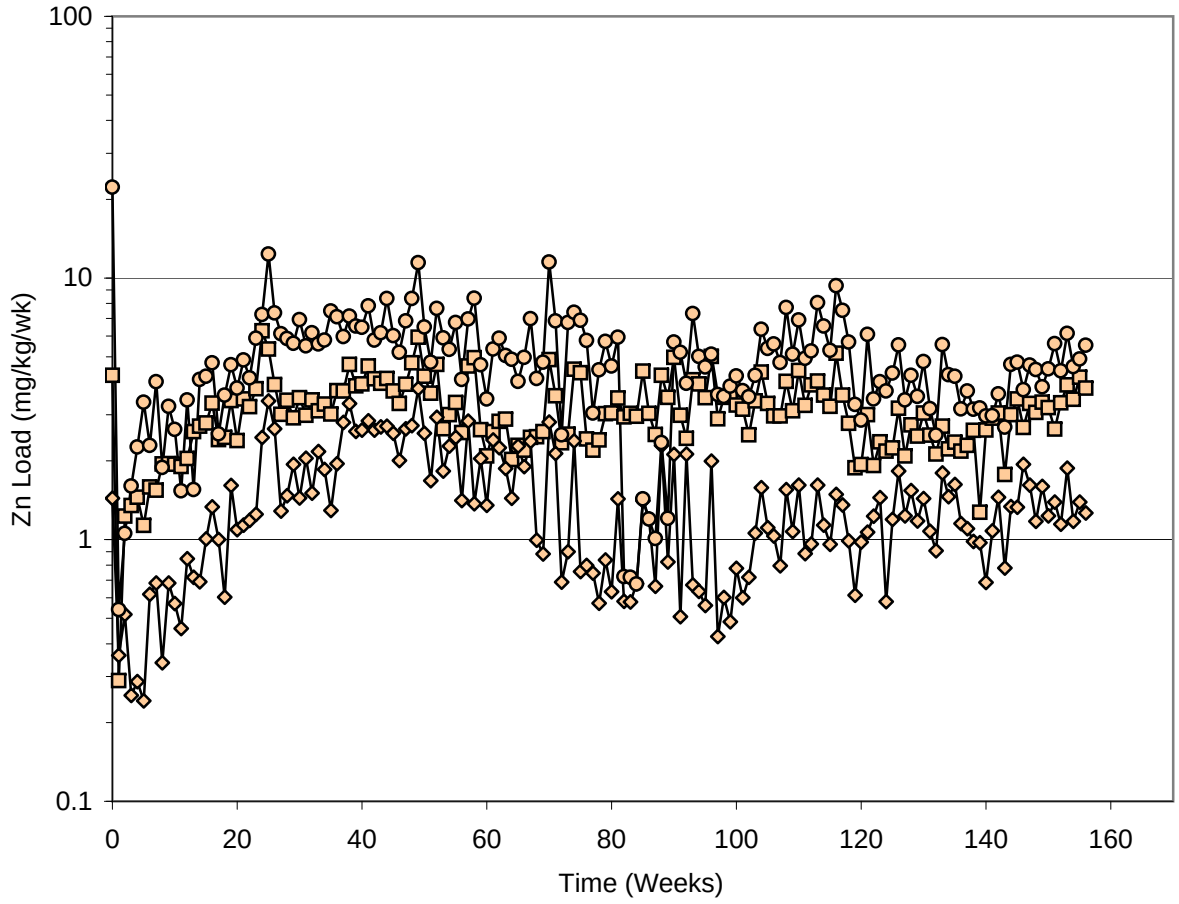


Selenium Load
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 30

TC 53920

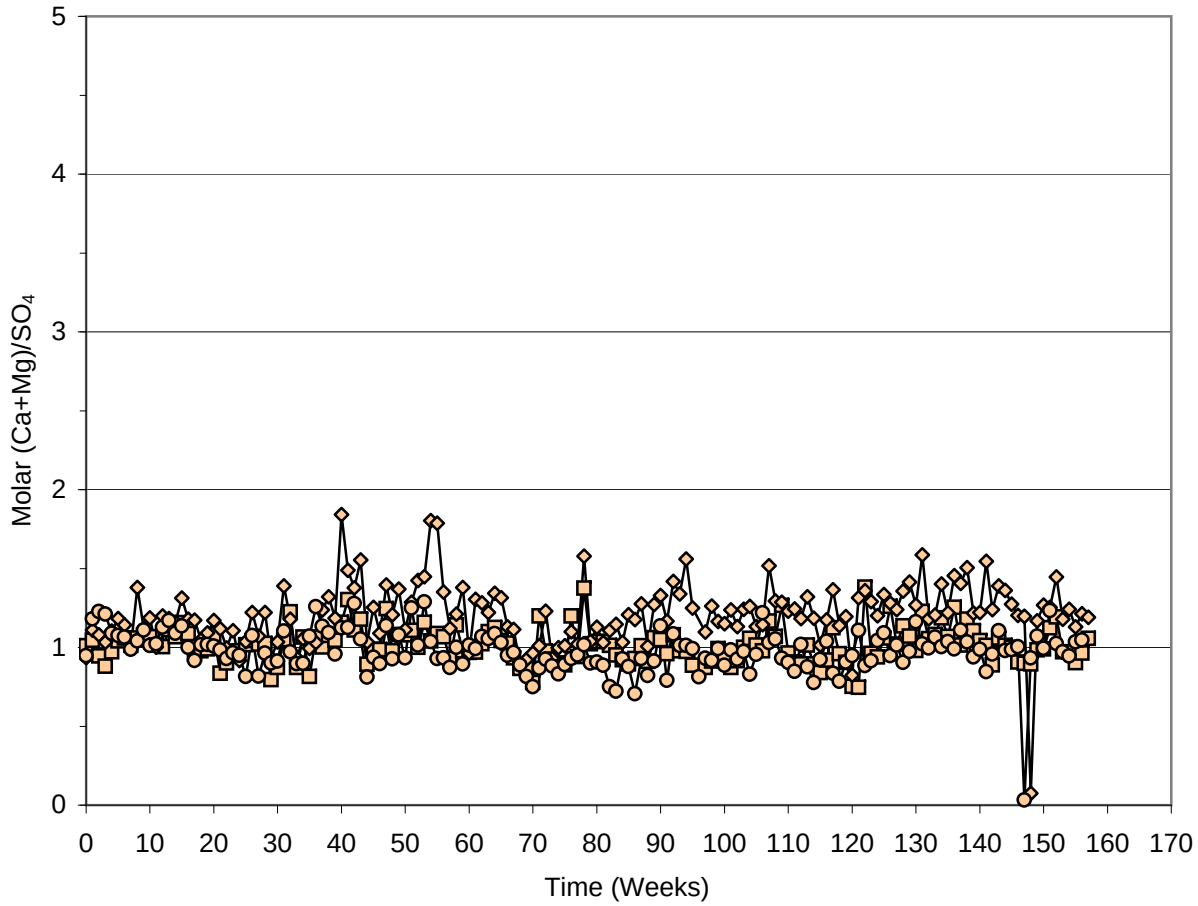


Zinc Load
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 31

TC 53920

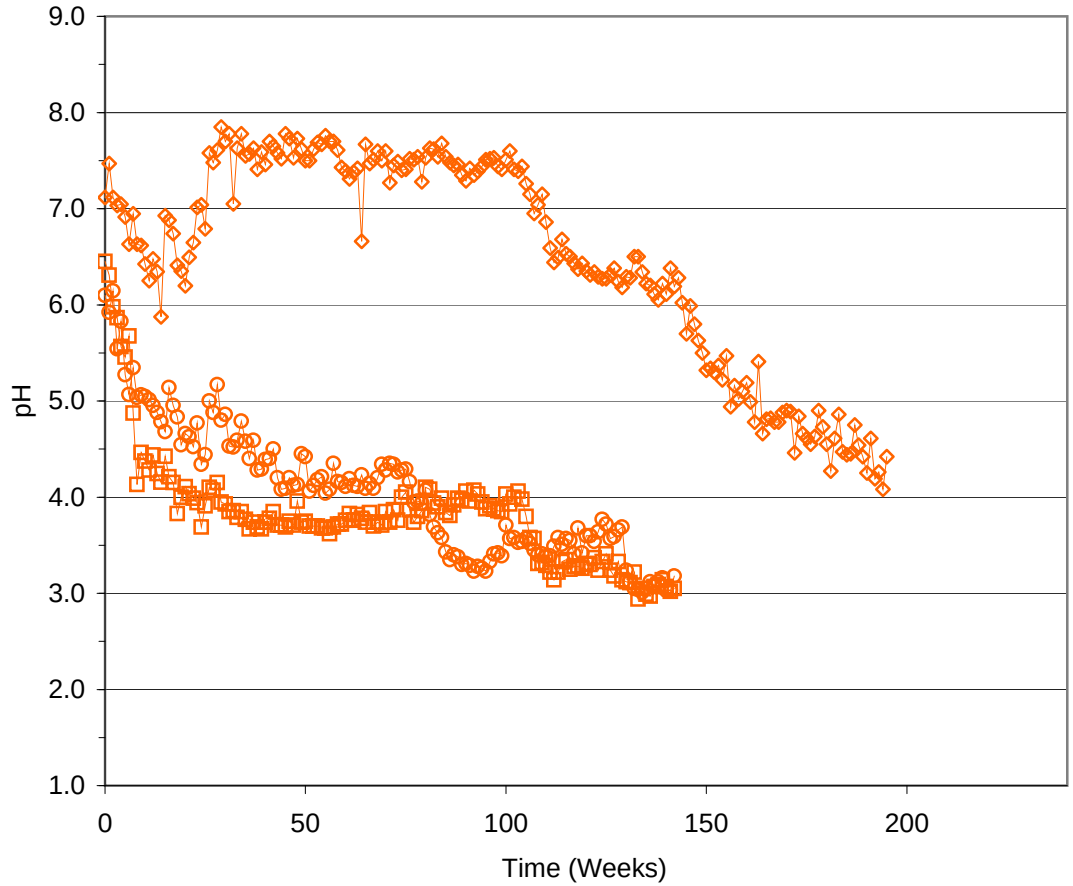


Molar (Ca+Mg)/SO4 Ratio
Terminated Cells
Wolverine Mine, YK

Ore

March 2010 | FIGURE 32

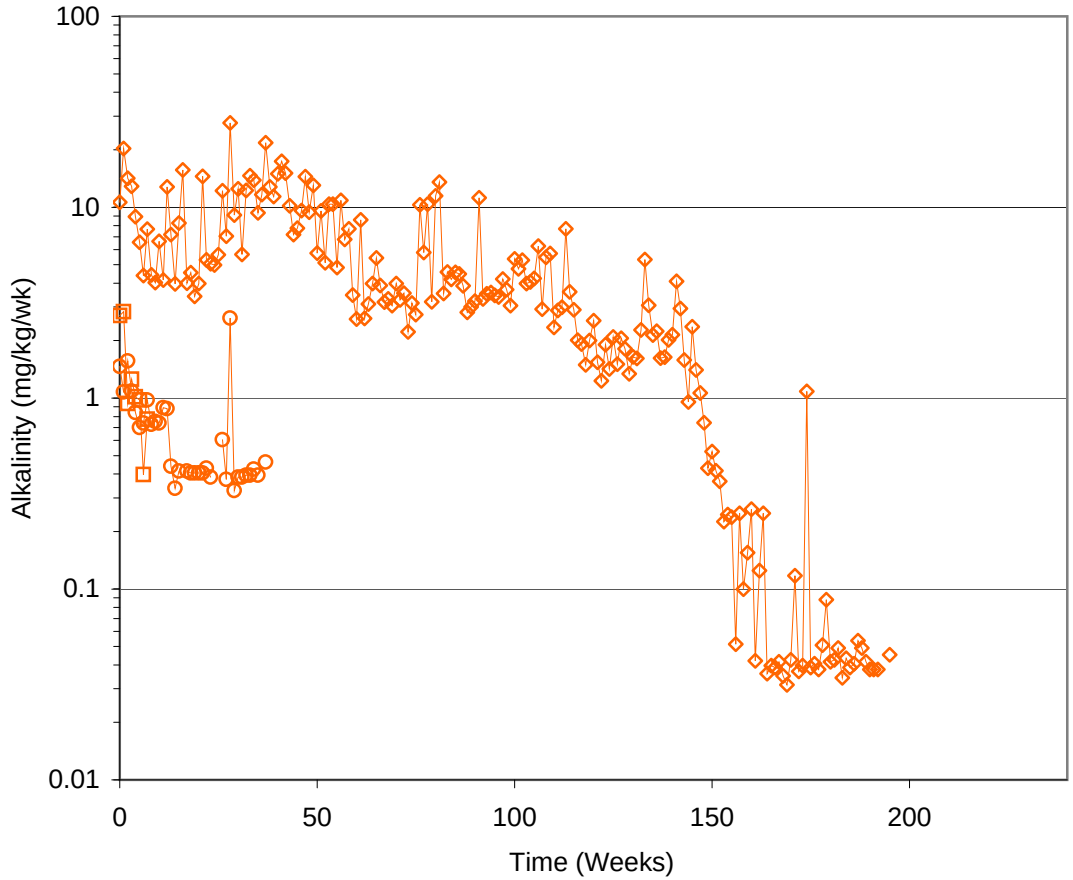
TC 53920



pH
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

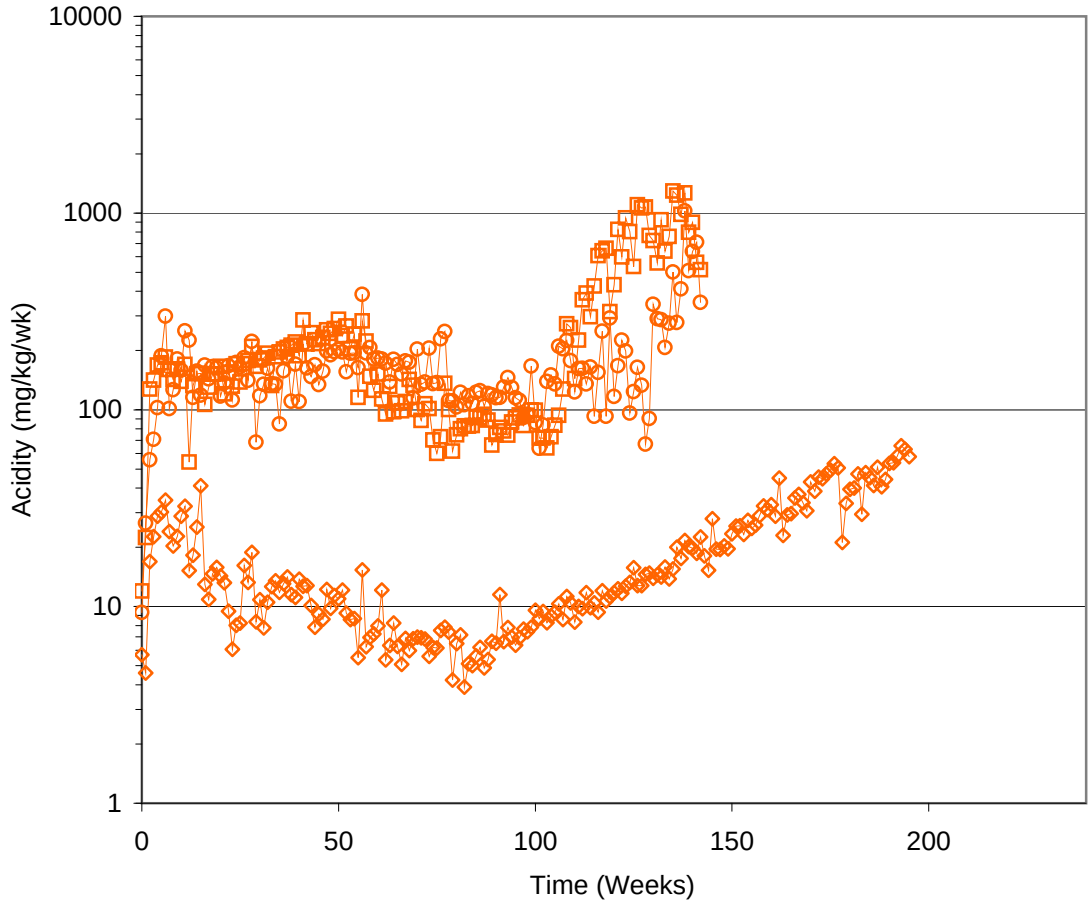
March 2010 | FIGURE 33



Alkalinity Load
Terminated and Operating Cells
Wolverine Mine, YK

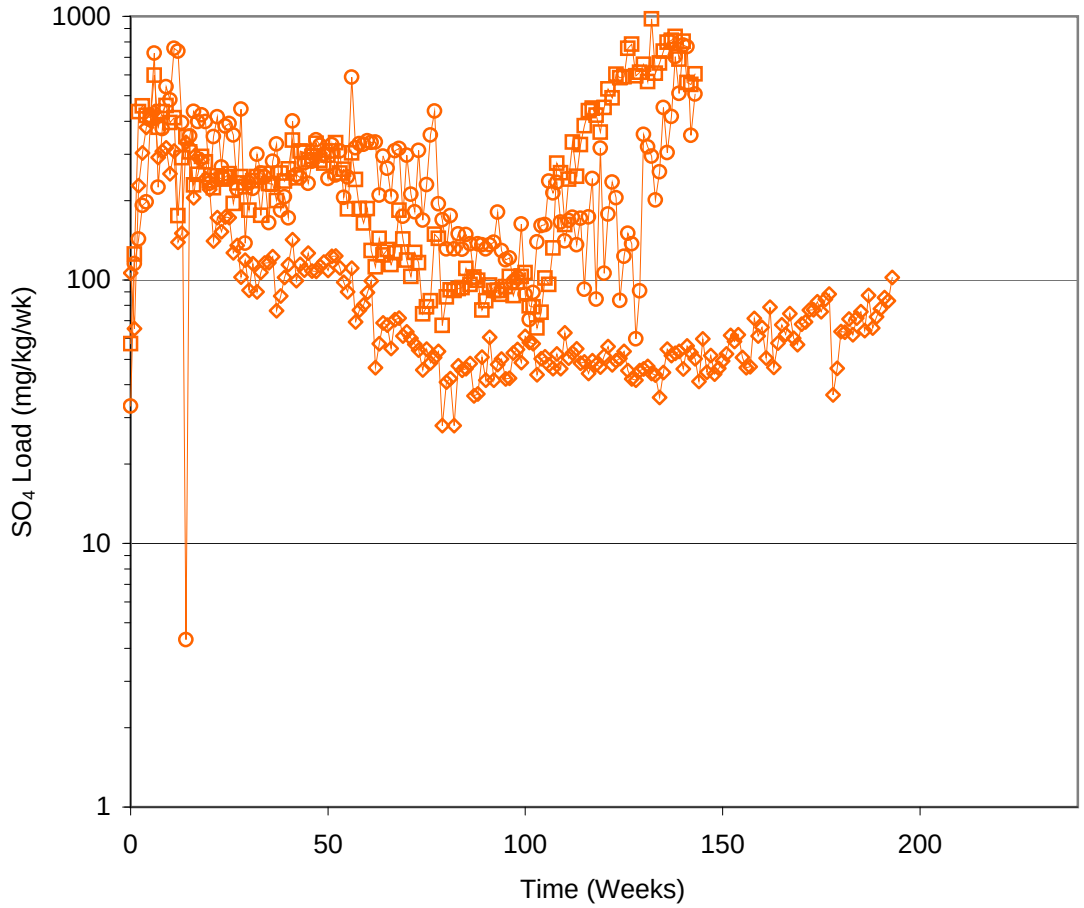
NP-Depleted Ore

March 2010 | FIGURE 34



Acidity Load Terminated and Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2010	FIGURE 35

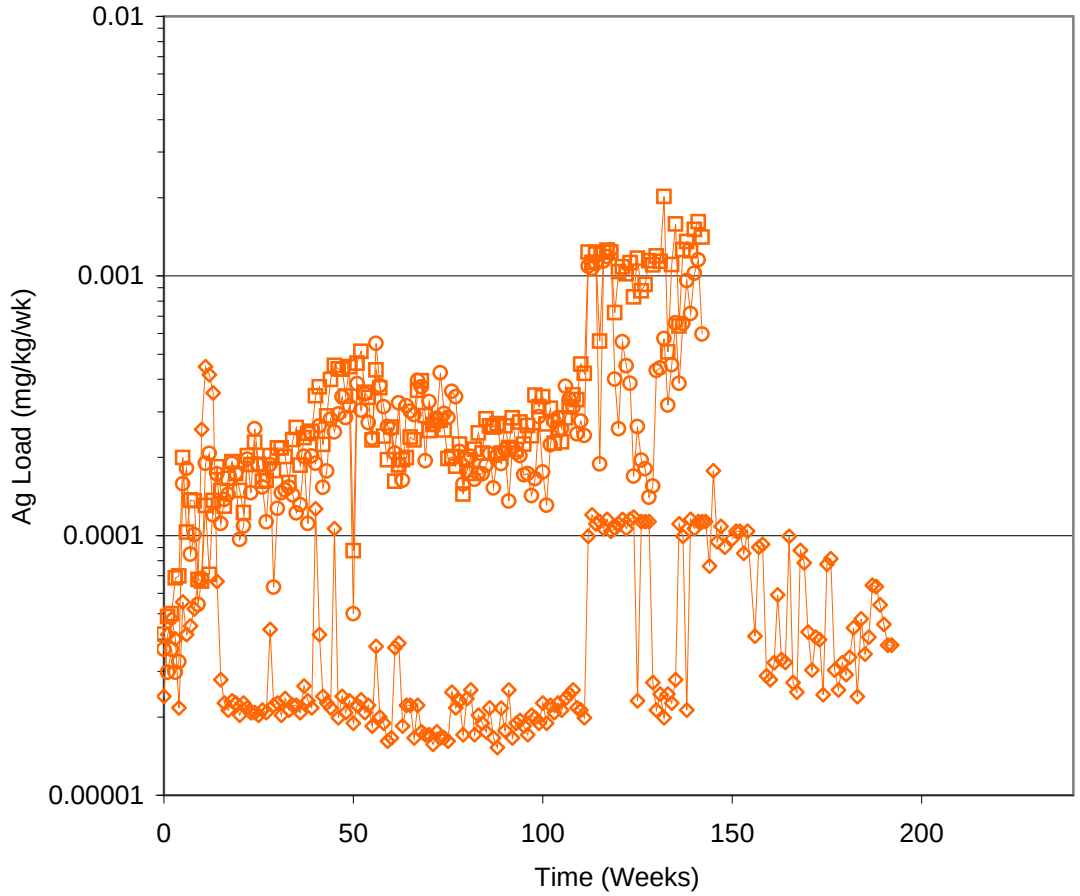
TC 53920



Sulphate Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

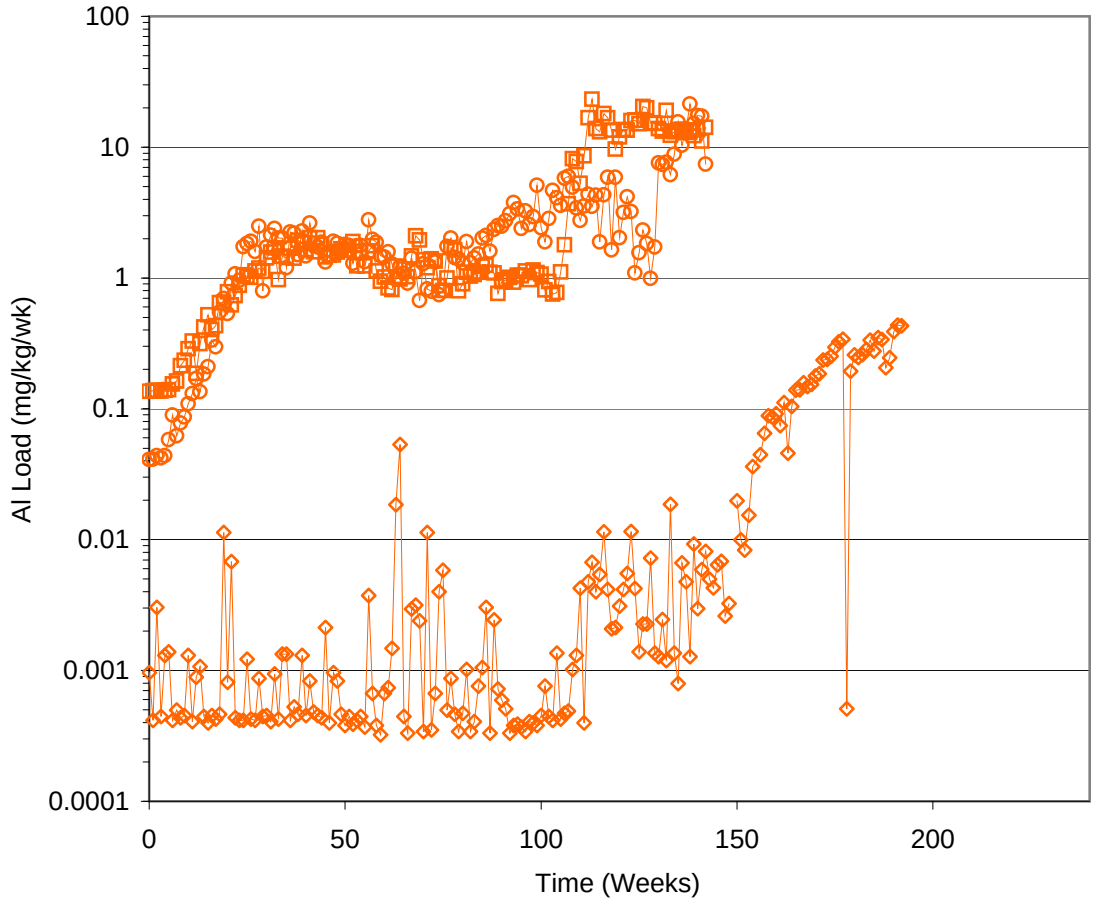
March 2010 | FIGURE 36



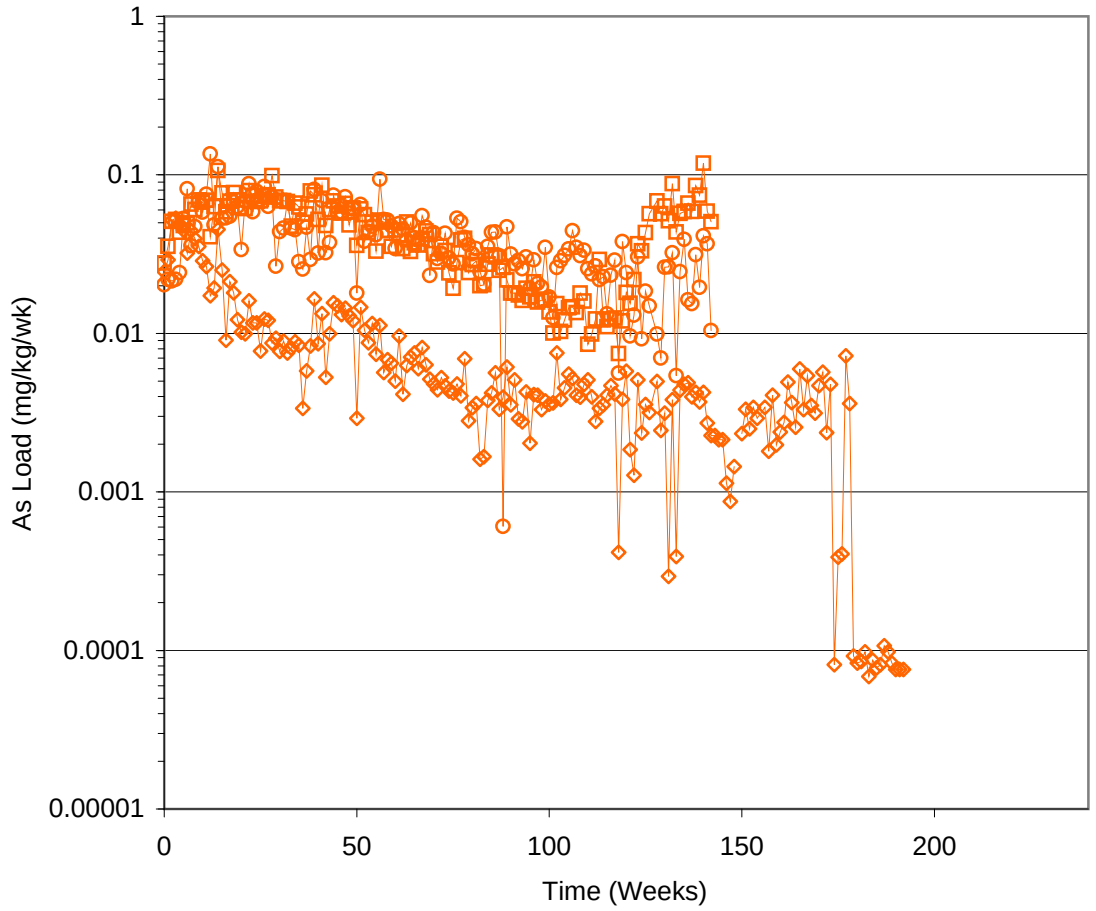
Silver Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 37



Aluminium Load Terminated and Operating Cells Wolverine Mine, YK	
NP-Depleted Ore	
March 2010	FIGURE 38

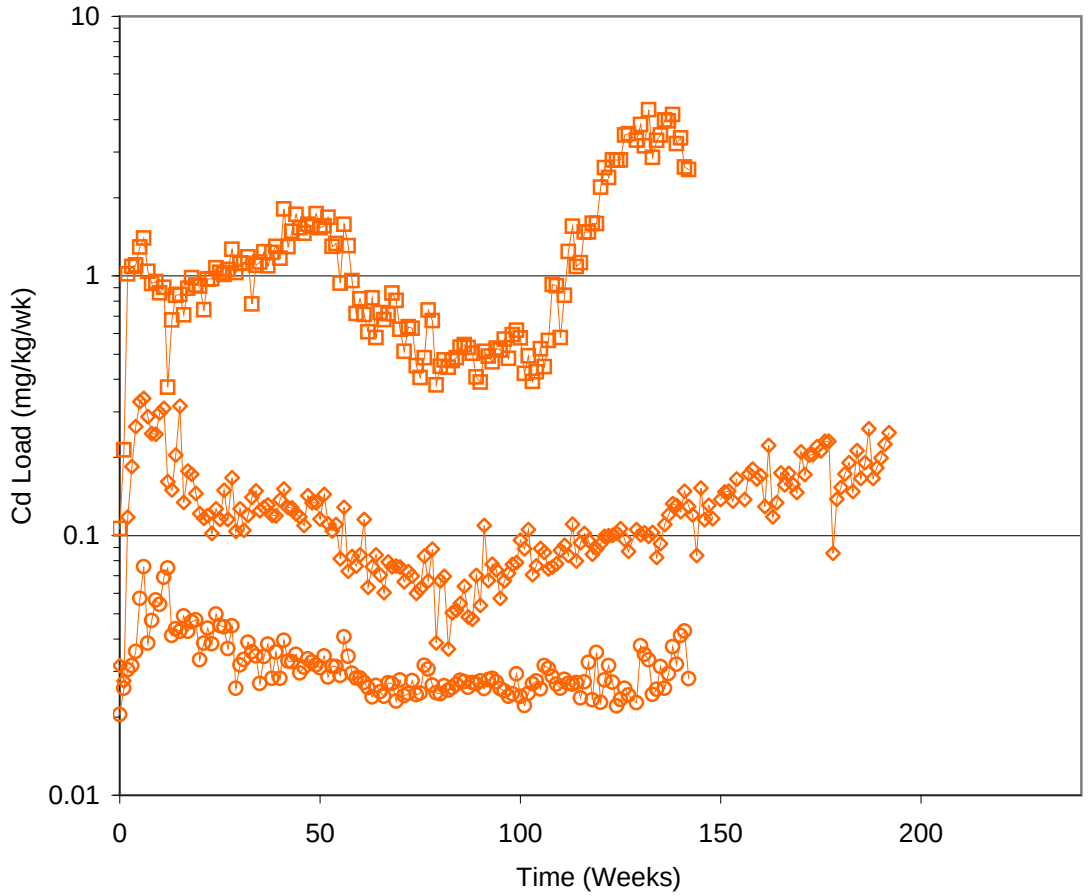


Arsenic Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 39

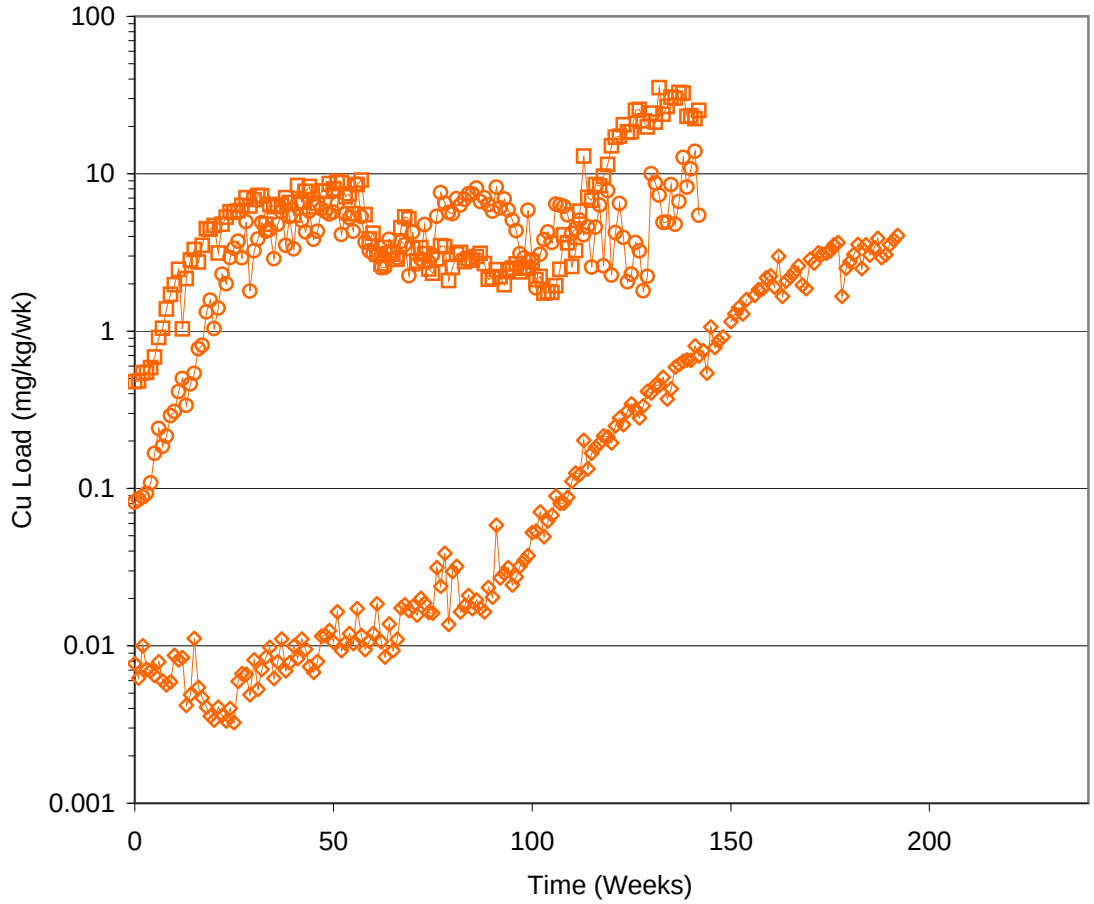
TC 53920



Cadmium Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 40

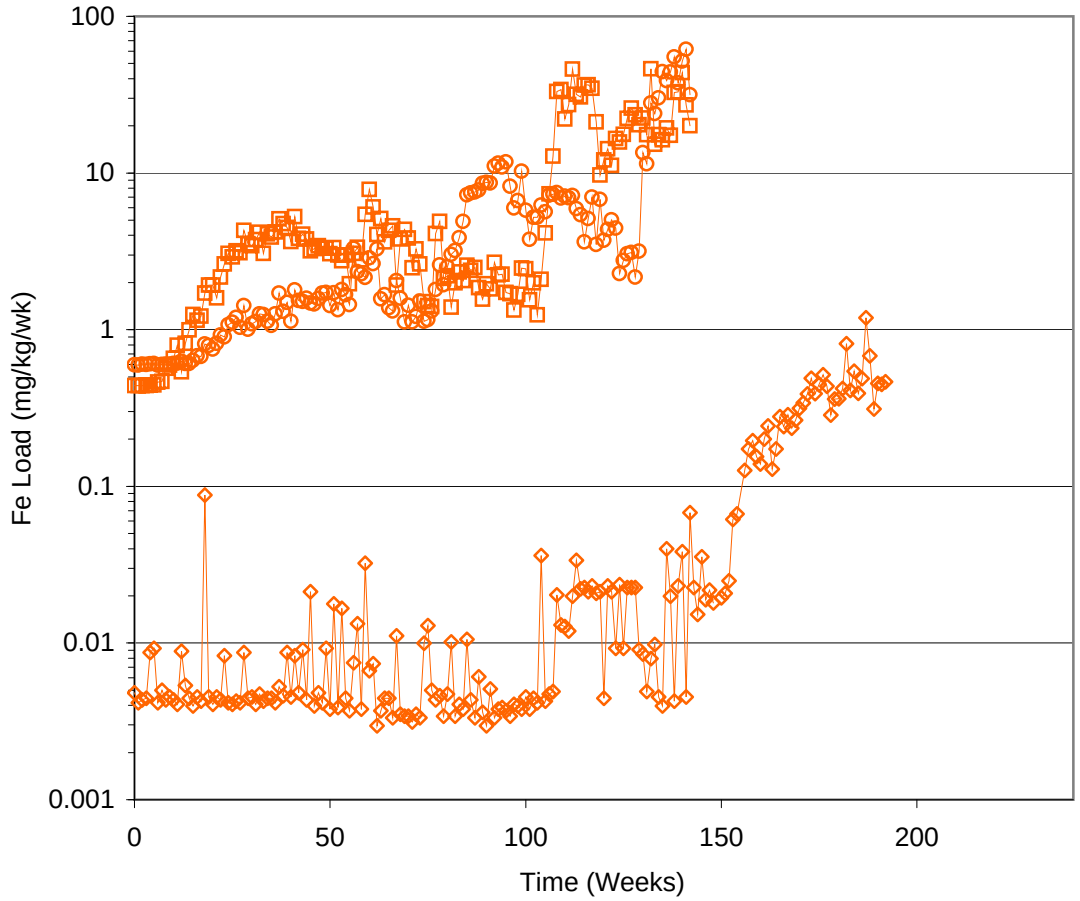


Copper Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

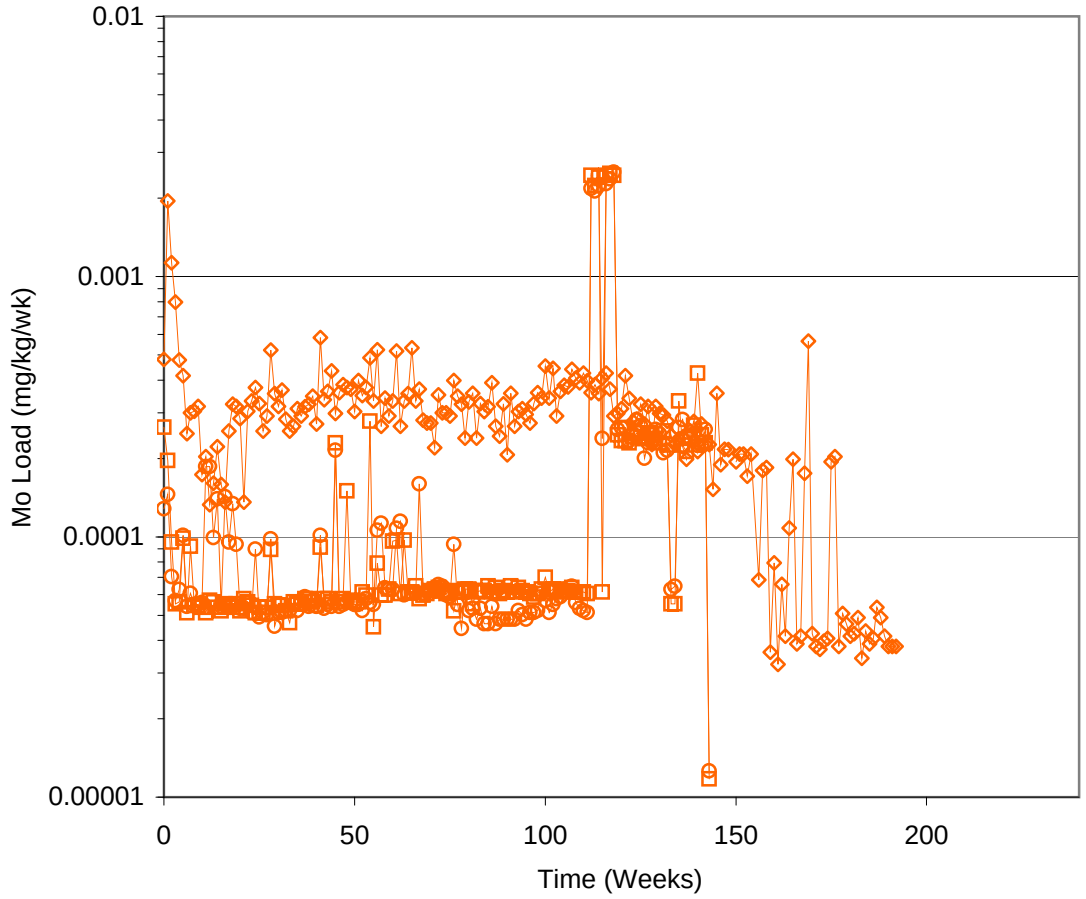
March 2010 | FIGURE 41

TC 53920



Iron Load	
Terminated and Operating Cells	
Wolverine Mine, YK	
NP-Depleted Ore	
March 2010	FIGURE 42

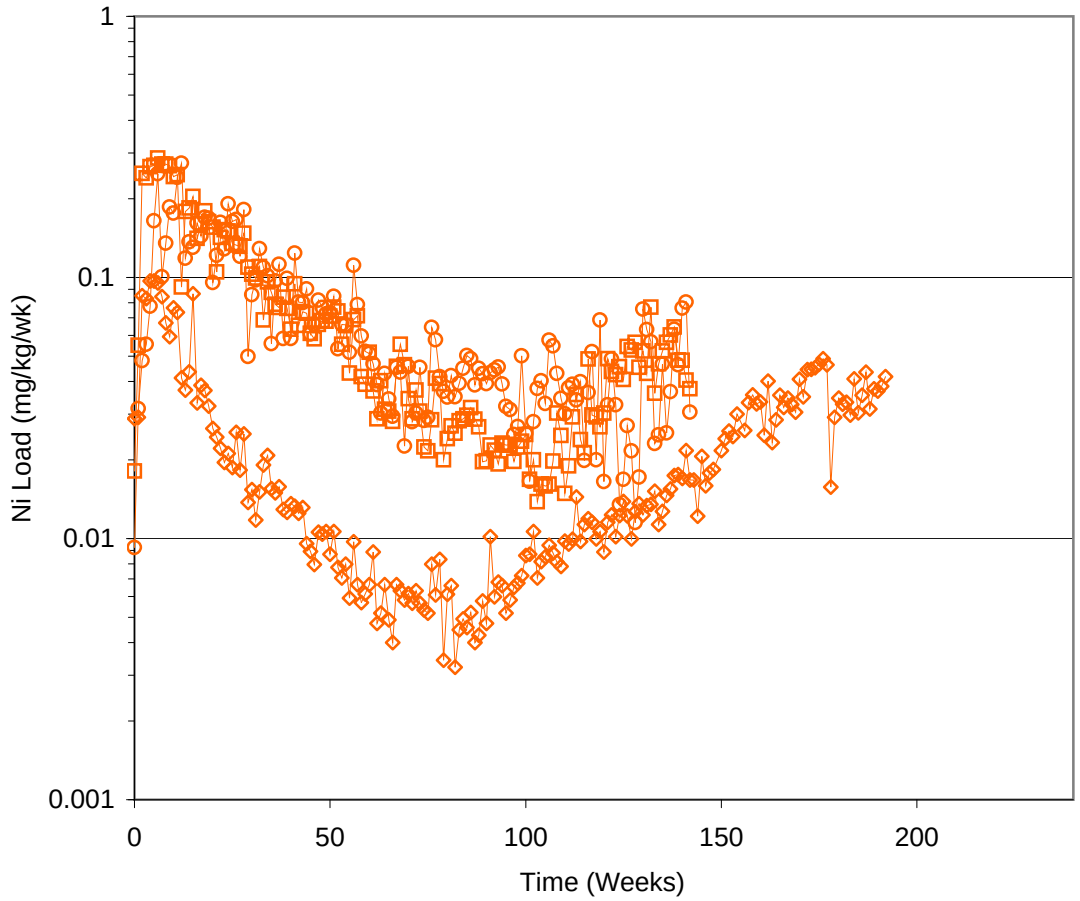
TC 53920



Molybdenum Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 43

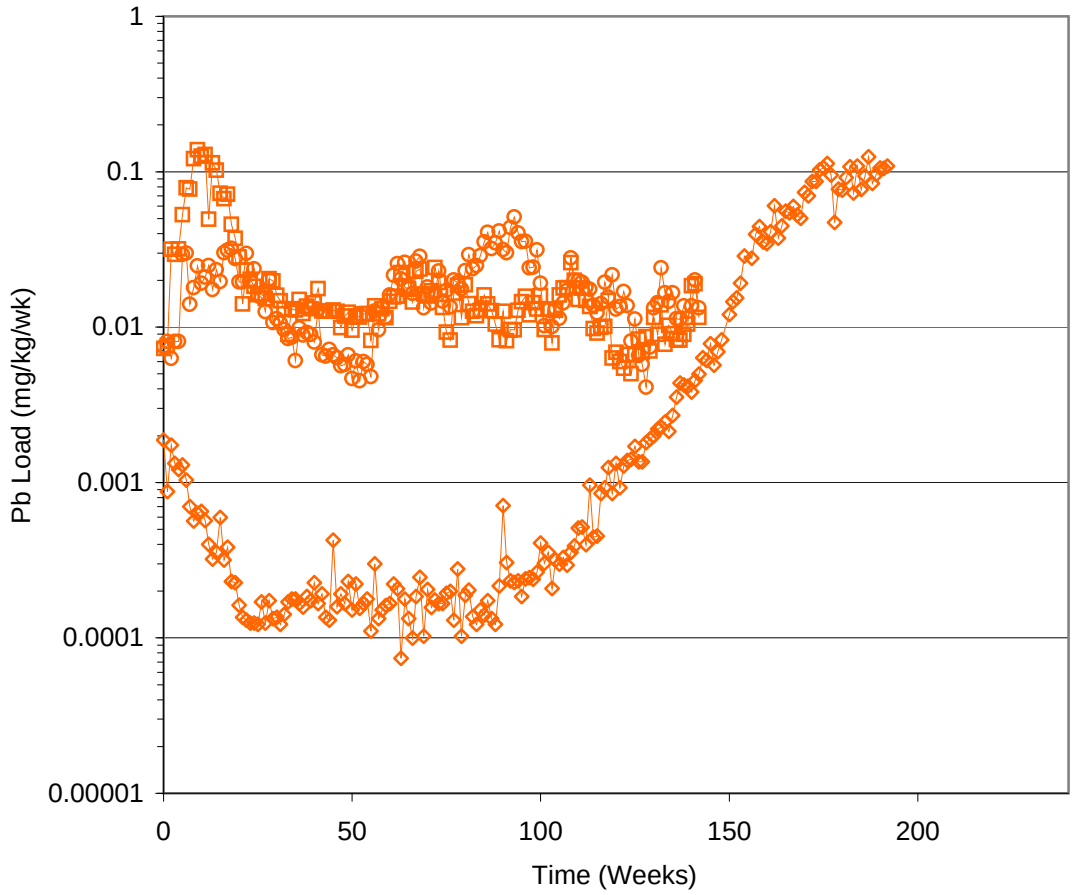


Nickel Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

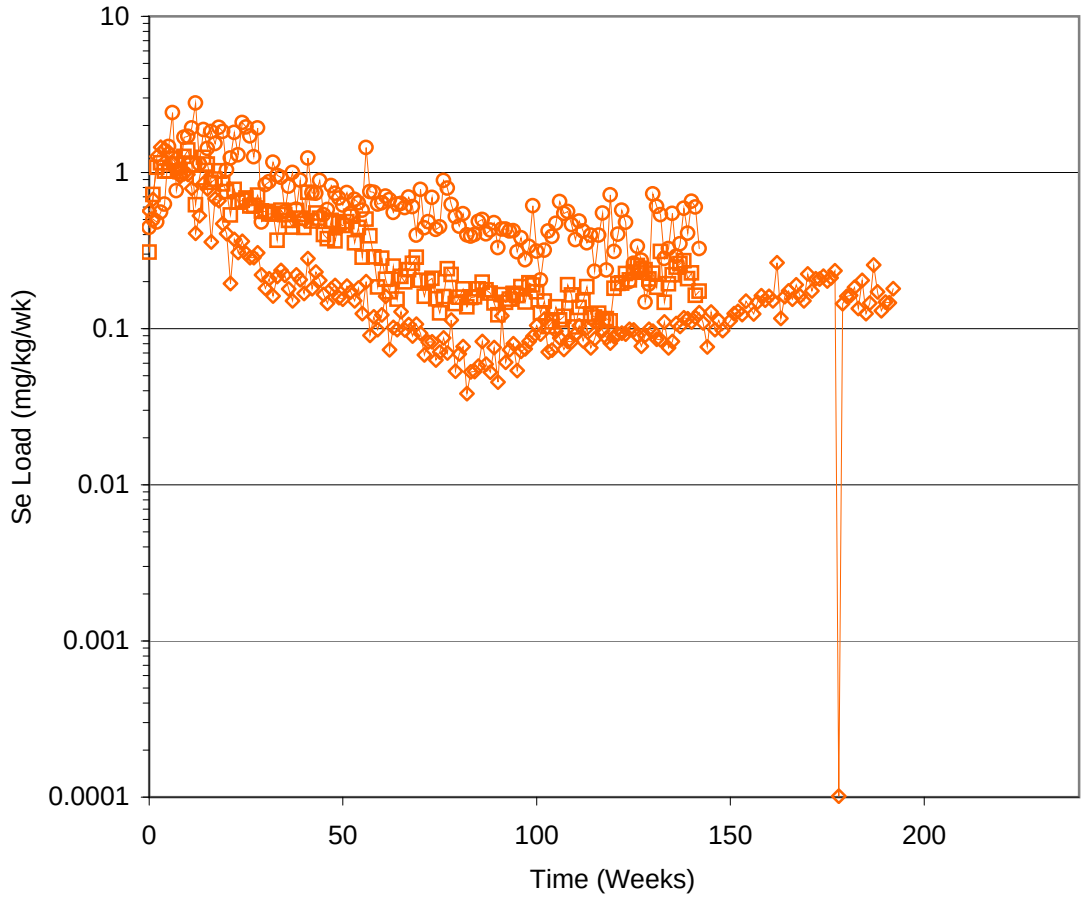
March 2010 | FIGURE 44

TC 53920



Lead Load
Terminated and Operating Cells
Wolverine Mine, YK
NP-Depleted Ore
March 2010 | FIGURE 45

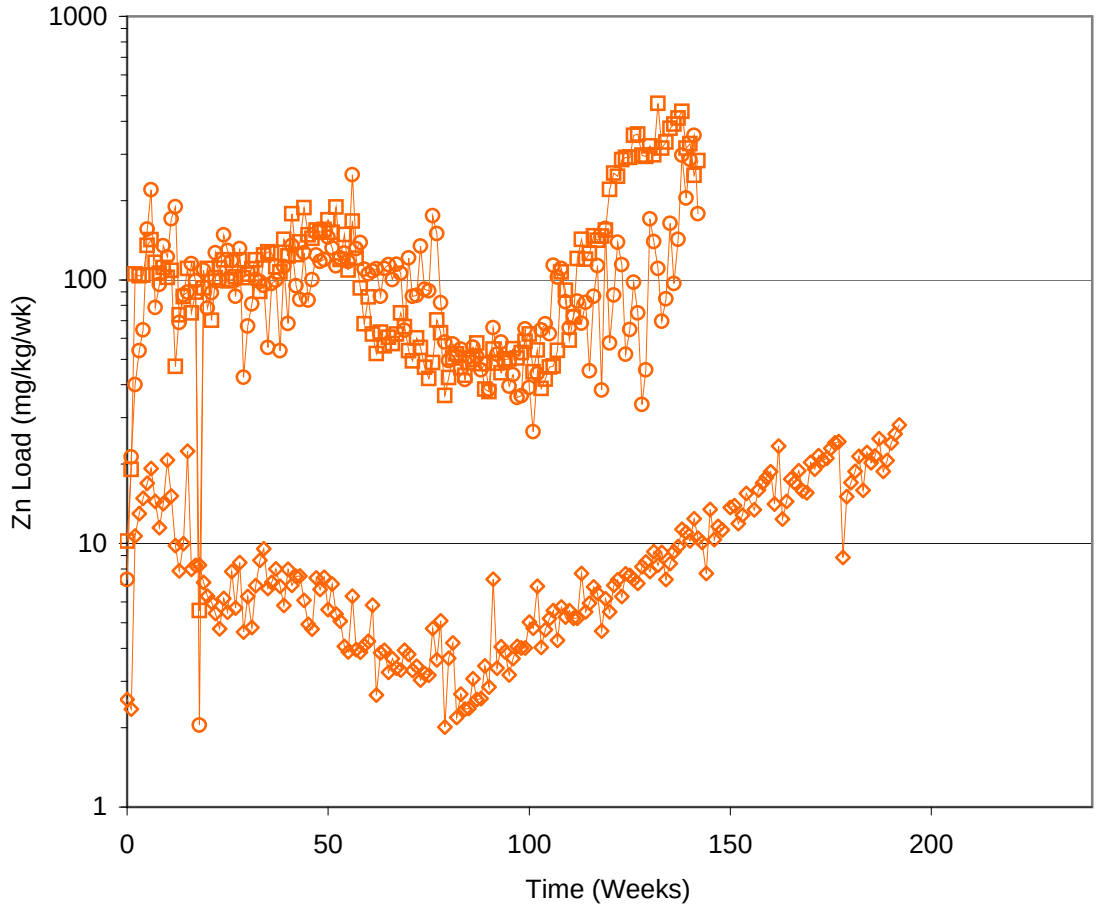
TC 53920



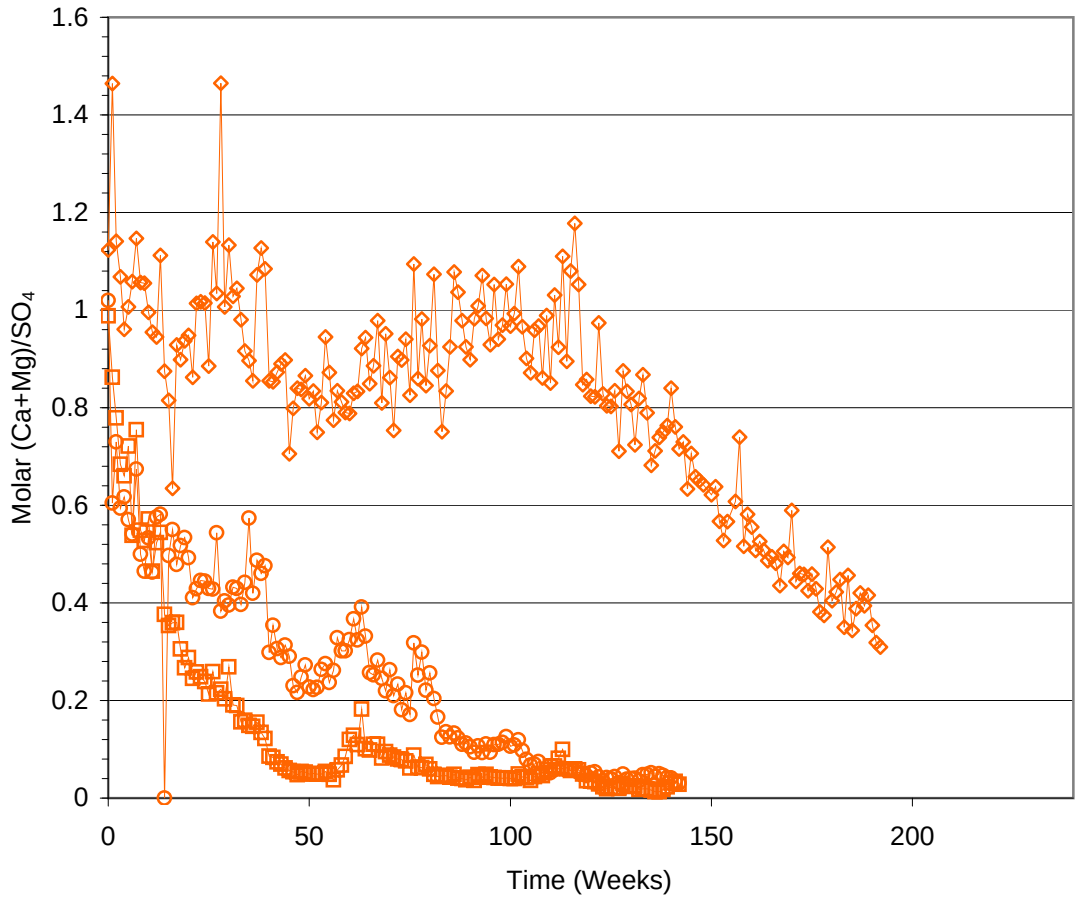
Selenium Load
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 46



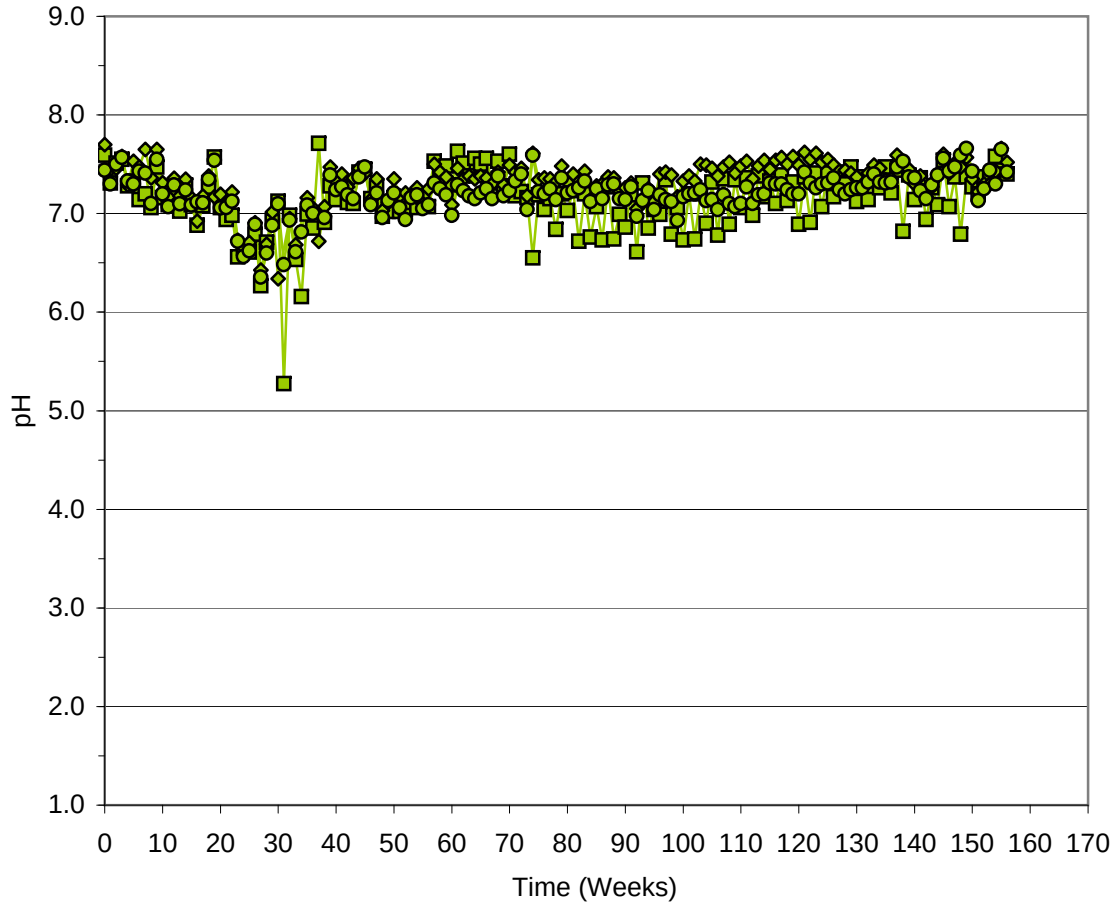
Zinc Load
Terminated and Operating Cells
Wolverine Mine, YK
NP-Depleted Ore
March 2010 | FIGURE 47

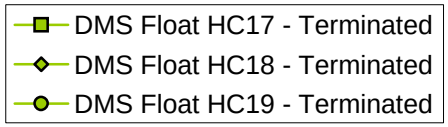


Molar $(Ca+Mg)/SO_4$ Ratio
Terminated and Operating Cells
Wolverine Mine, YK

NP-Depleted Ore

March 2010 | FIGURE 48

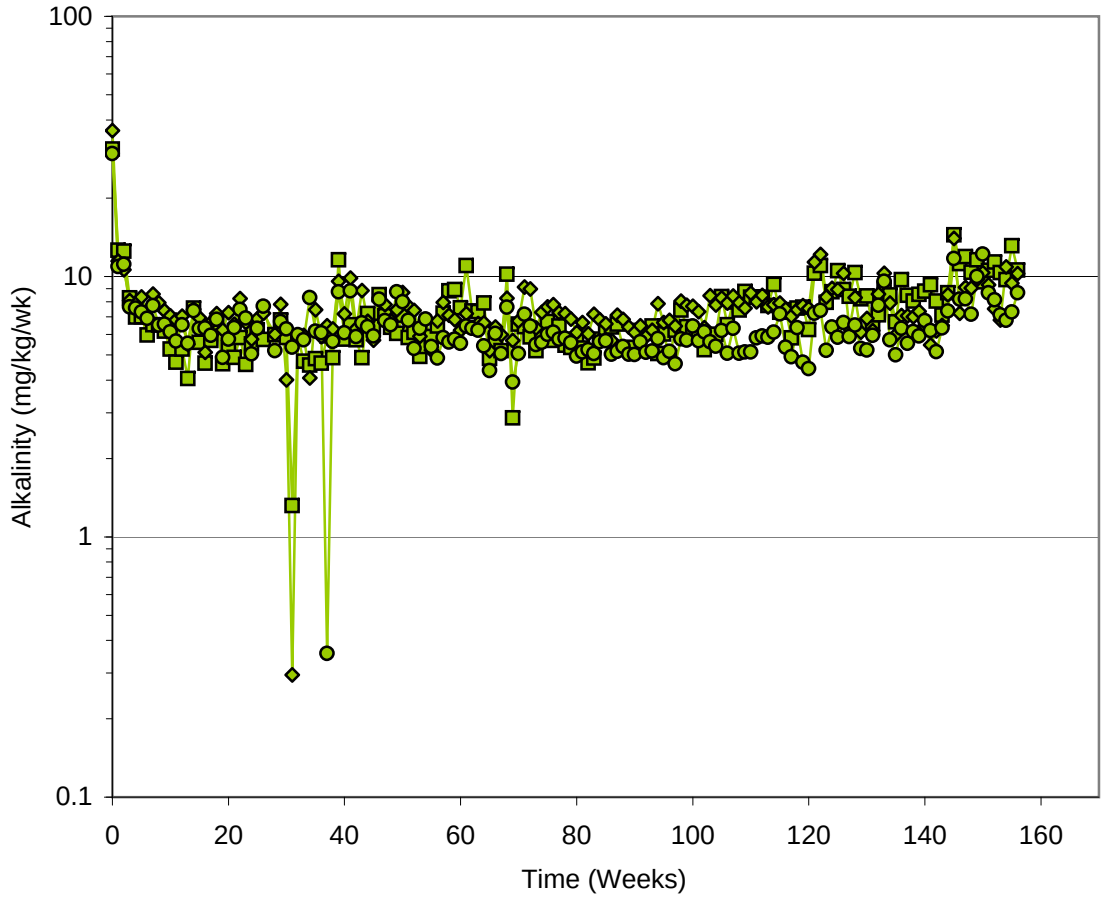




pH
Terminated Cells
Wolverine Mine, YK

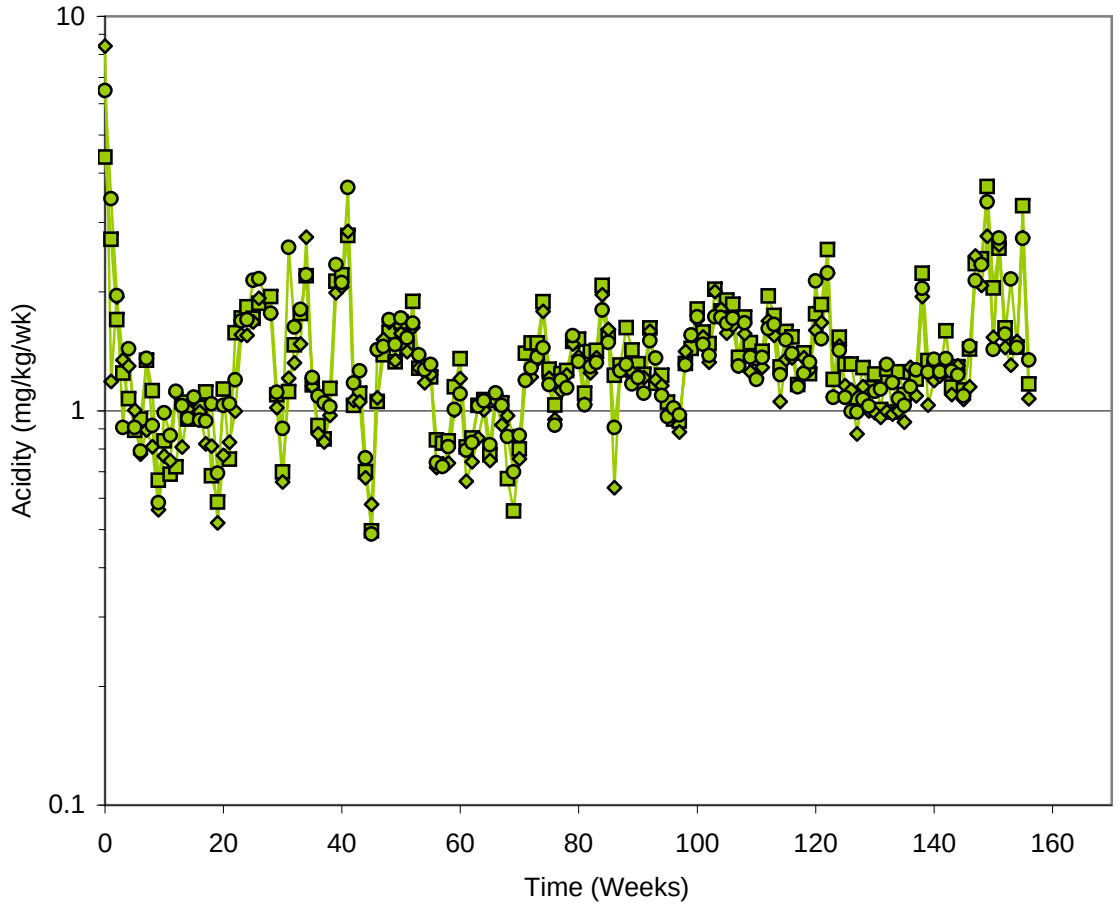
DMS Float

March 2010 | FIGURE 49



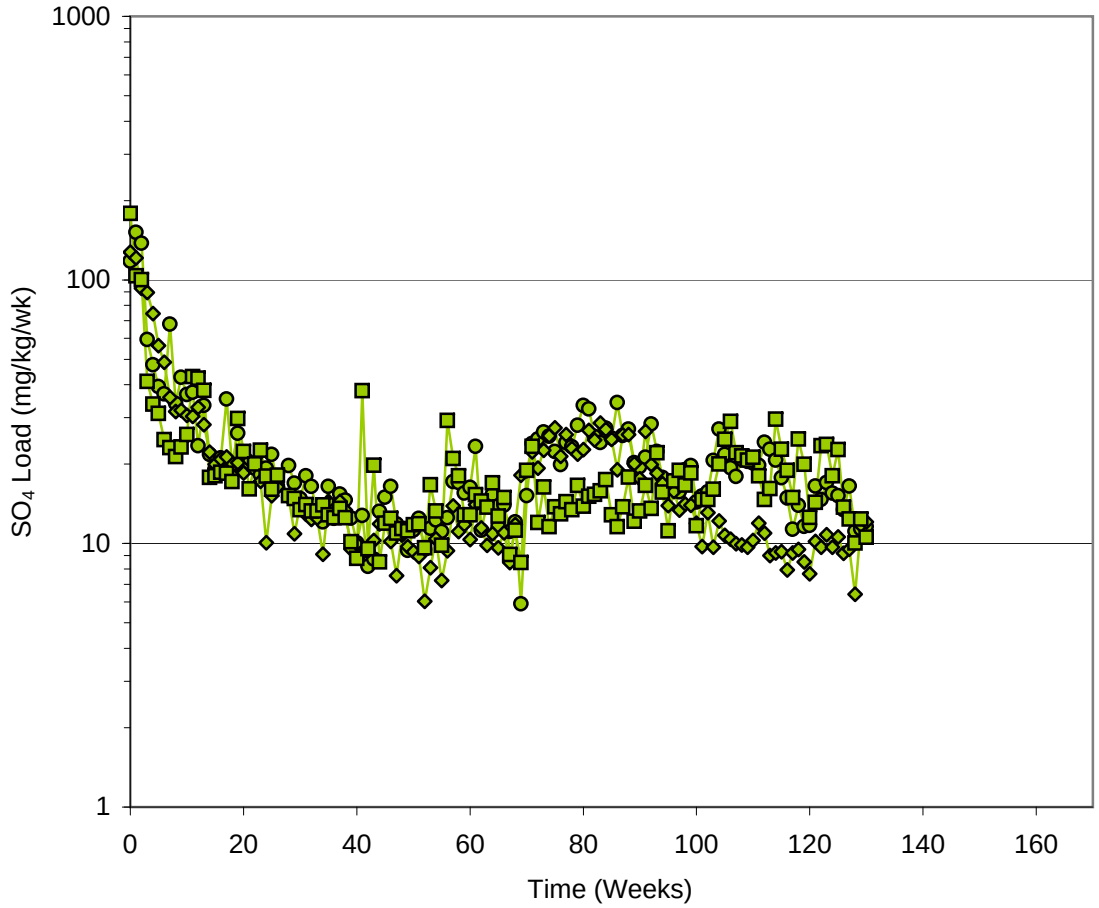
Alkalinity Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 50

TC 53920



Acidity Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 51

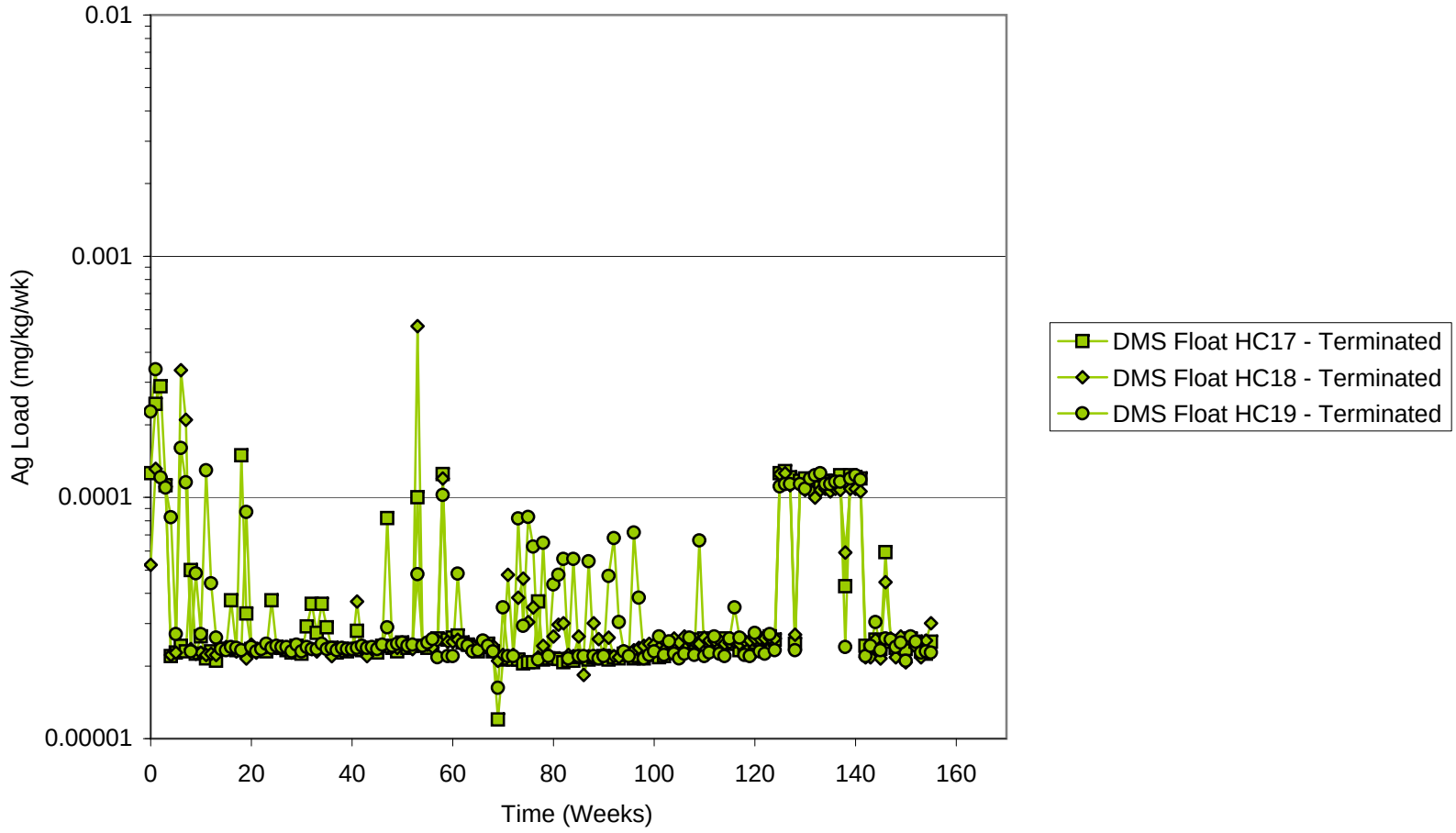
TC 53920



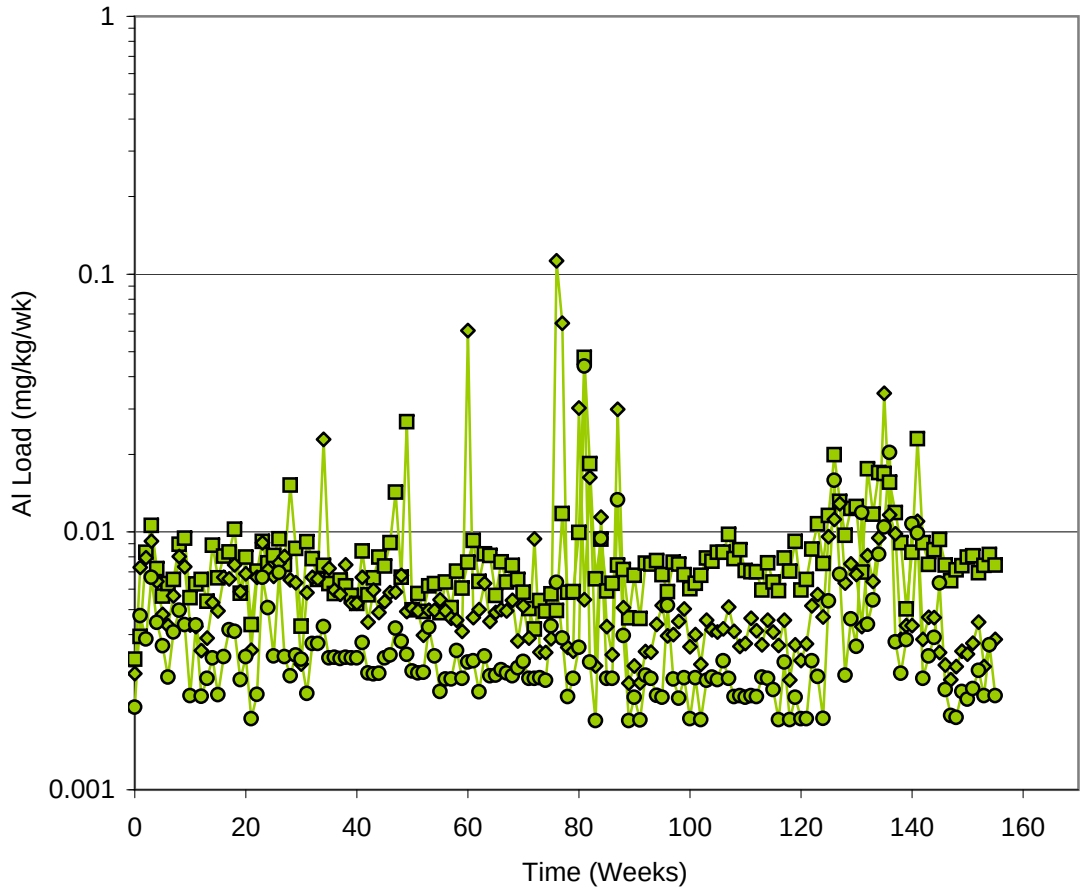
Sulphate Load
Terminated Cells
Wolverine Mine, YK

DMS Float

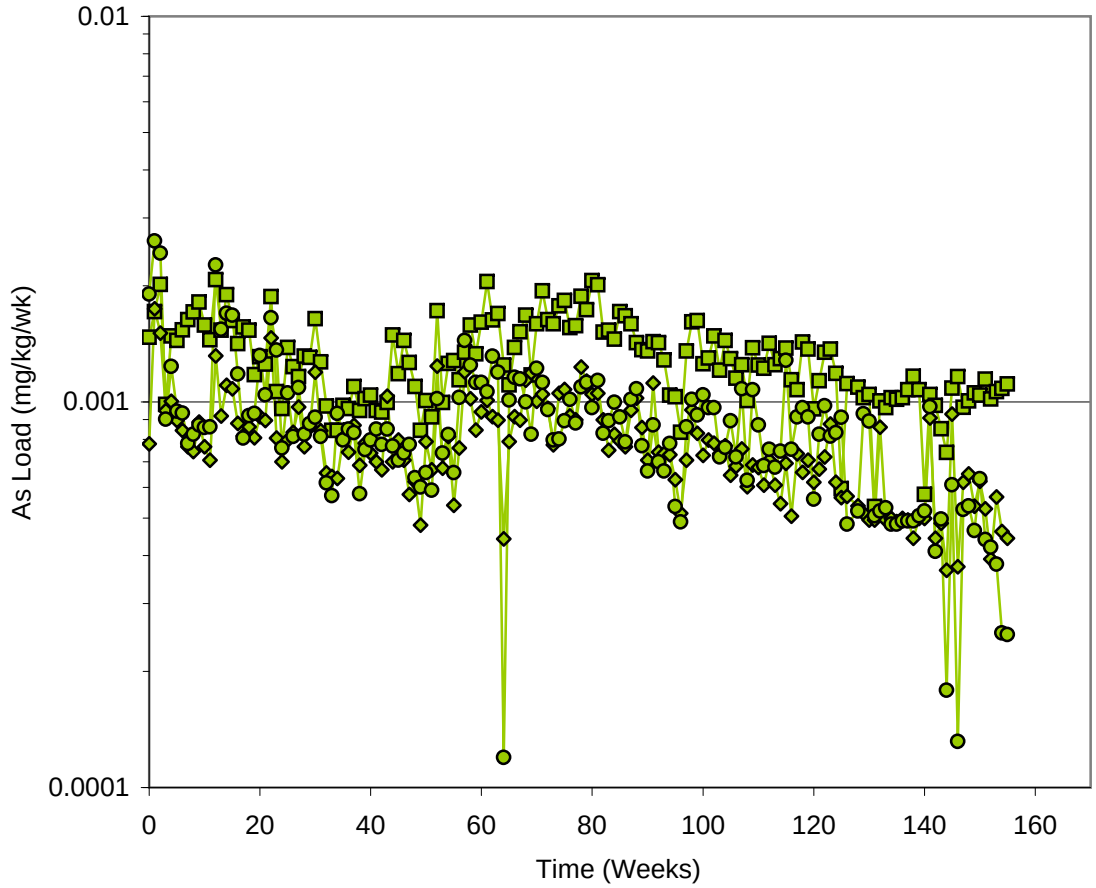
March 2010 | FIGURE 52



Silver Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 53

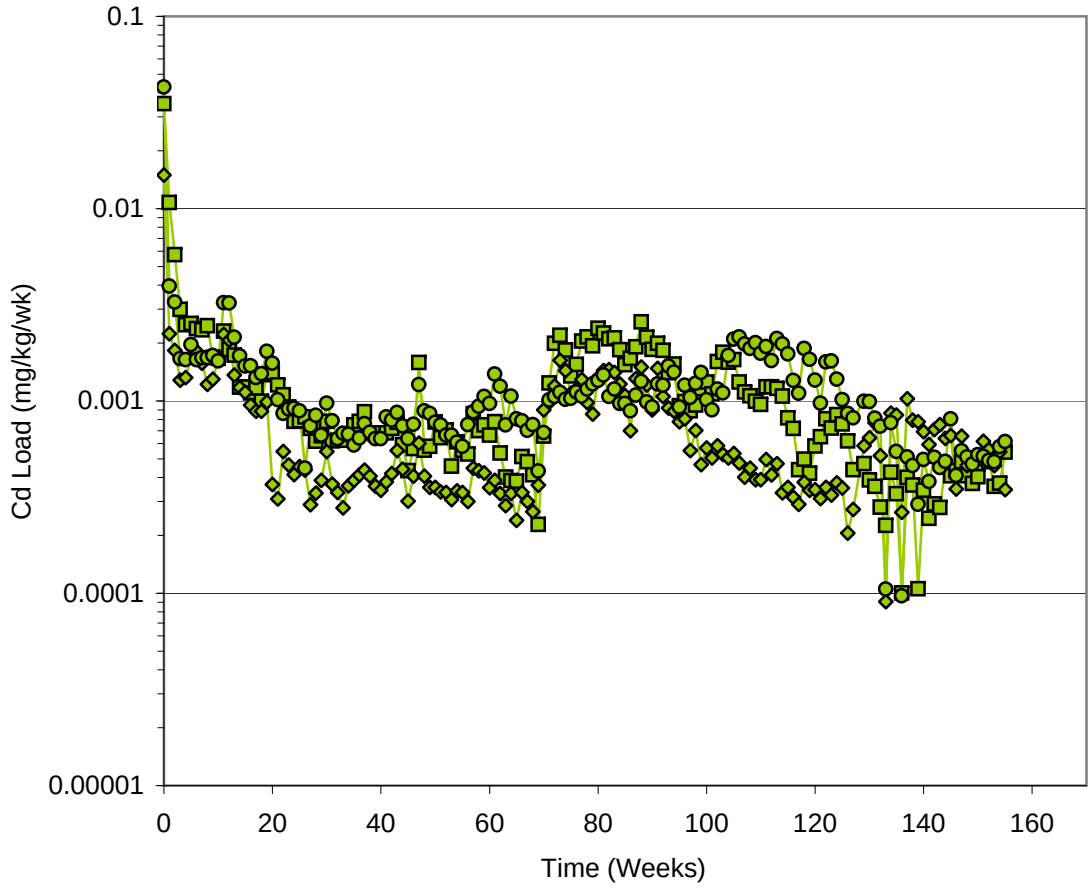


Aluminium Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 54



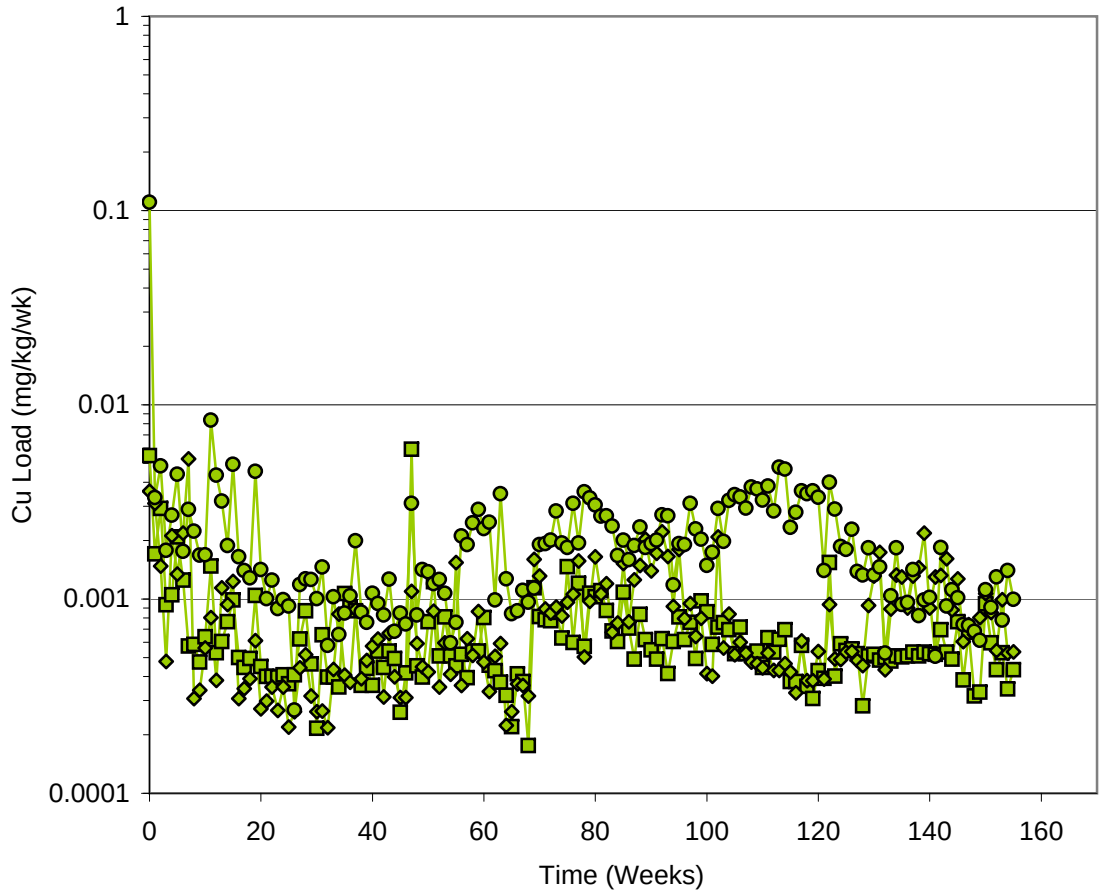
Arsenic Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 55

TC 53920

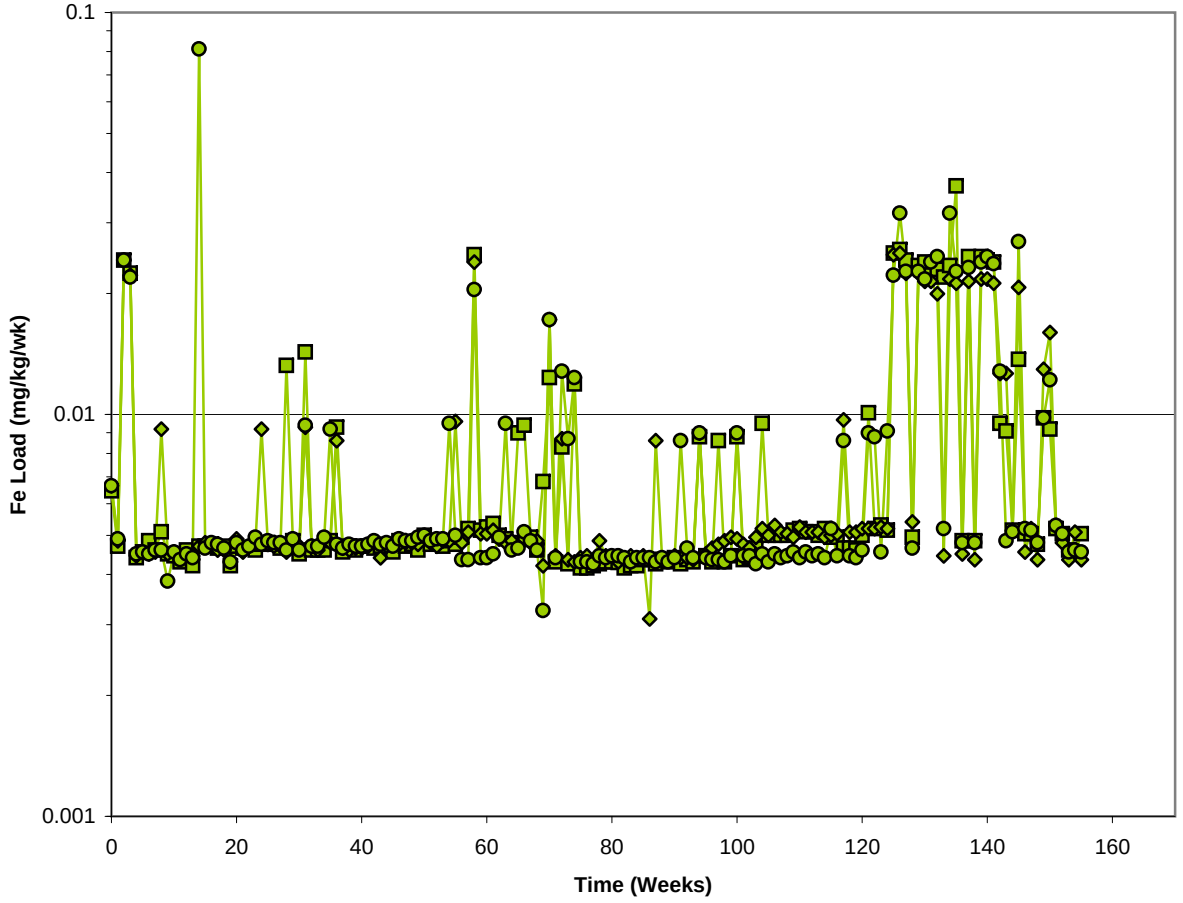


DMS Float HC17 - Terminated
DMS Float HC18 - Terminated
DMS Float HC19 - Terminated

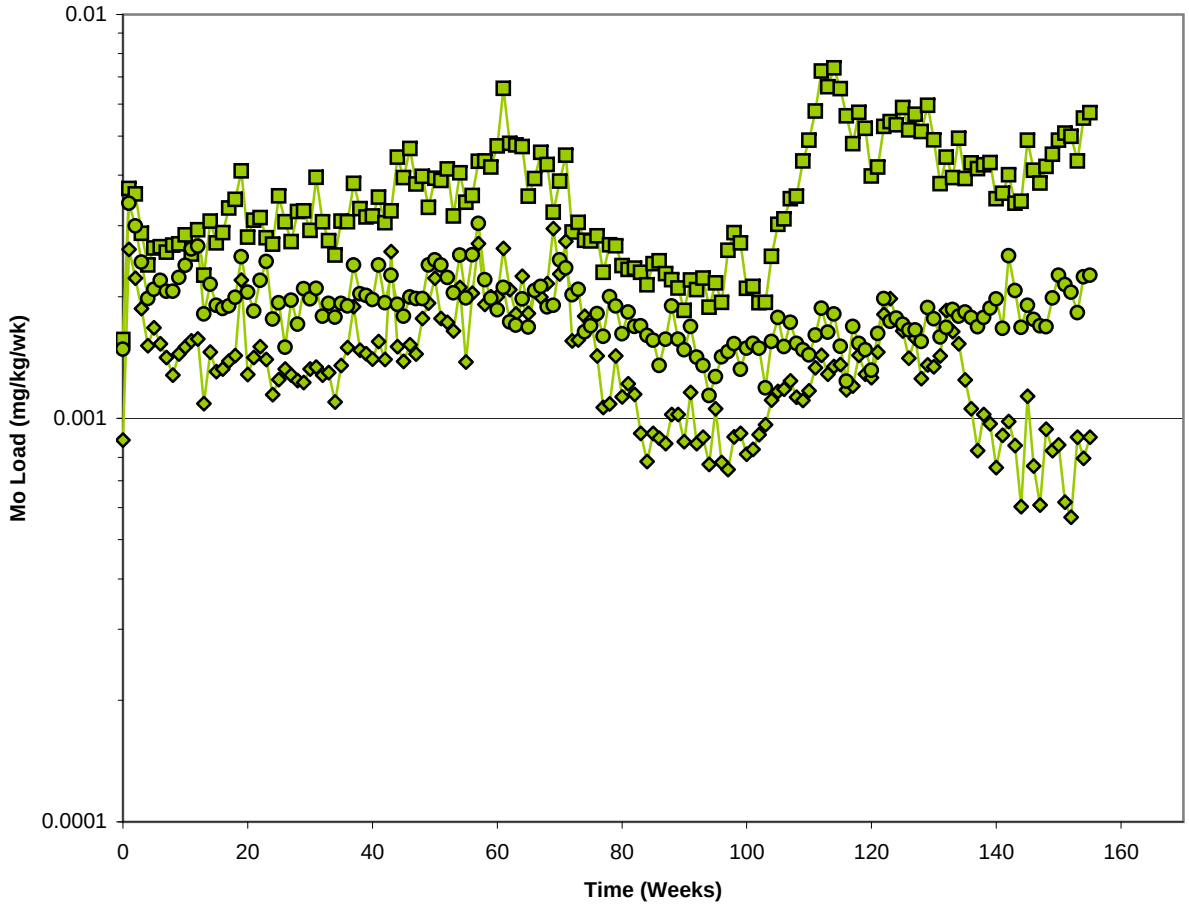
Cadmium Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 56



Copper Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 57



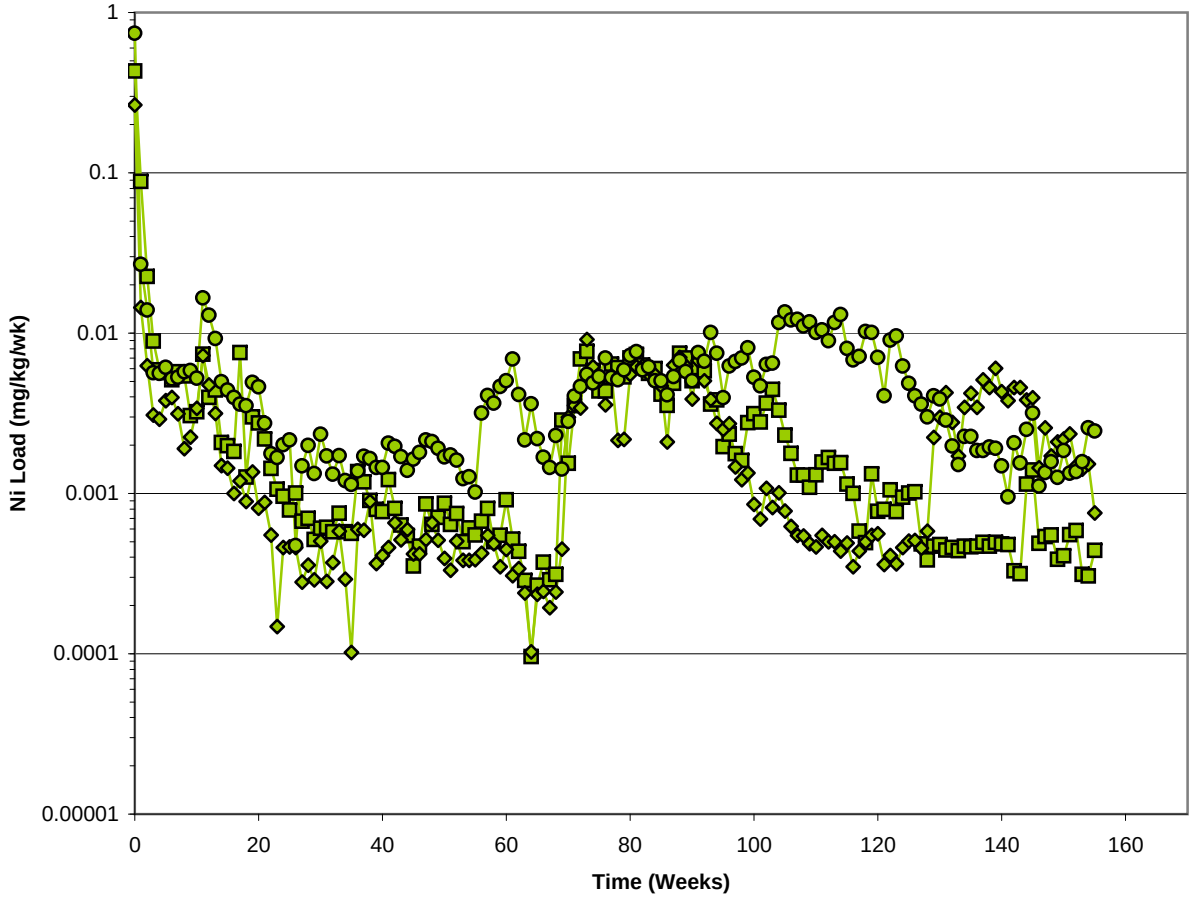
Iron Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 58



Molybdenum Load
Terminated Cells
Wolverine Mine, YK

DMS Float

March 2010 | FIGURE 59

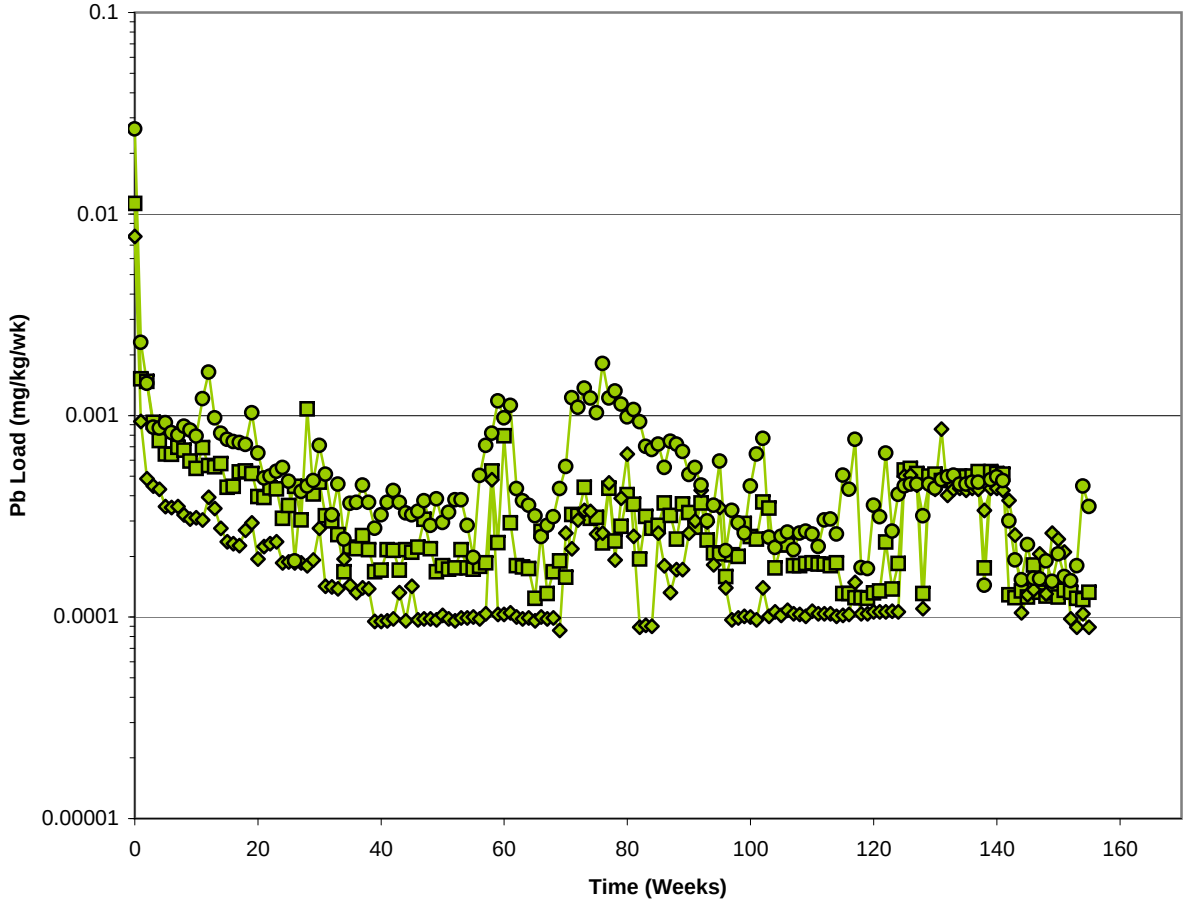


Nickel Load
Terminated Cells
Wolverine Mine, YK

DMS Float

March 2010	FIGURE 60

TC 53920

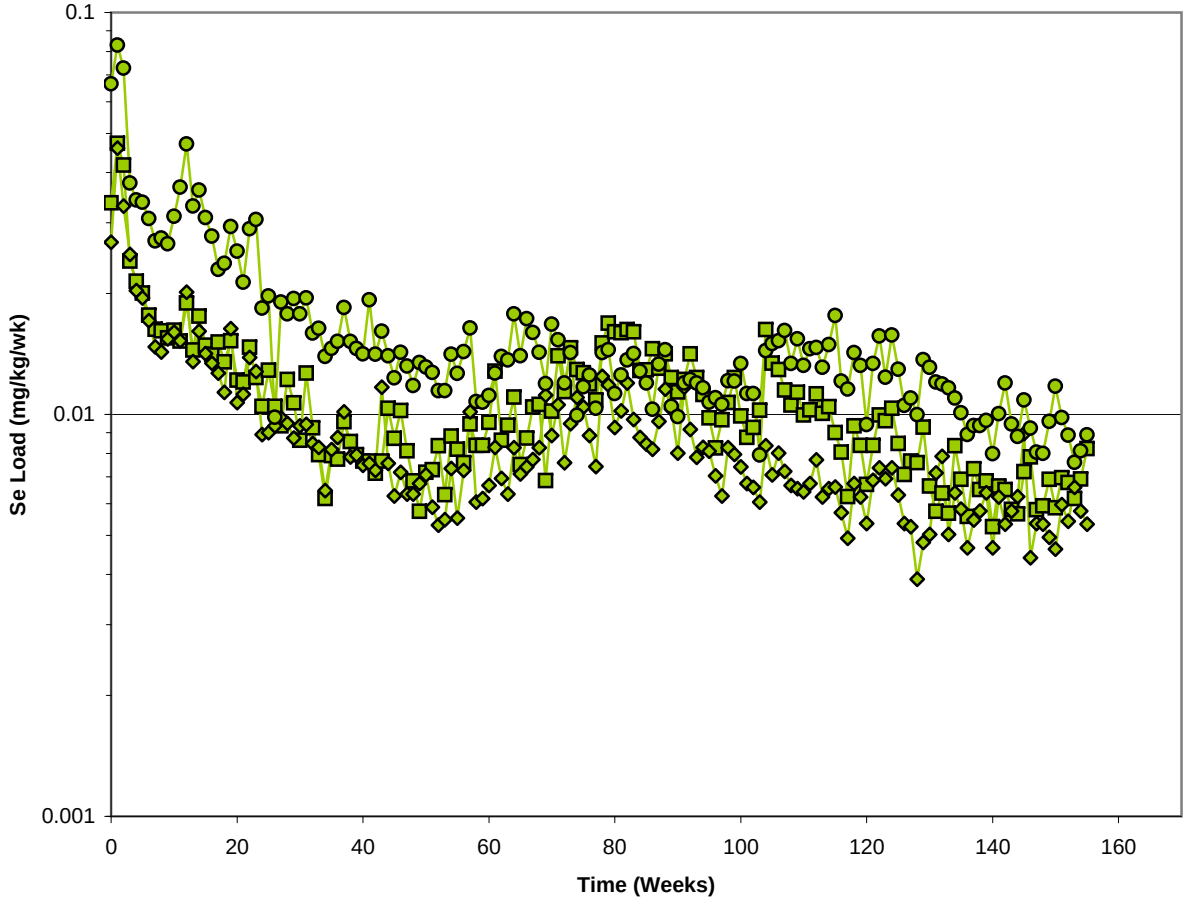


Lead Load
Terminated Cells
Wolverine Mine, YK

DMS Float

March 2010 | FIGURE 61

TC 53920

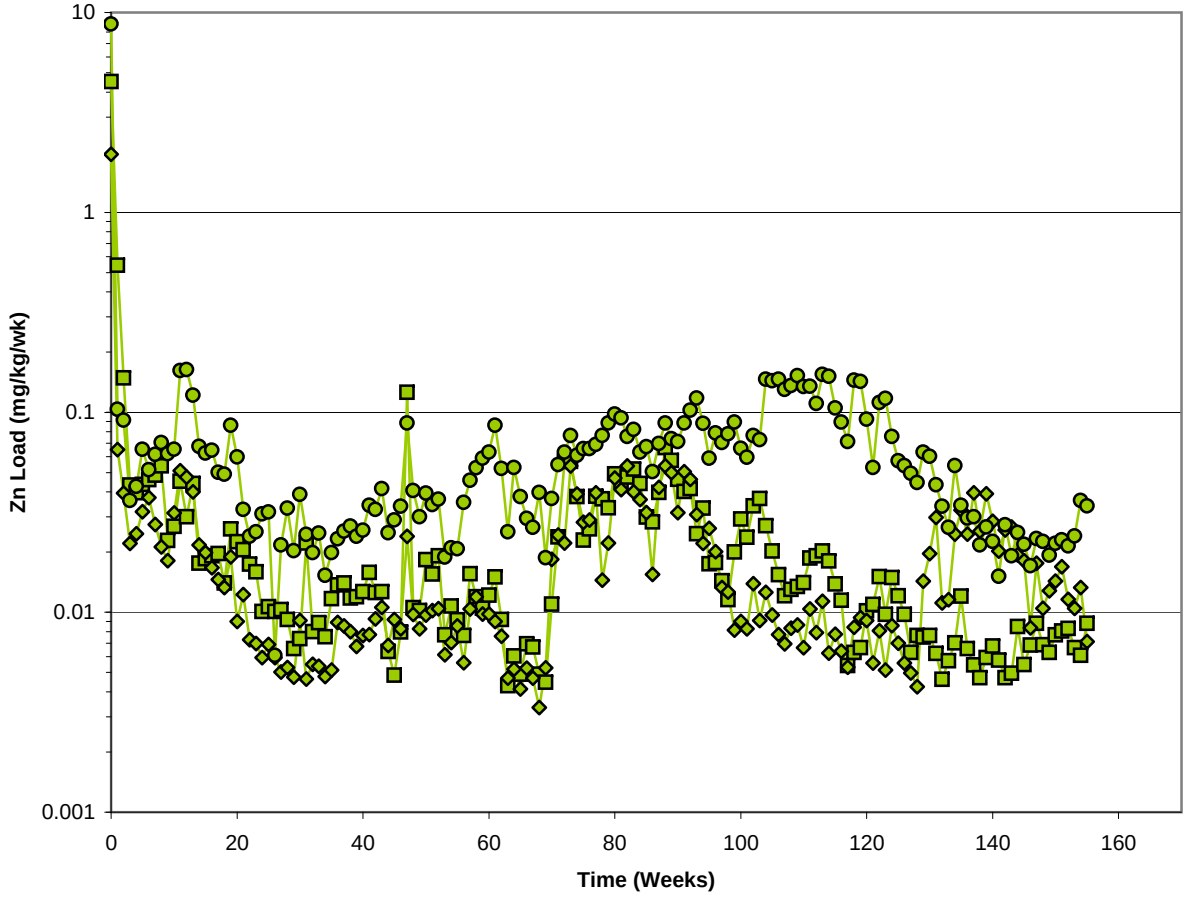


Selenium Load
Terminated Cells
Wolverine Mine, YK

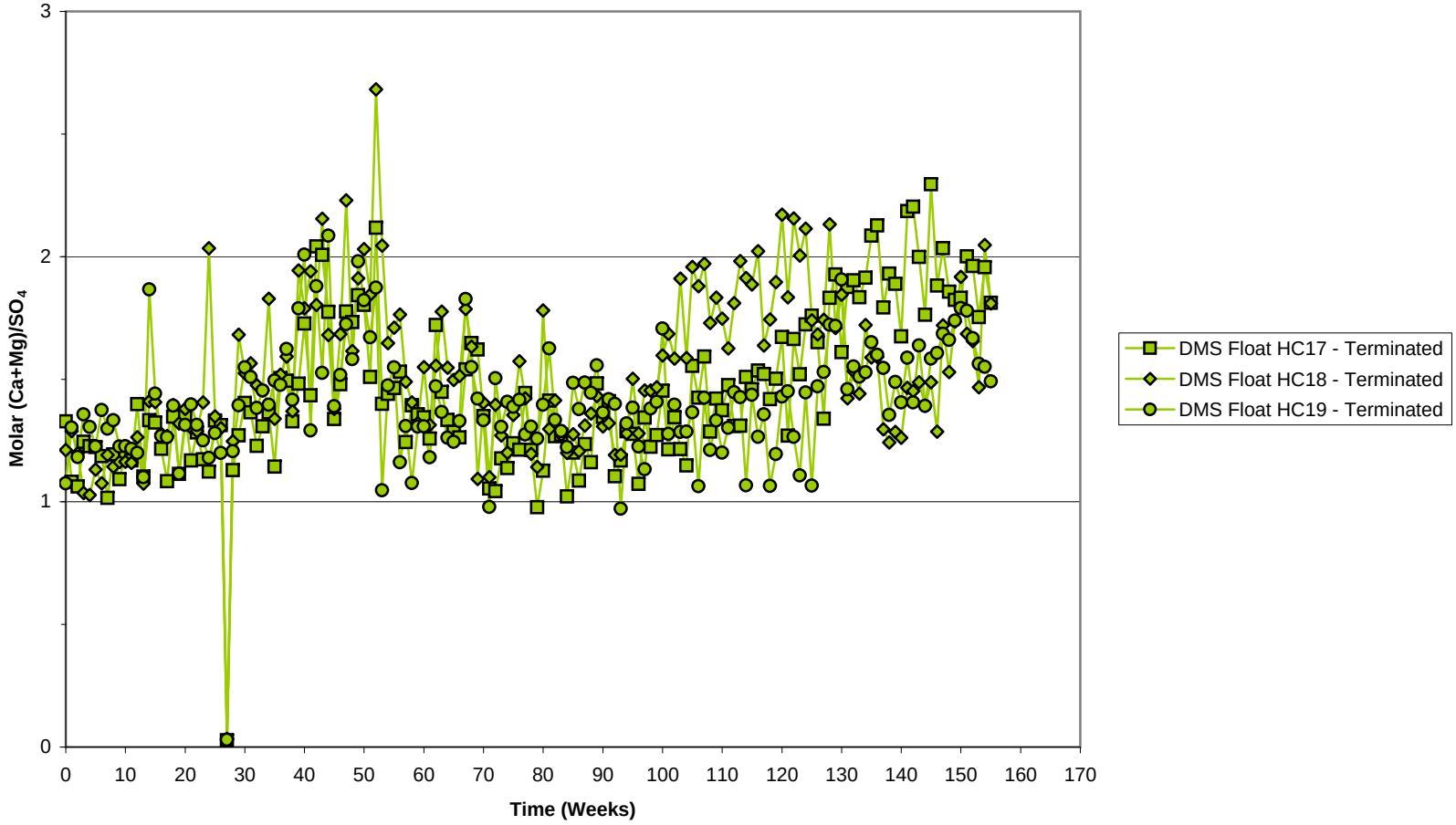
DMS Float

March 2010 | FIGURE 62

TC 53920

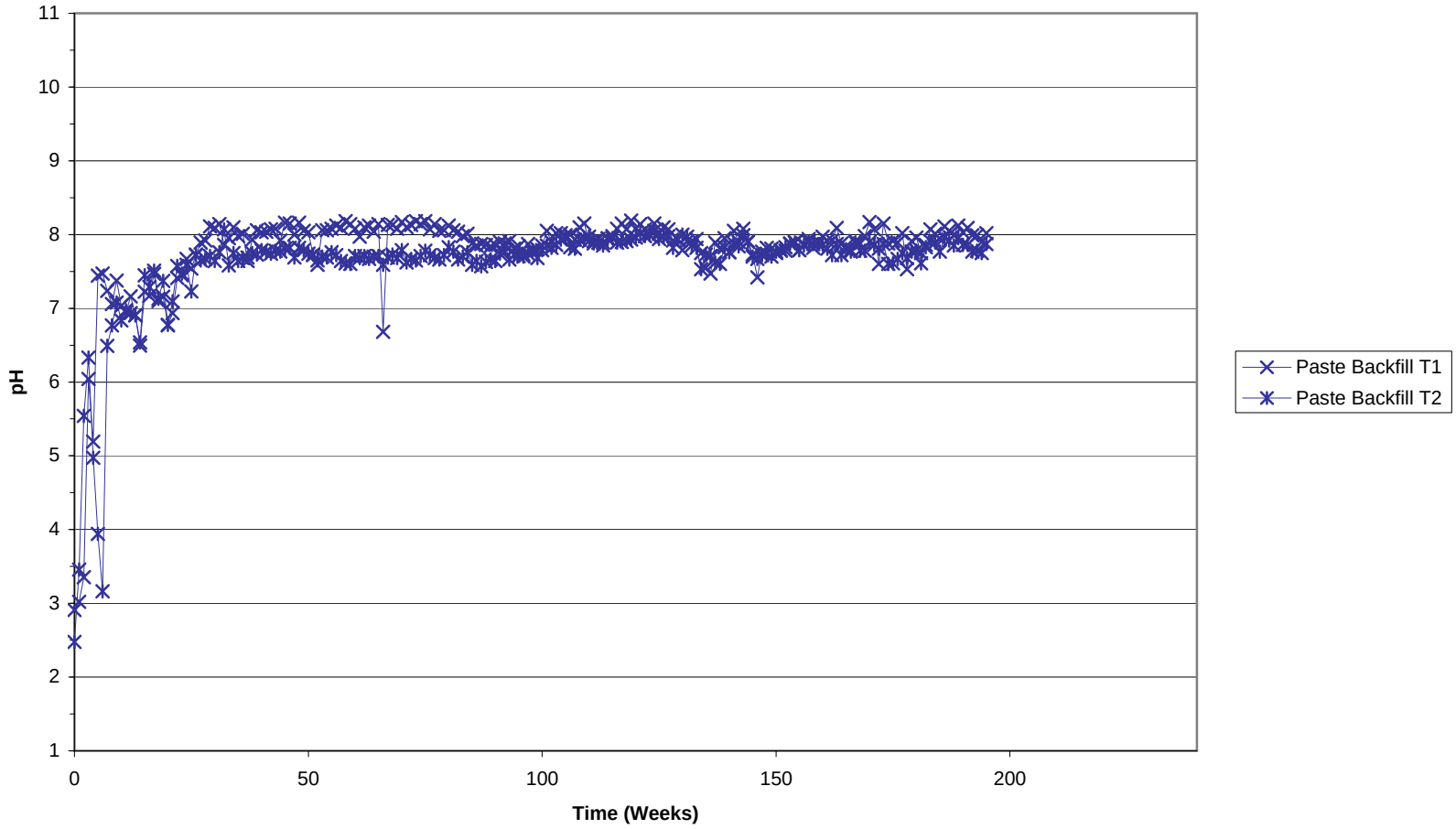


Zinc Load Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 63

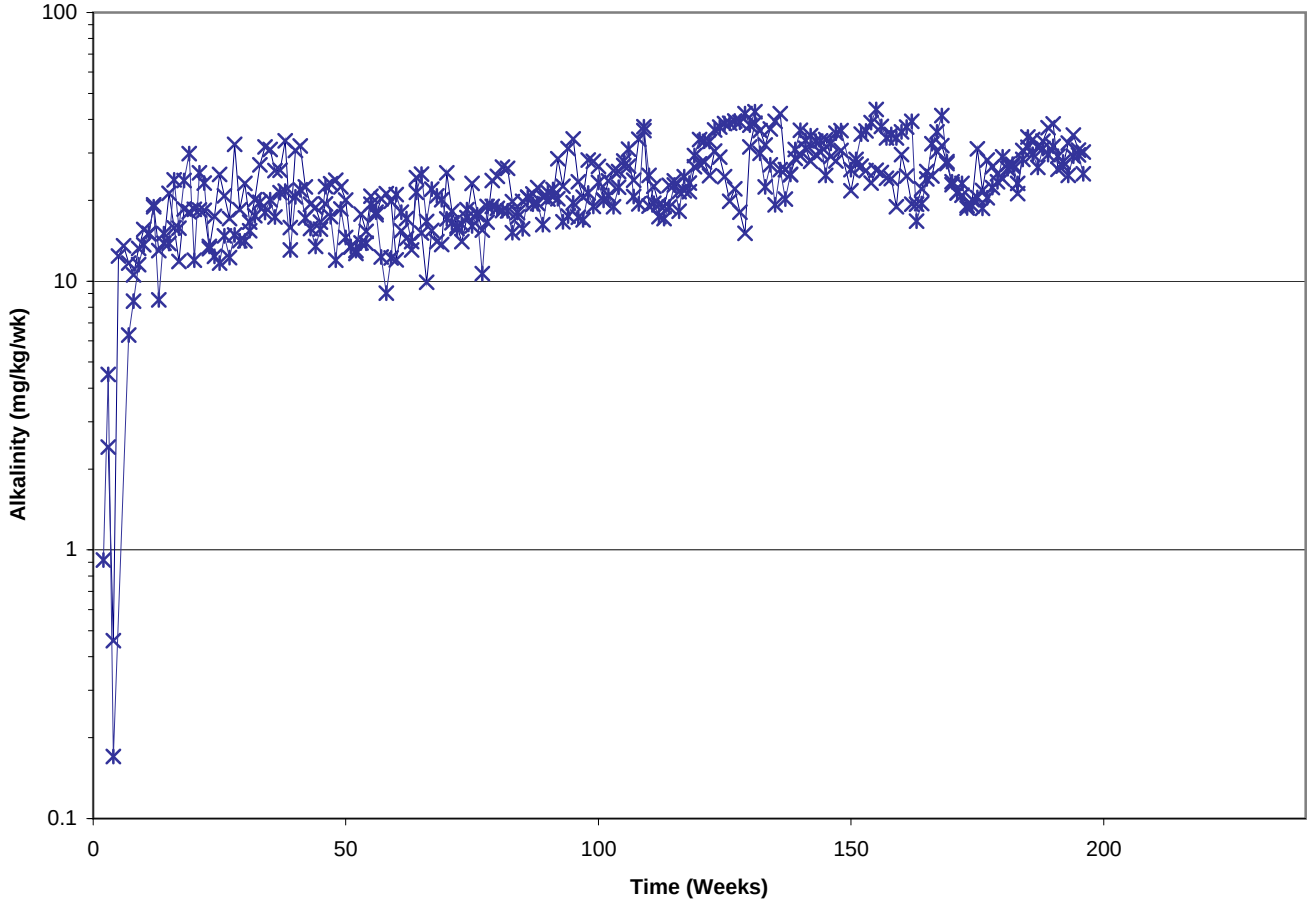


Molar $(Ca+Mg)/SO_4$ Ratio Terminated Cells Wolverine Mine, YK	
DMS Float	
March 2010	FIGURE 64

TC 53920



pH Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2010	FIGURE 65

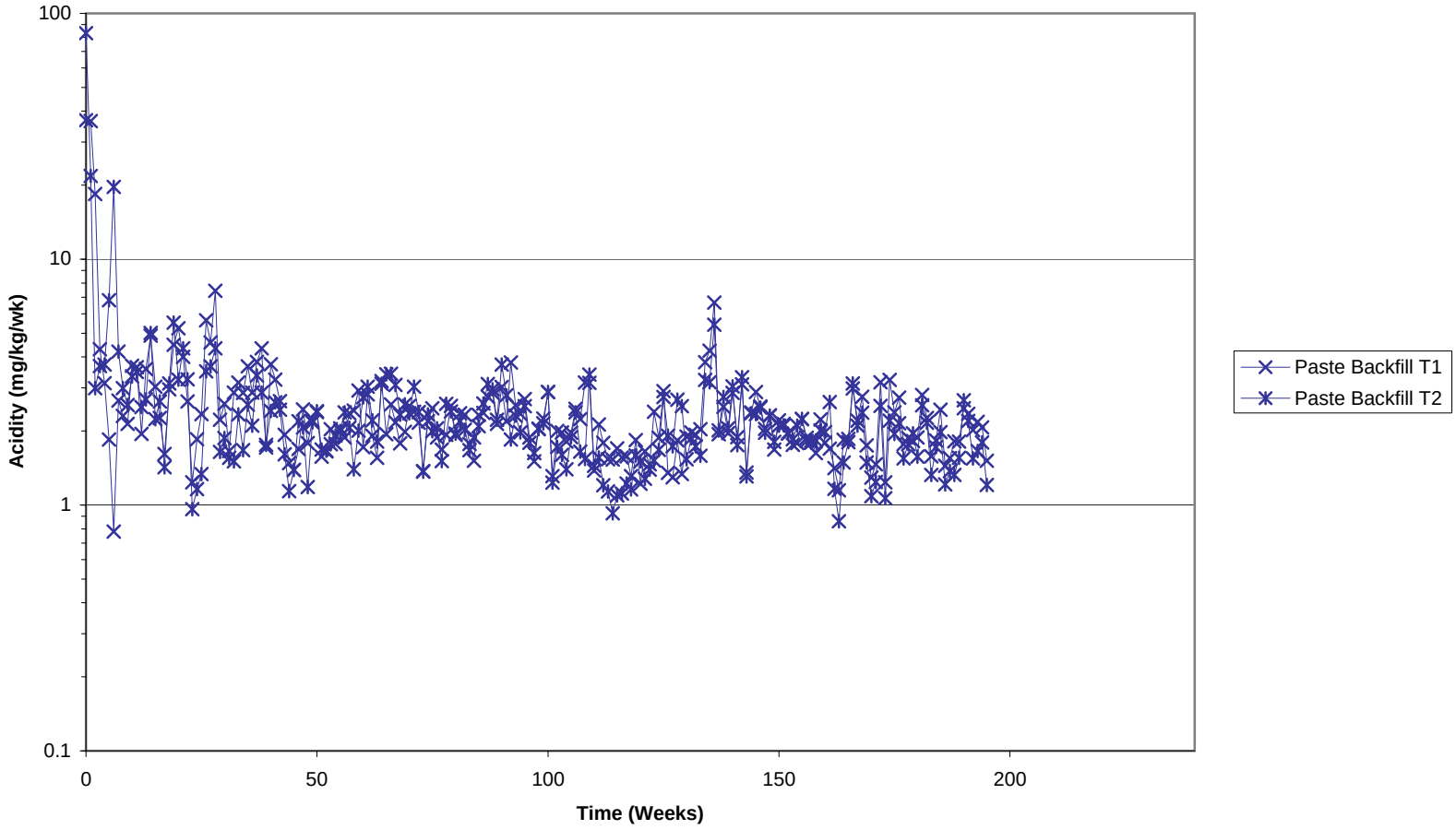


Alkalinity Load
Operating Cells
Wolverine Mine, YK

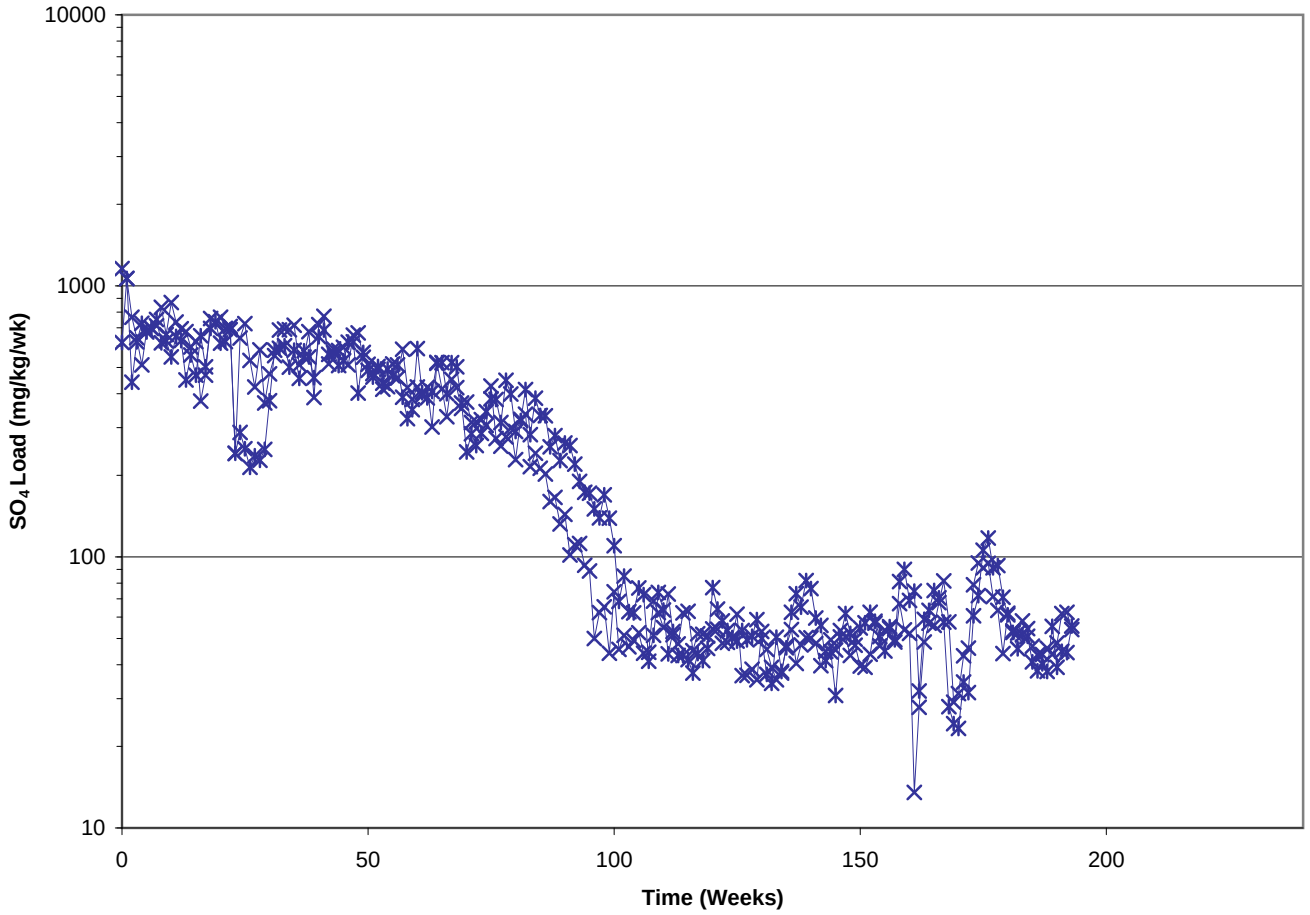
Paste Backfill

March 2010 | FIGURE 66

TC 53920



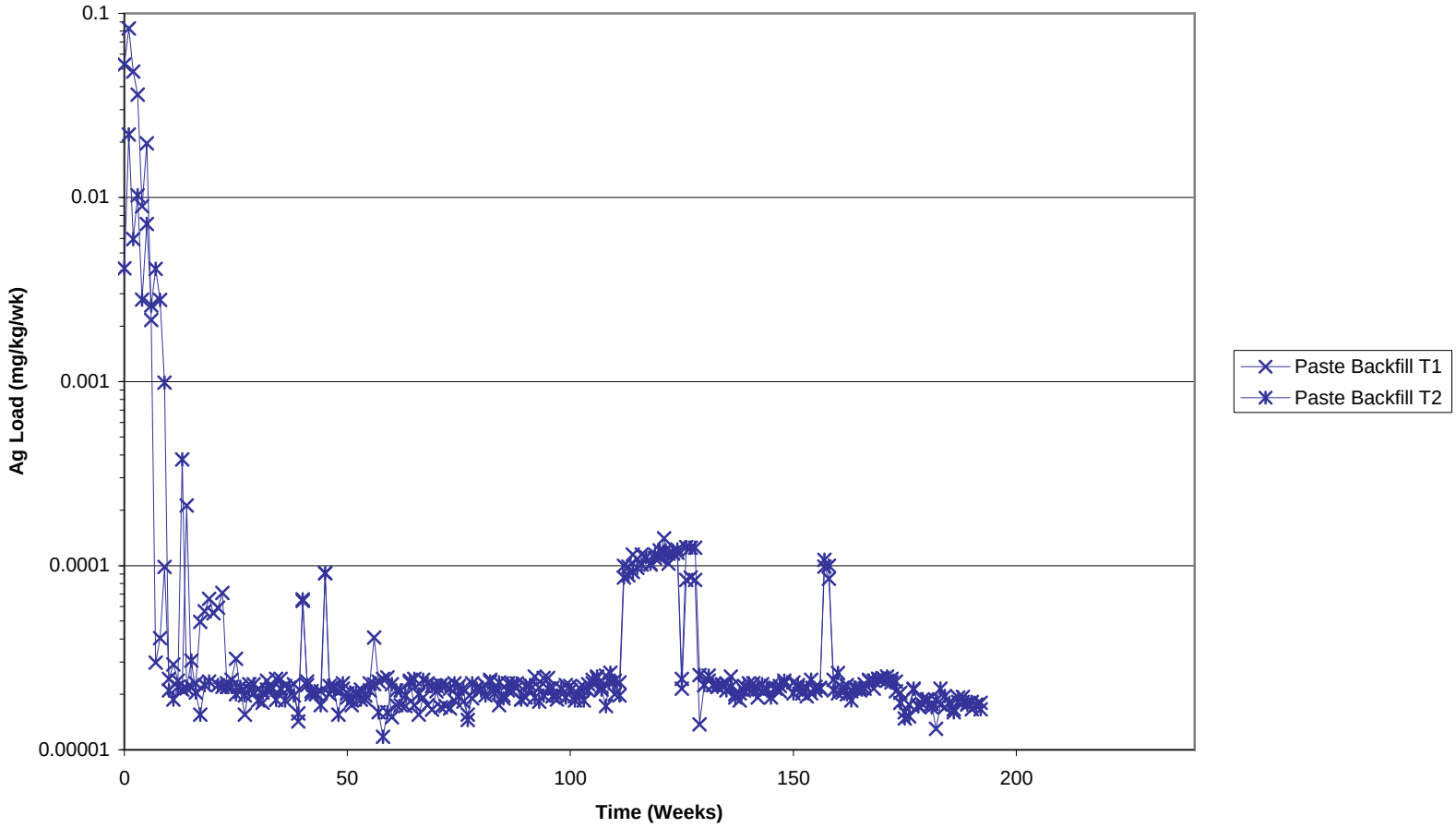
Acidity Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2010	FIGURE 67



Sulphate
Operating Cells
Wolverine Mine, YK

Paste Backfill

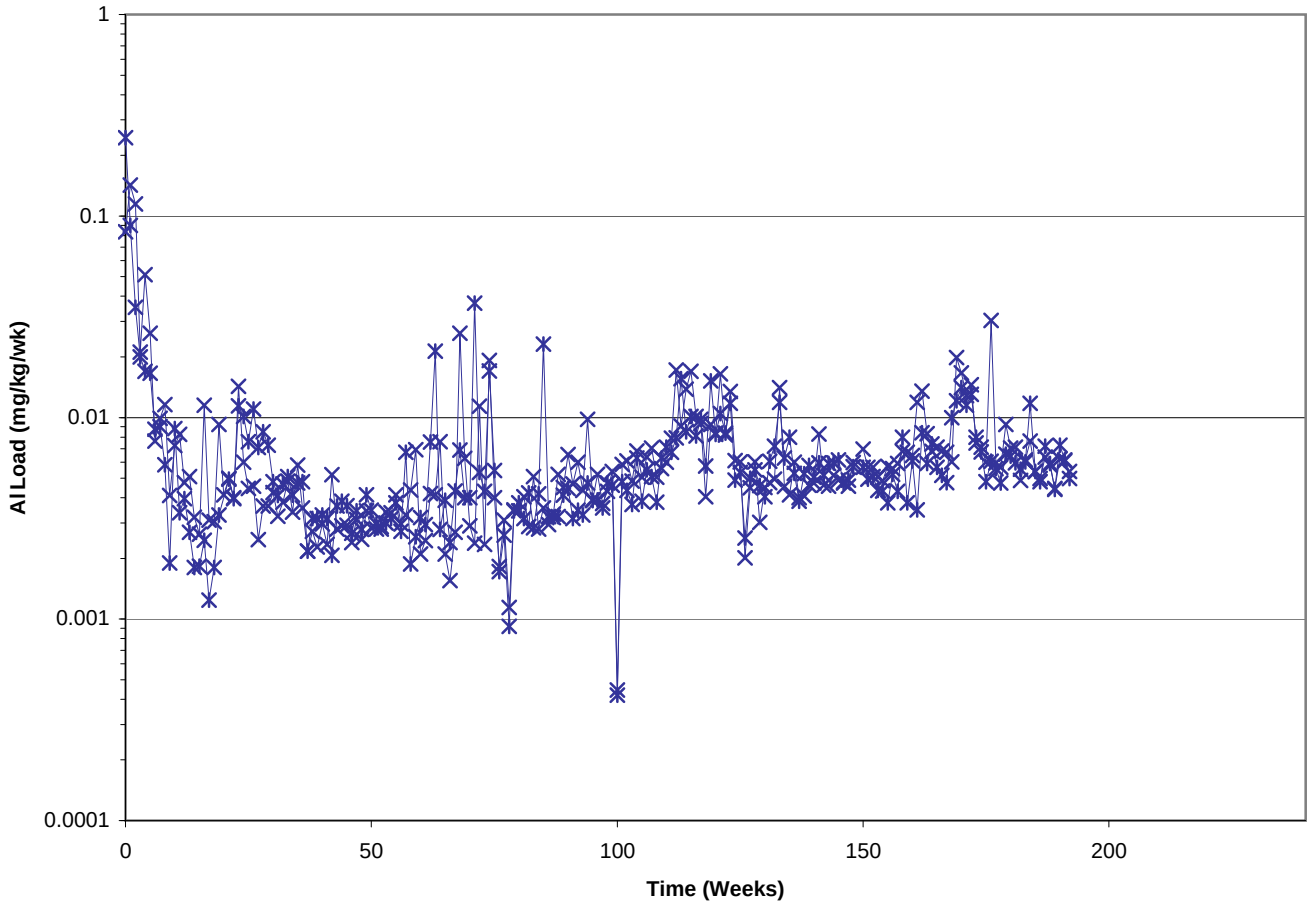
March 2010 | FIGURE 68



Silver Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

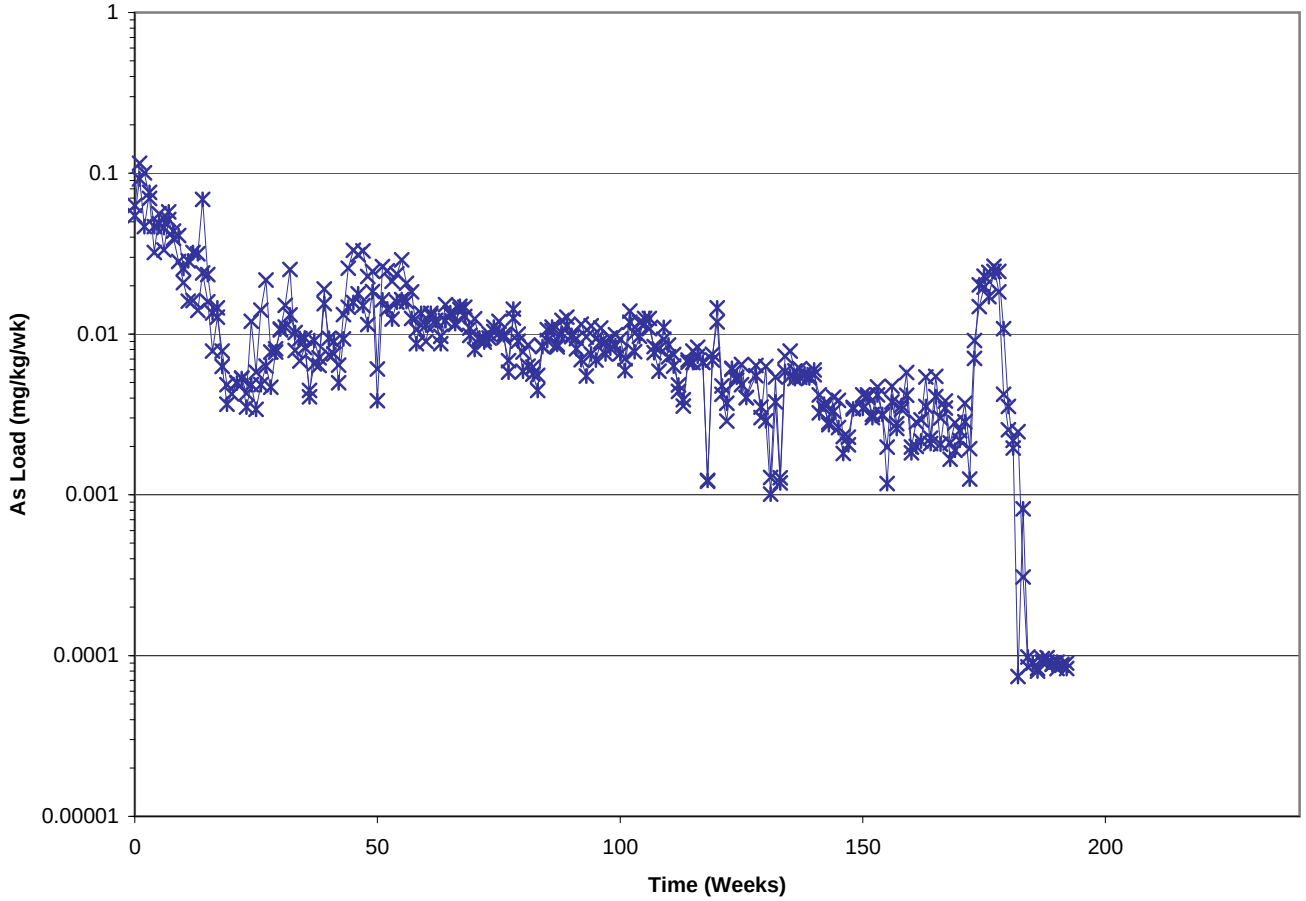
March 2010 | FIGURE 69



Aluminum Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

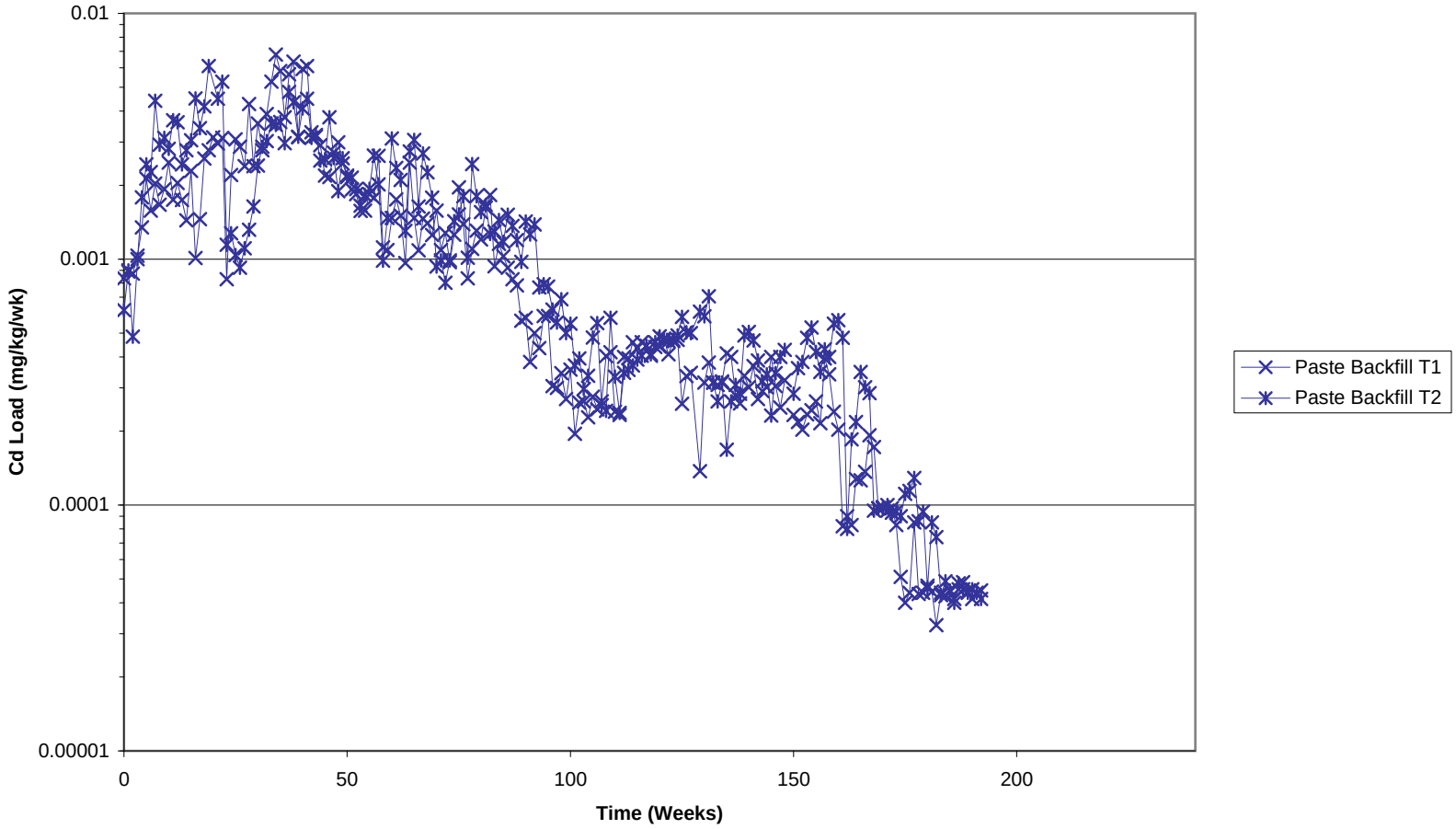
March 2010 | FIGURE 70



Arsenic Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2010 | FIGURE 71

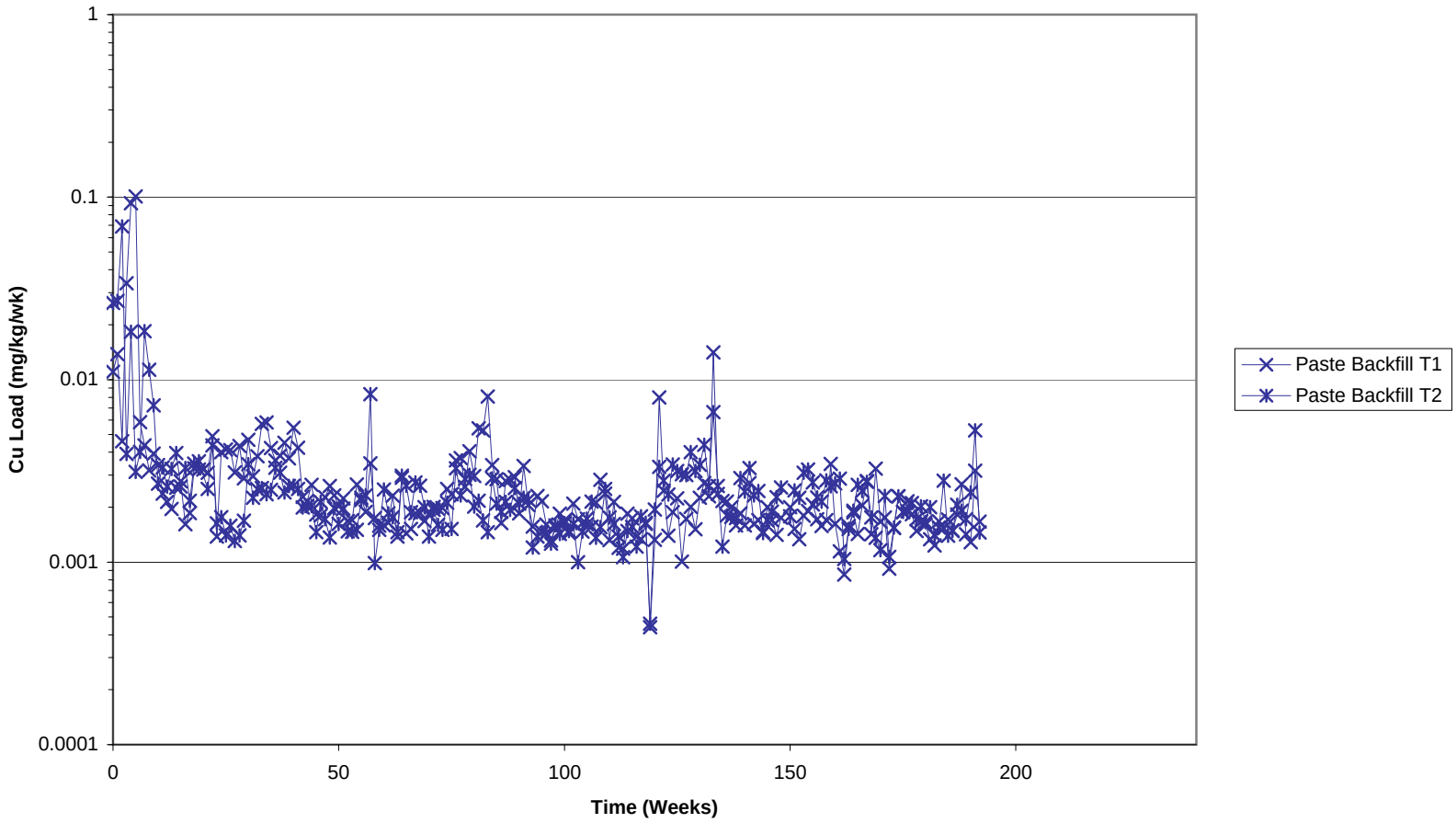


Cadmium Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

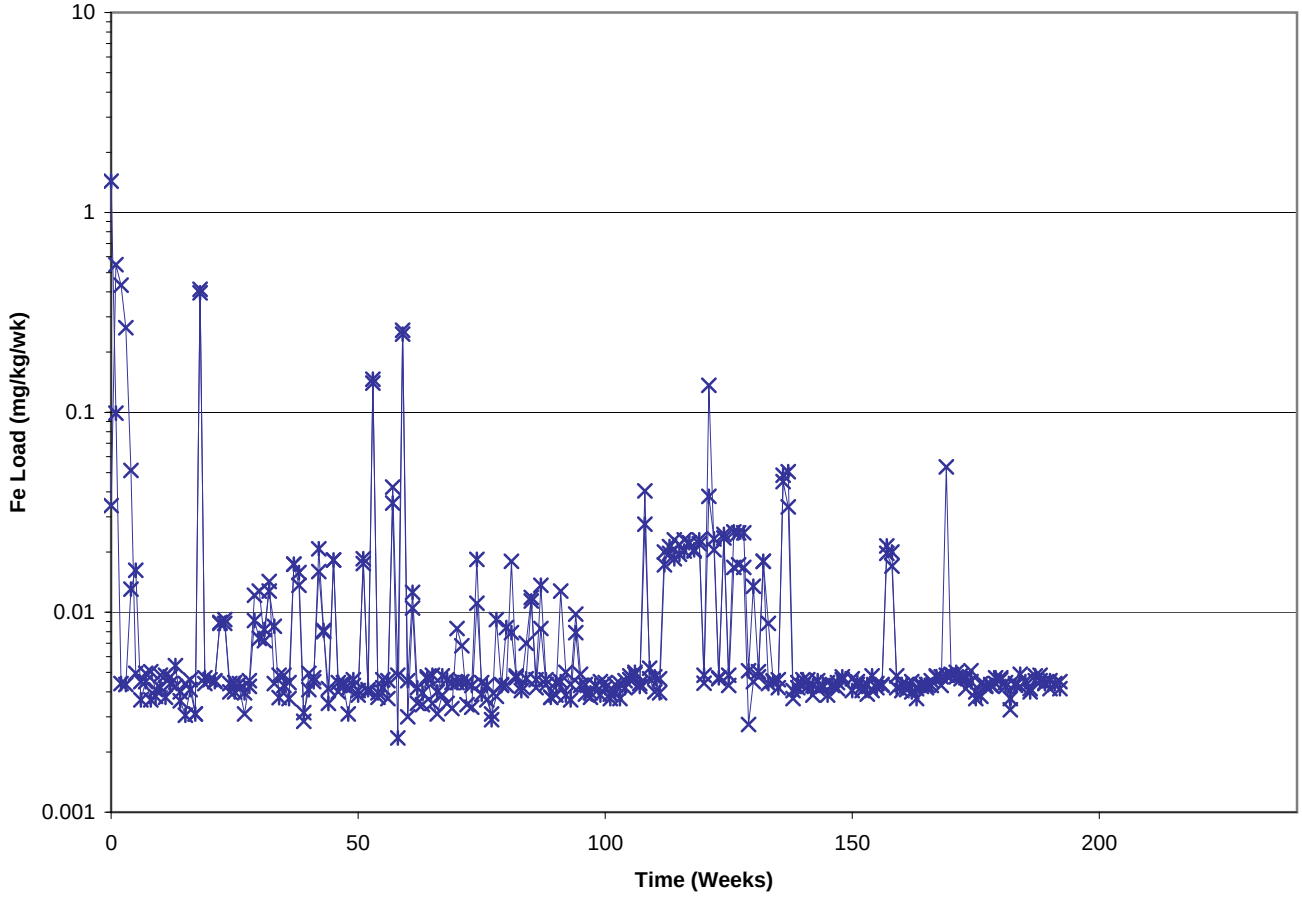
March 2010	FIGURE 72

TC 53920



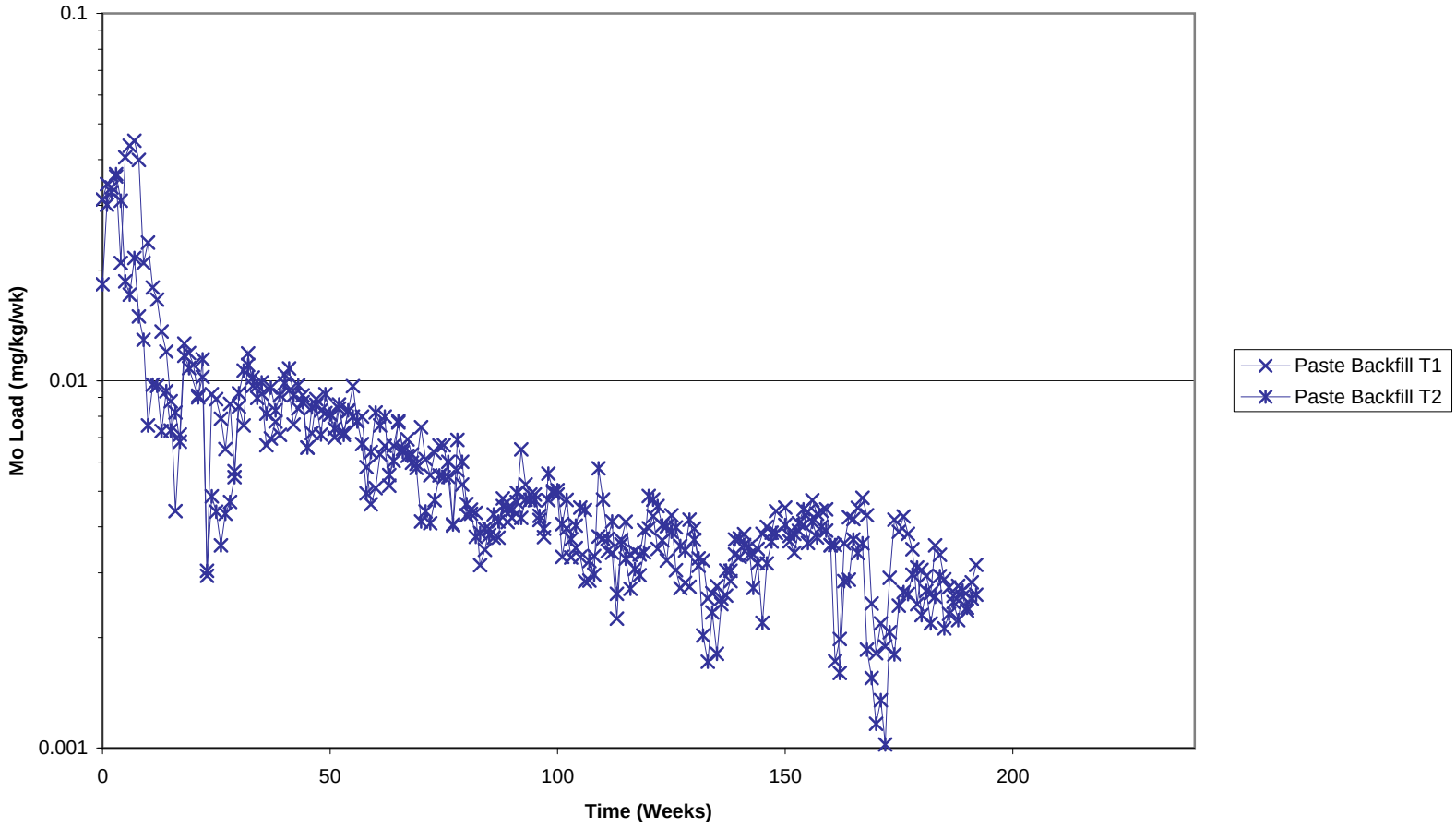
Copper Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2010	FIGURE 73

TC 53920



Iron Load Operating Cells Wolverine Mine, YK	
Paste Backfill	
March 2010	FIGURE 74

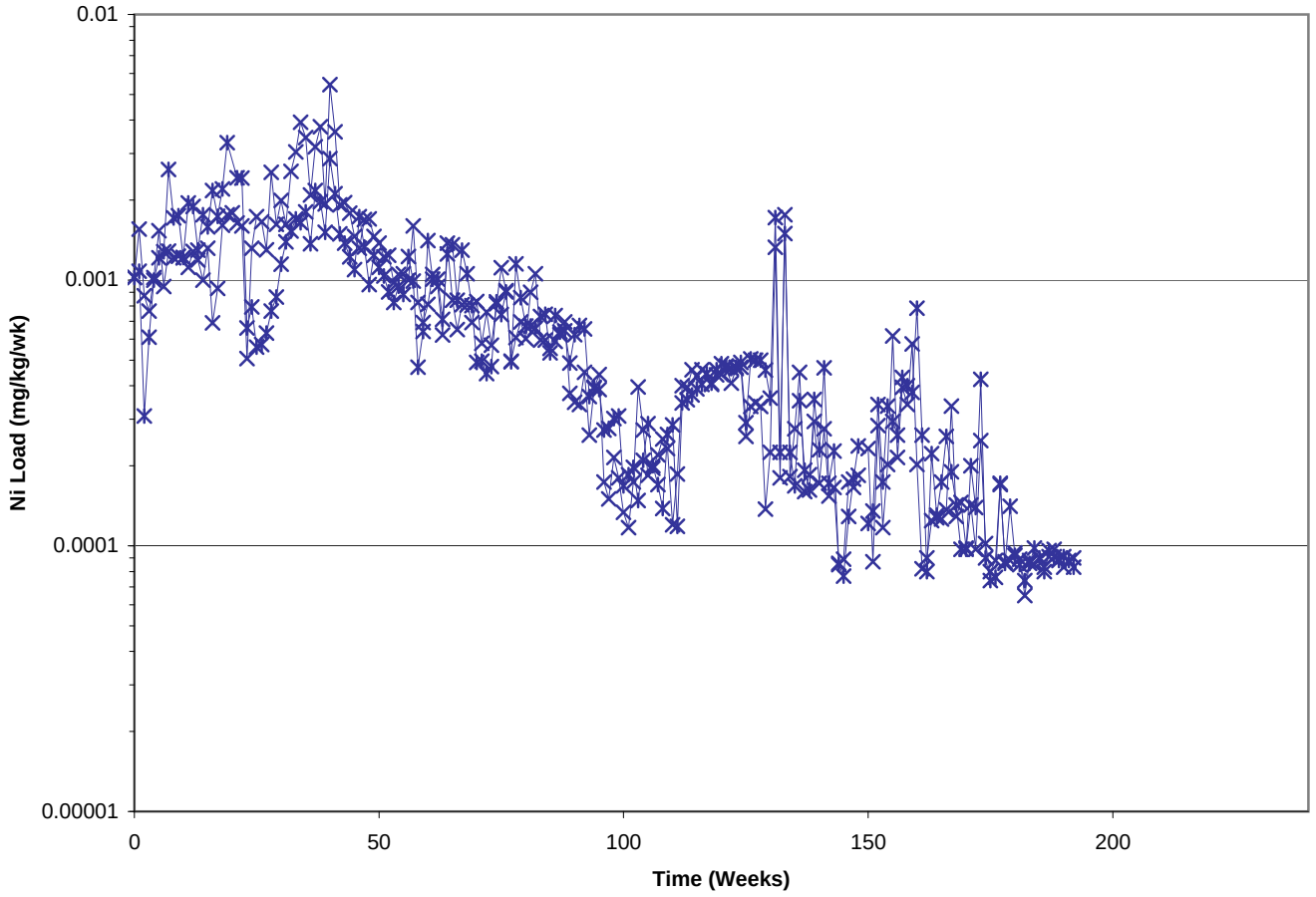
TC 53920



Molybdenum Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

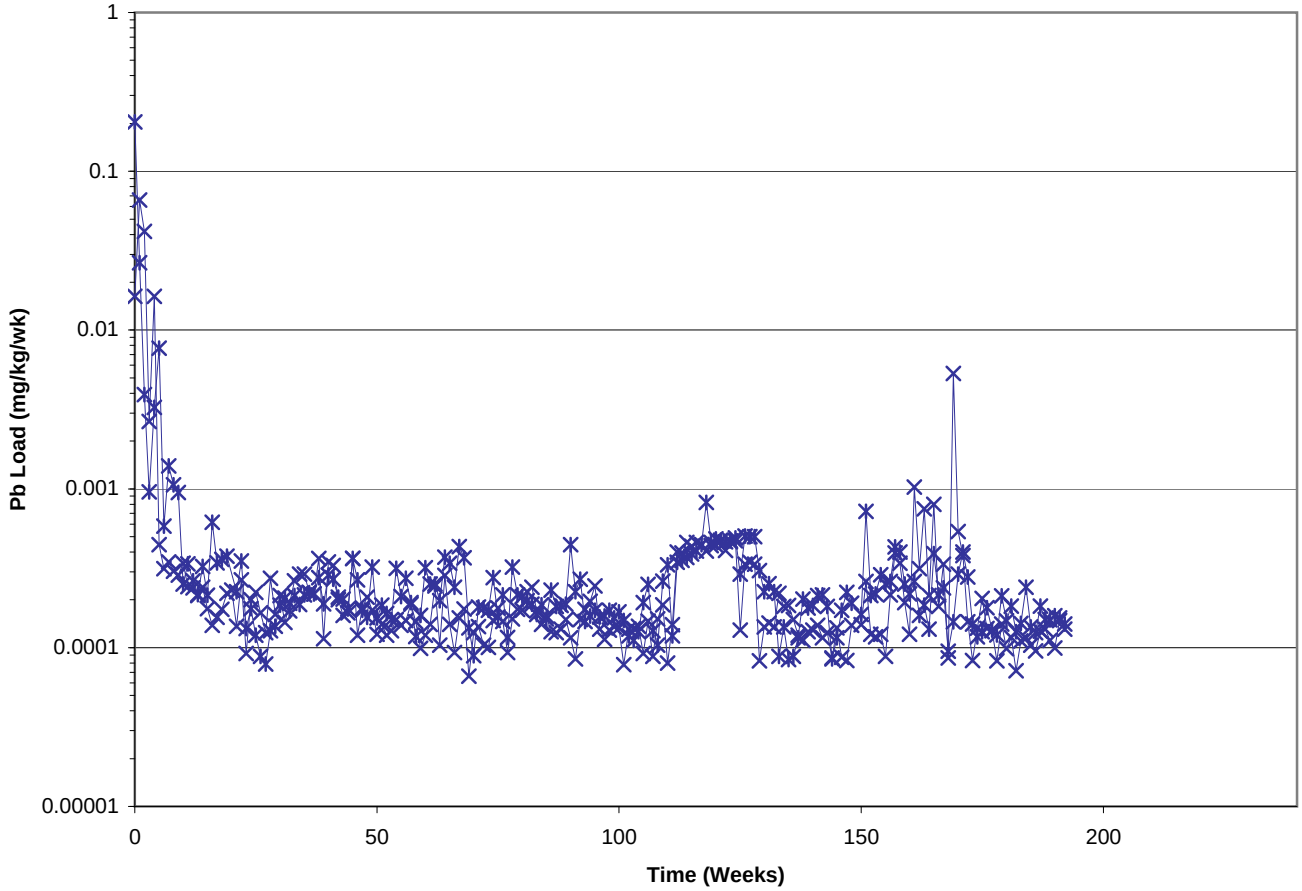
March 2010 | FIGURE 75



Nickel Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

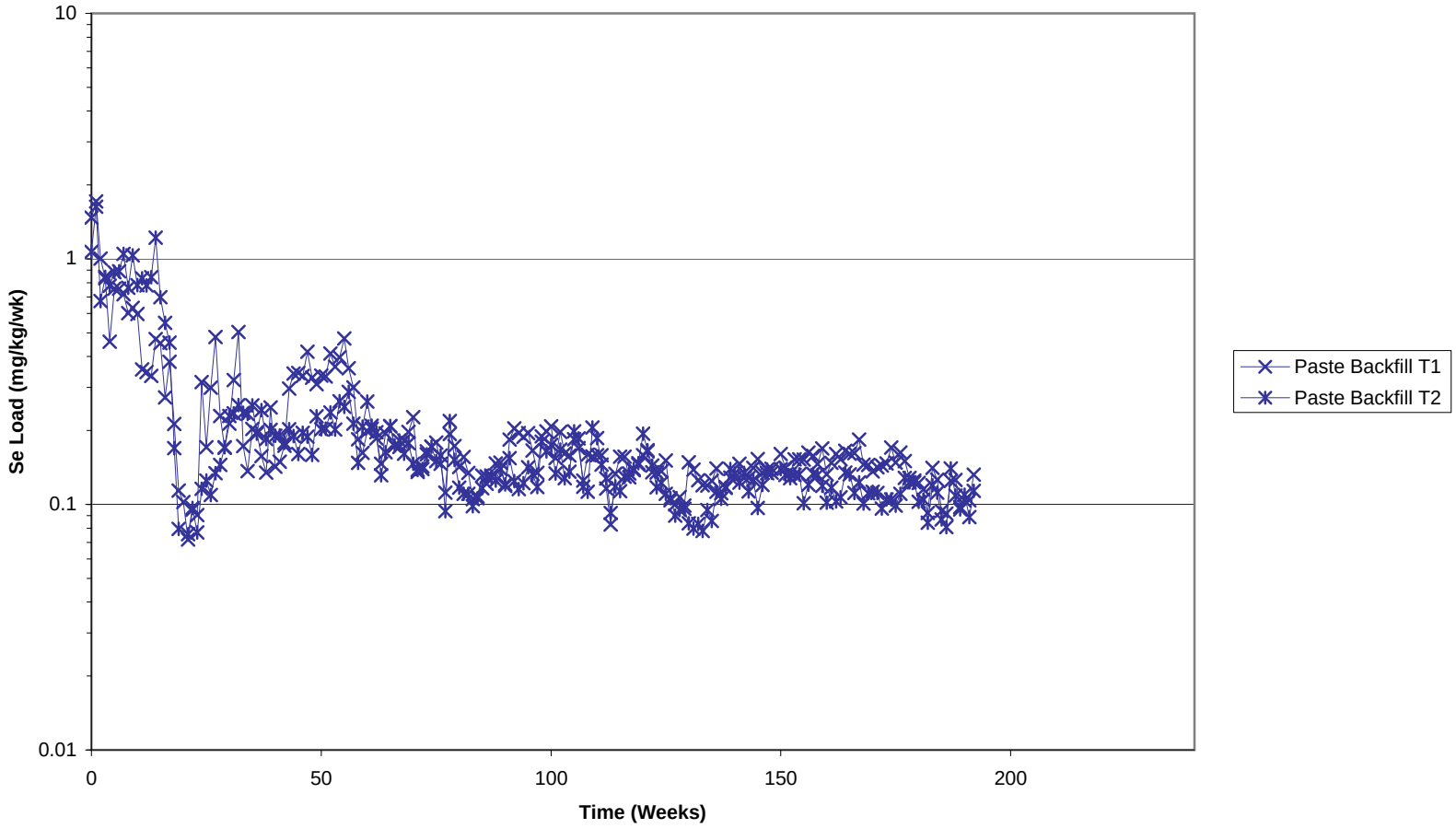
March 2010 | FIGURE 76



Lead Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2010 | FIGURE 77

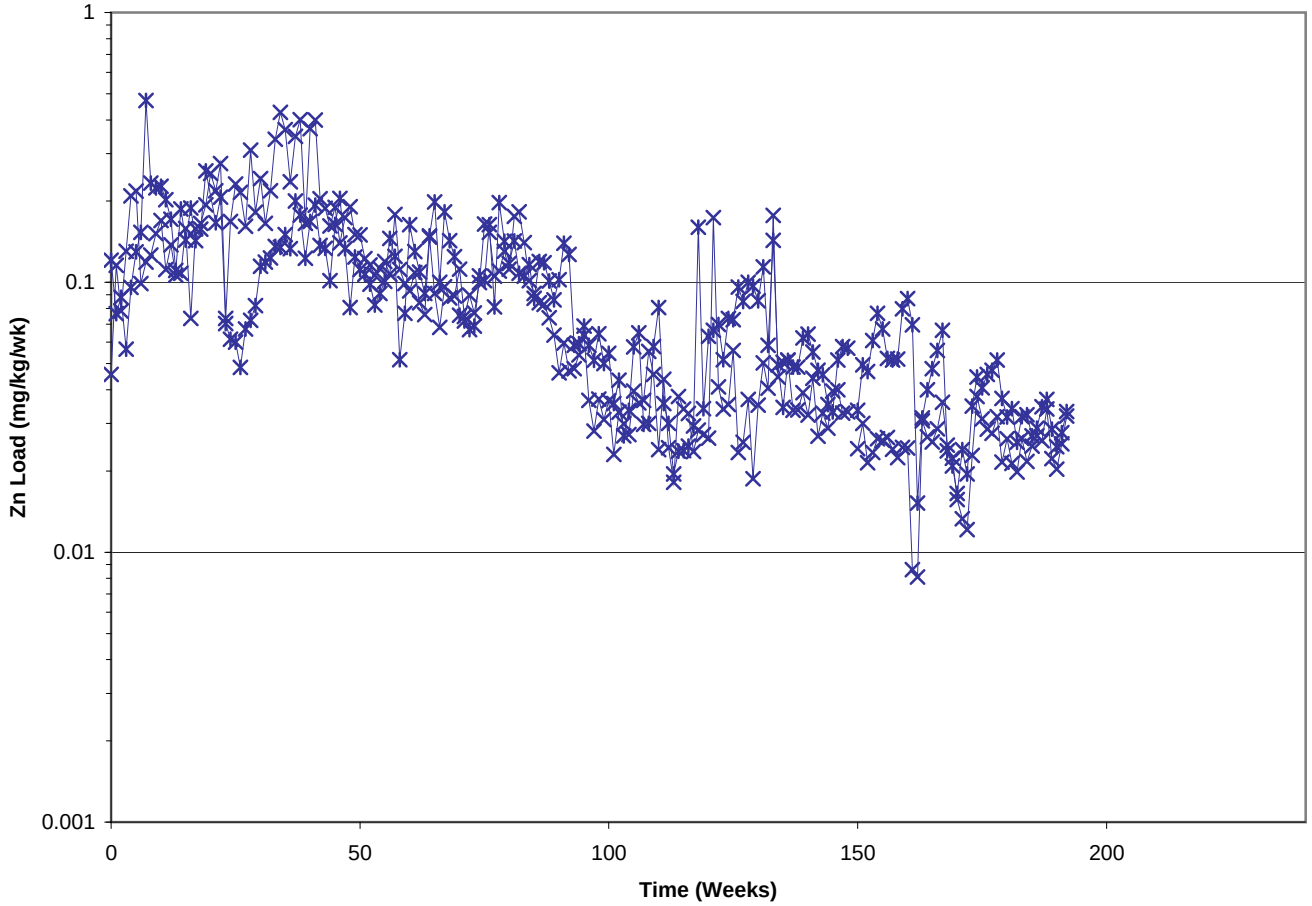


Selenium Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2010 | FIGURE 78

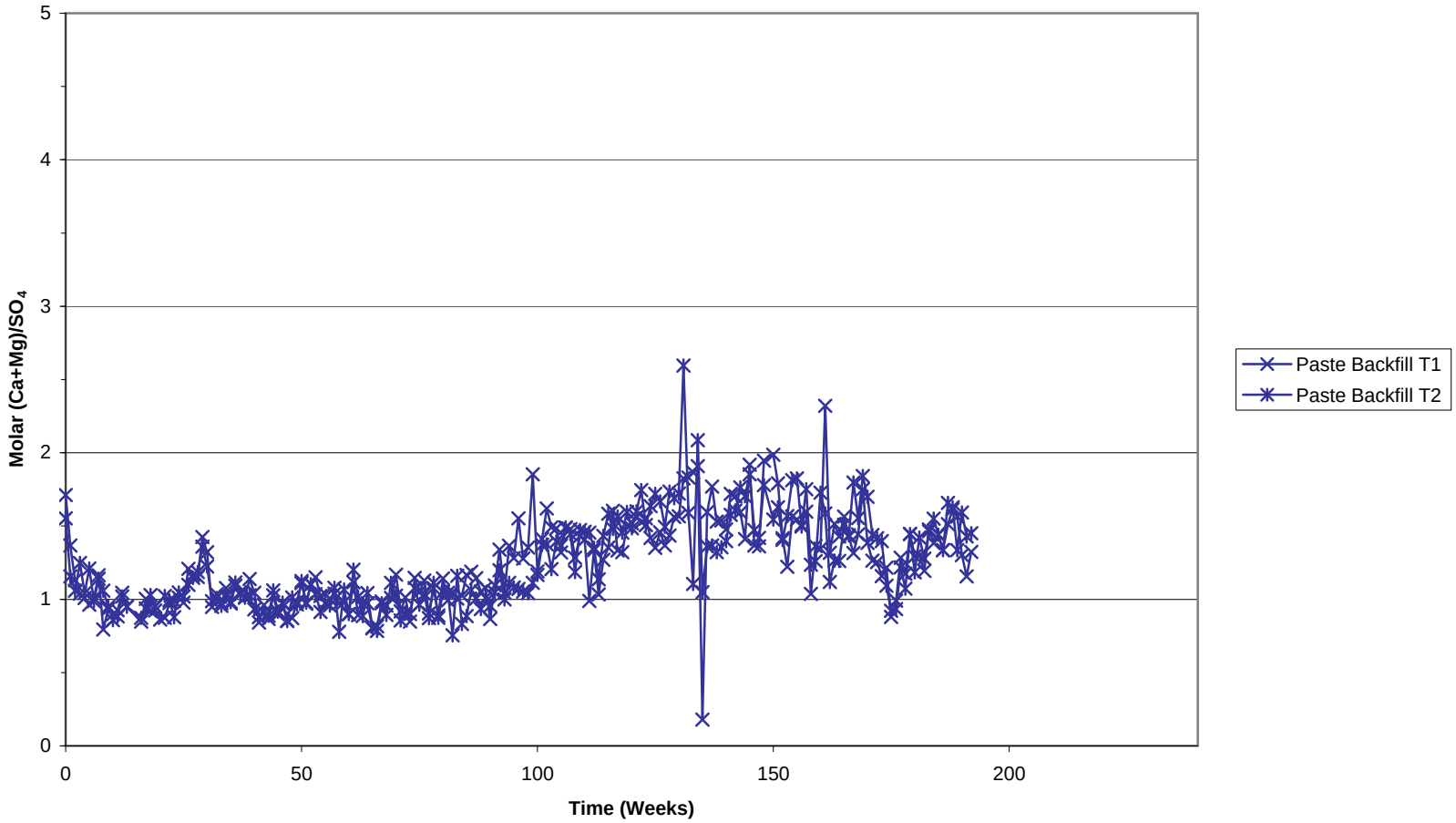
TC 53920



Zinc Load
Operating Cells
Wolverine Mine, YK

Paste Backfill

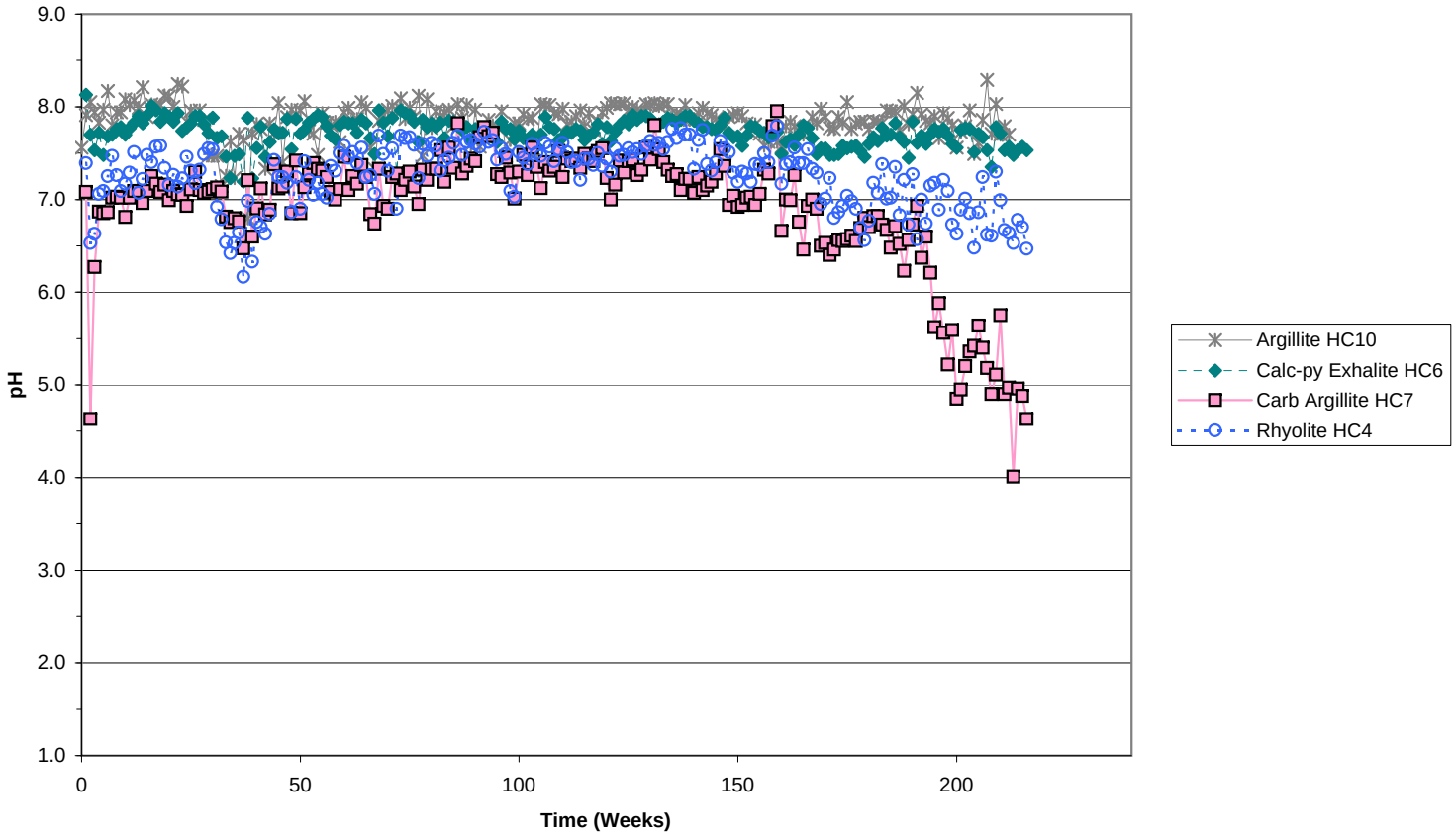
March 2010 | FIGURE 79



Molar $(Ca+Mg)/SO_4$ Ratio
Operating Cells
Wolverine Mine, YK

Paste Backfill

March 2010 | FIGURE 80

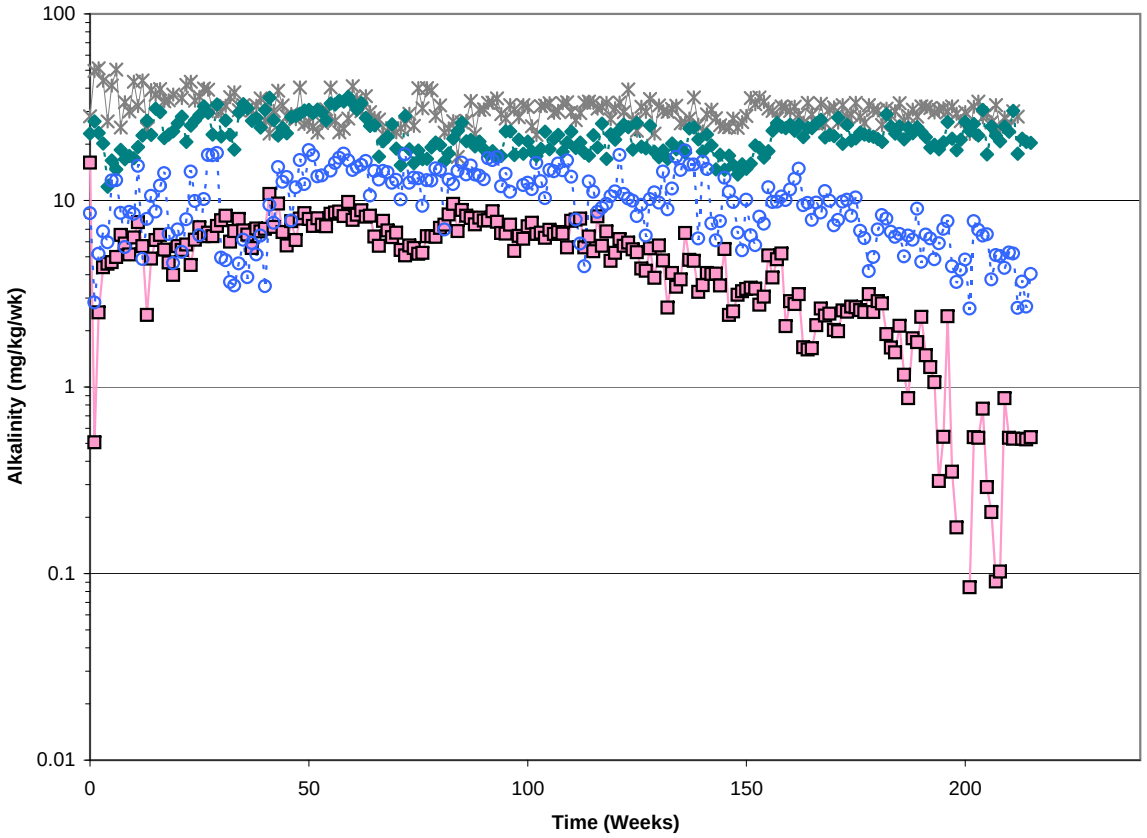


pH
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2010 | FIGURE 81

TC 53920

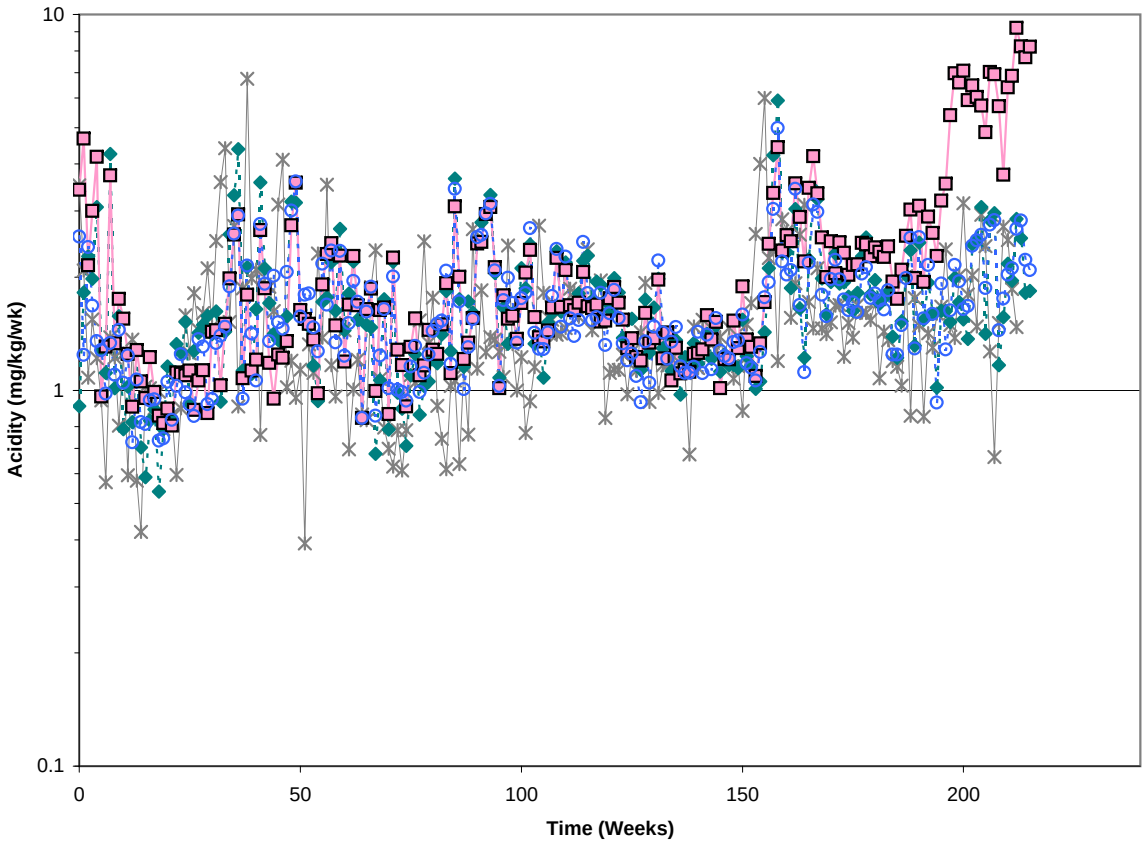


Alkalinity Load
Operating Cells
Wolverine Mine, YK

Mine Rock

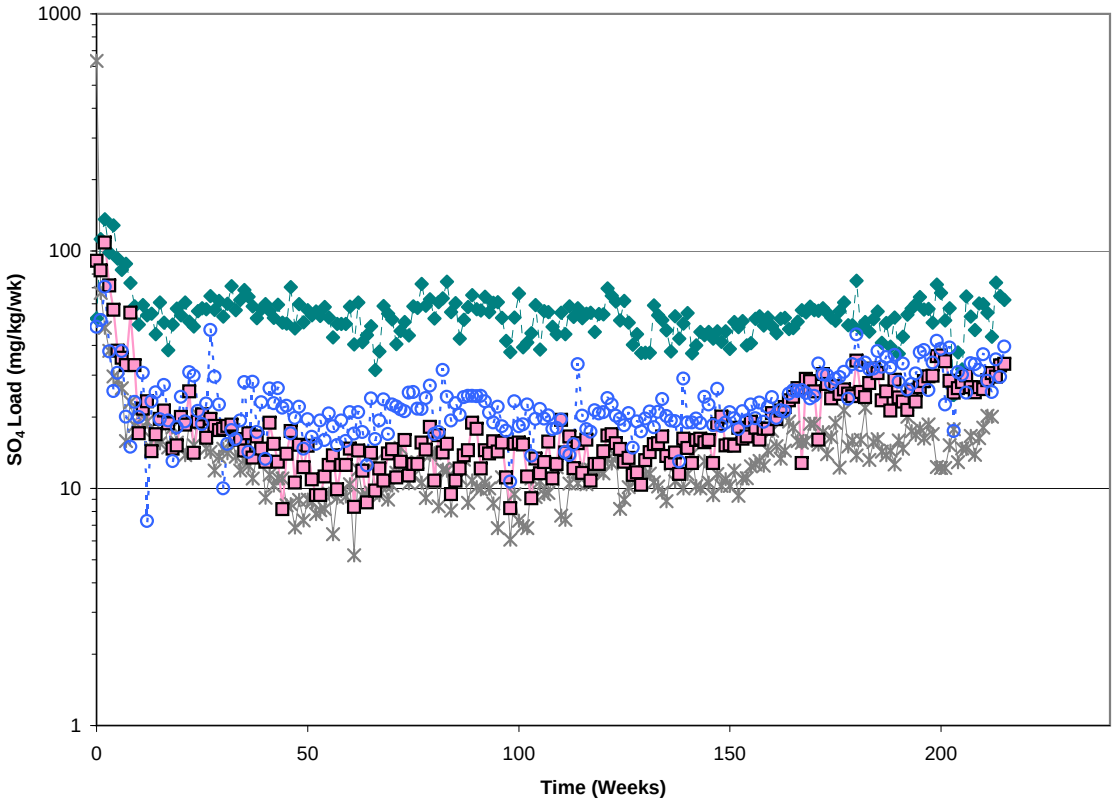
March 2010 | FIGURE 82

TC 53920



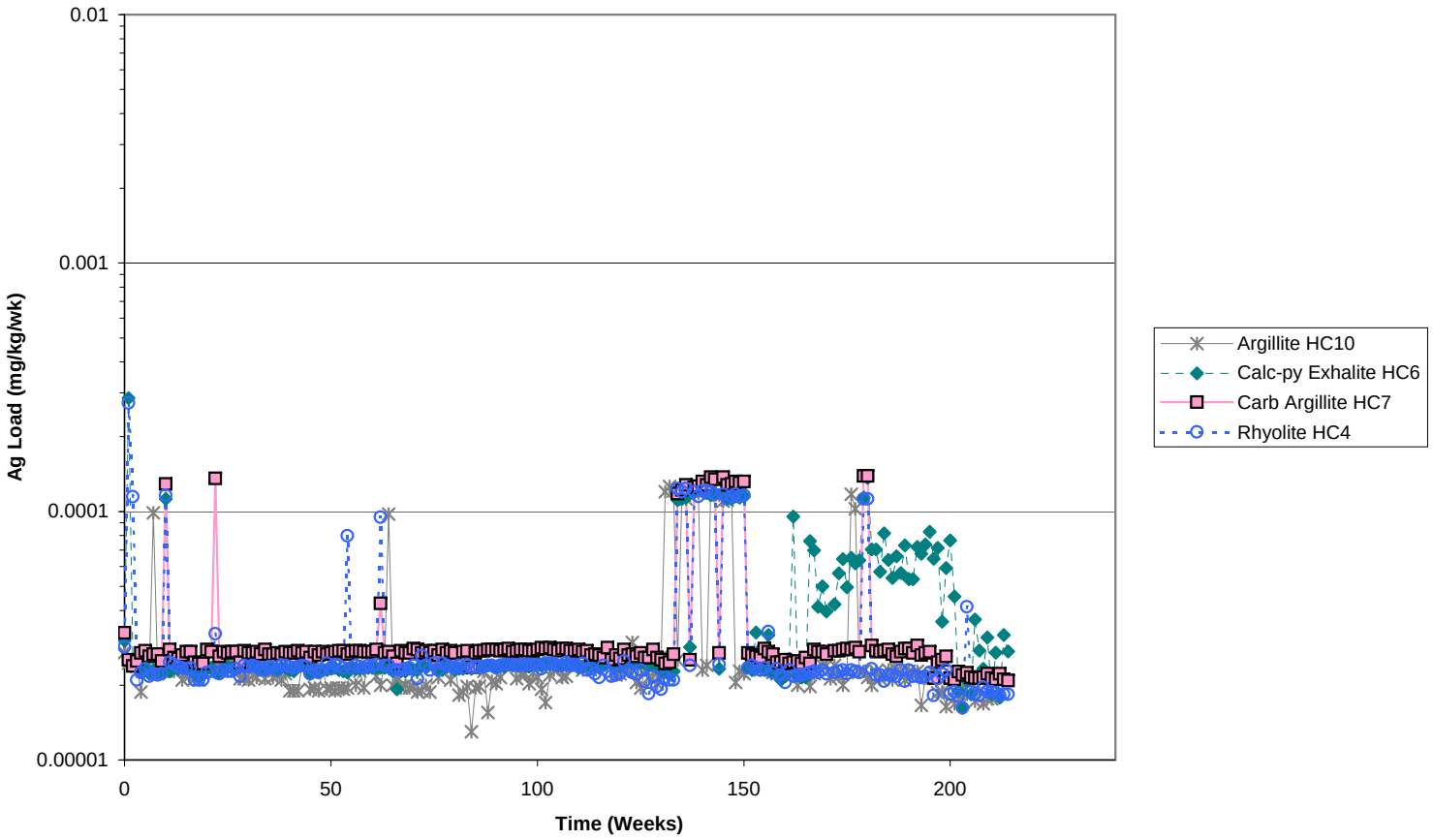
Acidity Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 83

TC 53920



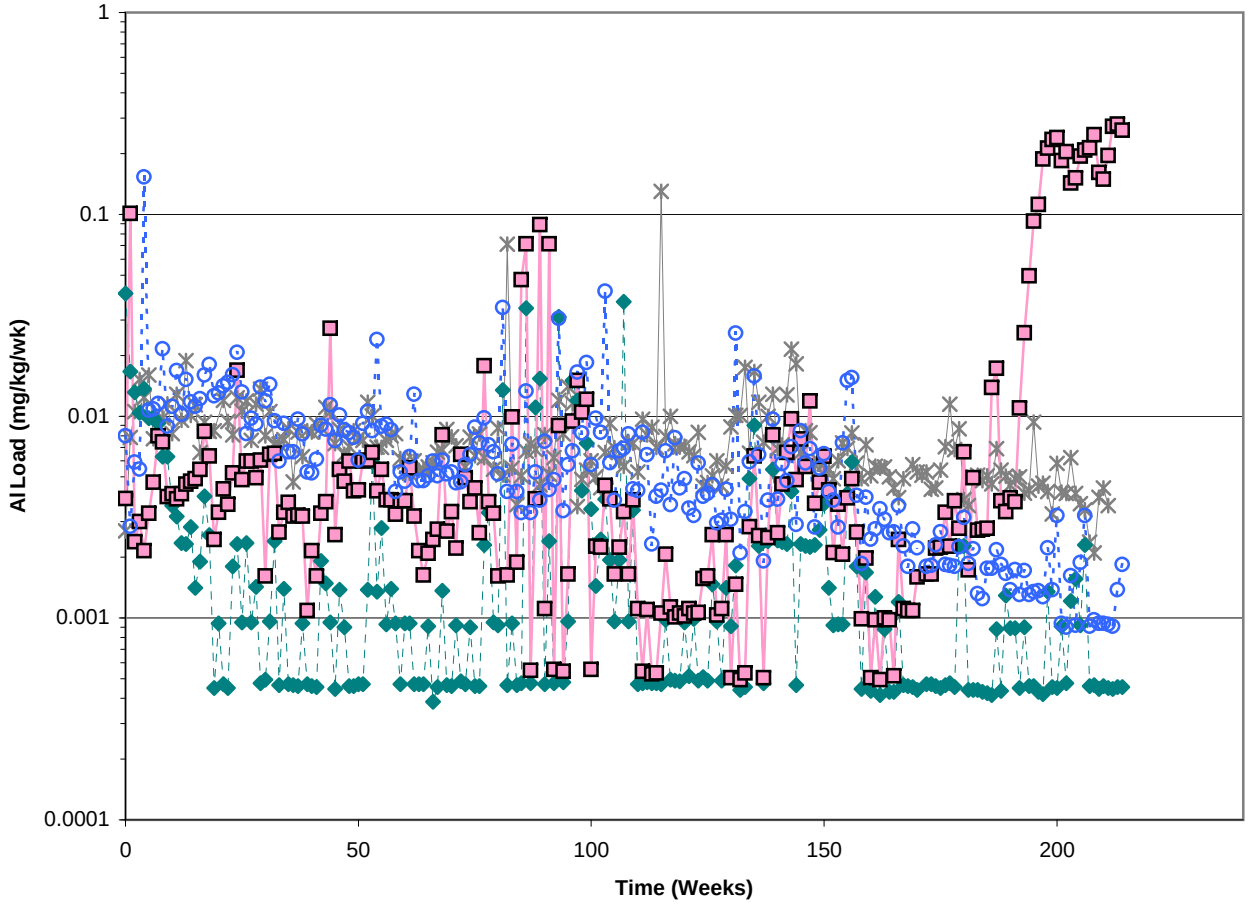
Sulphate Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 84

TC 53920



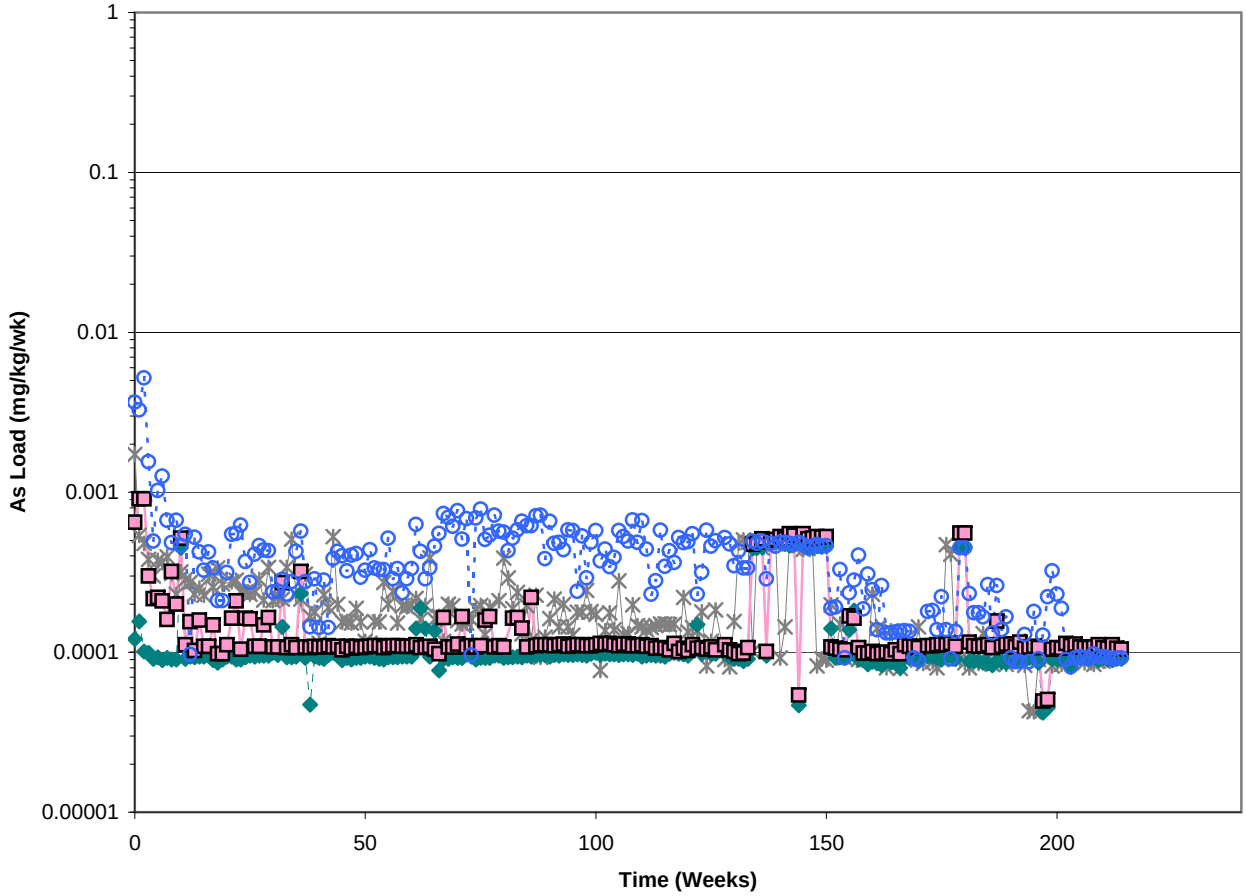
Silver Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 85

TC 53920



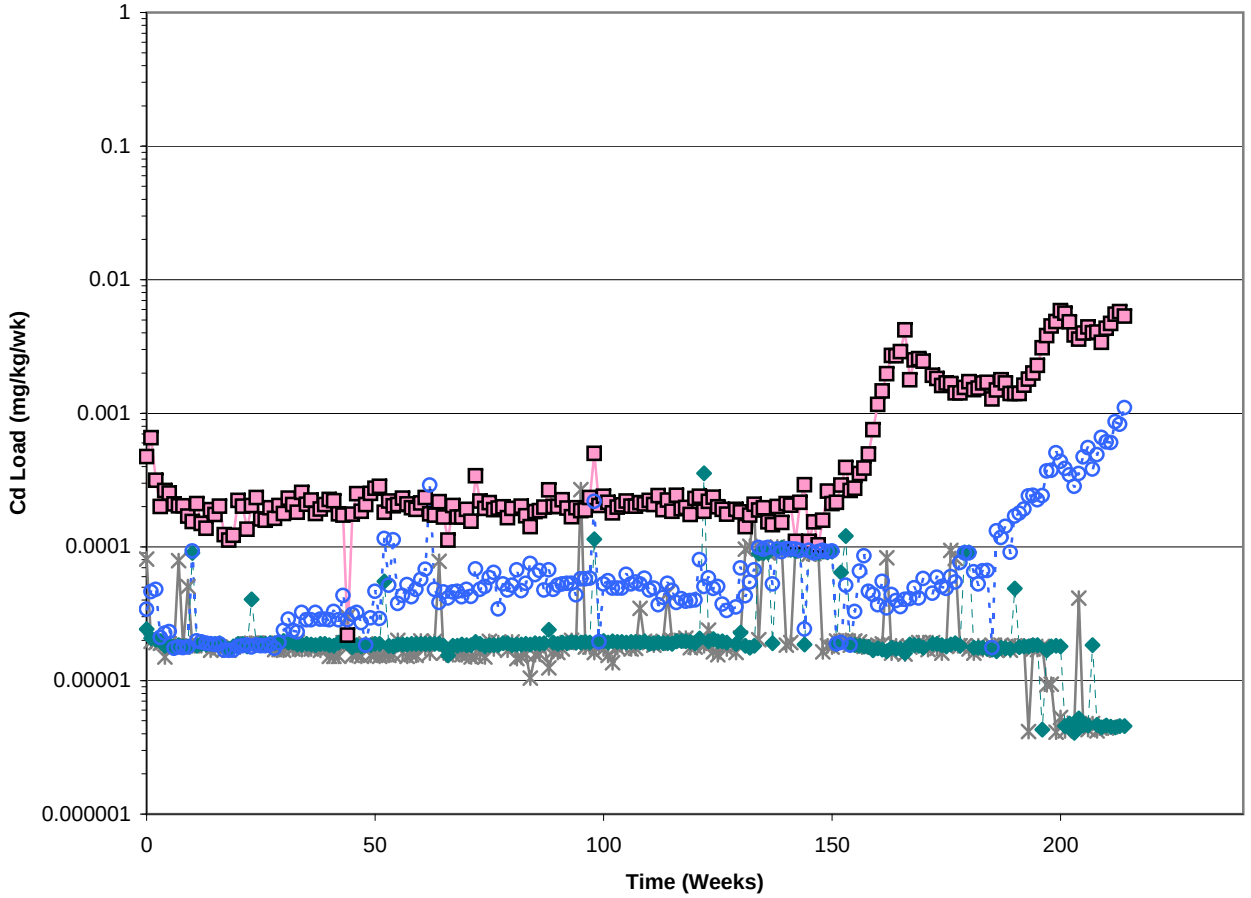
Aluminium Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 86

TC 53920



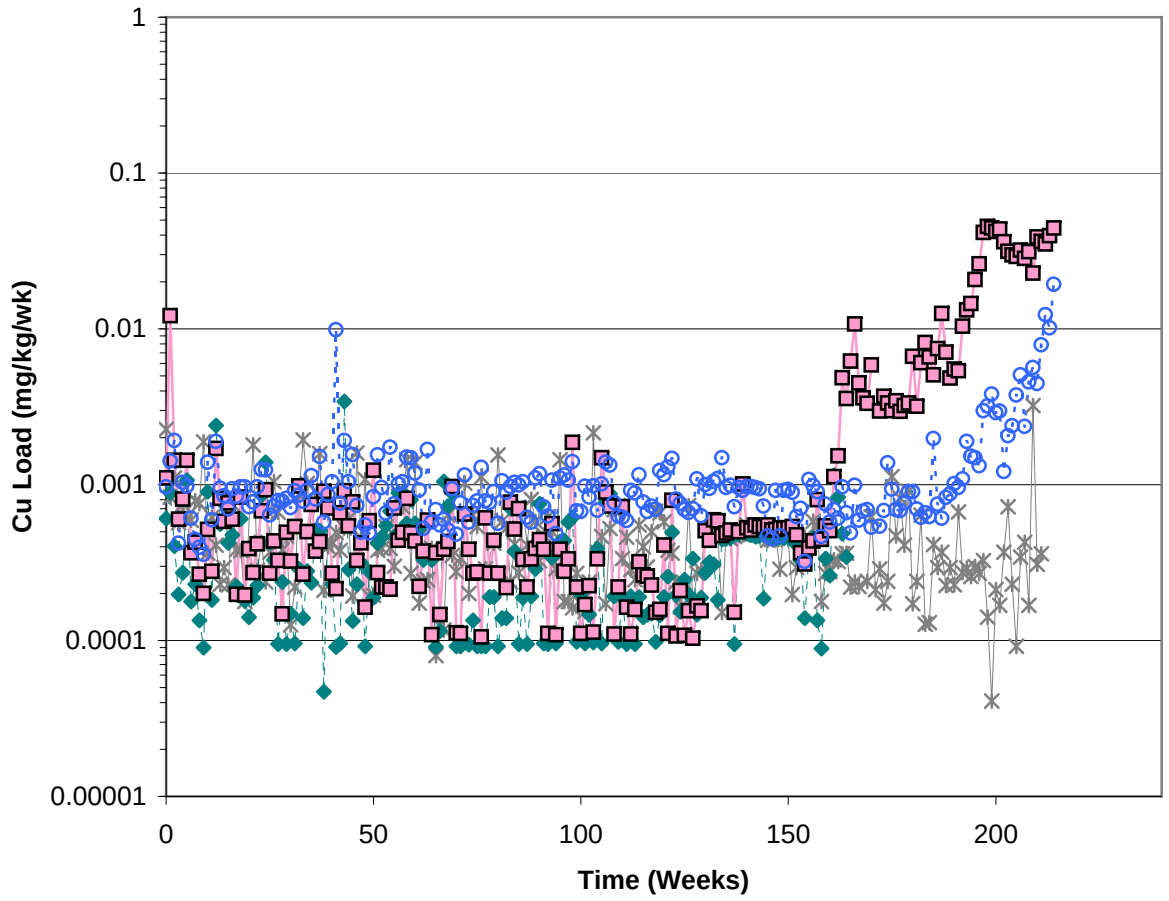
Arsenic Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 87

TC 53920



Cadmium Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 88

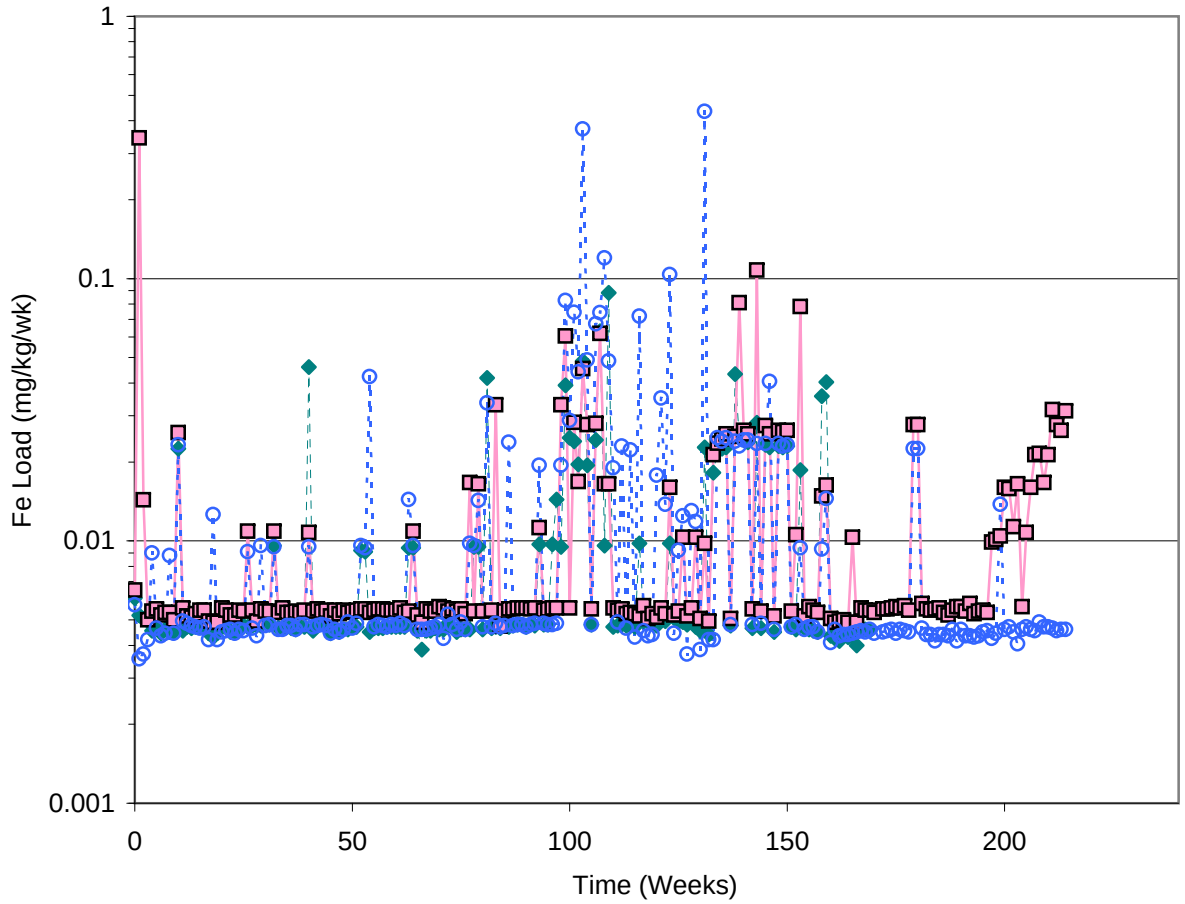
TC 53920



Copper Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2010 | FIGURE 89

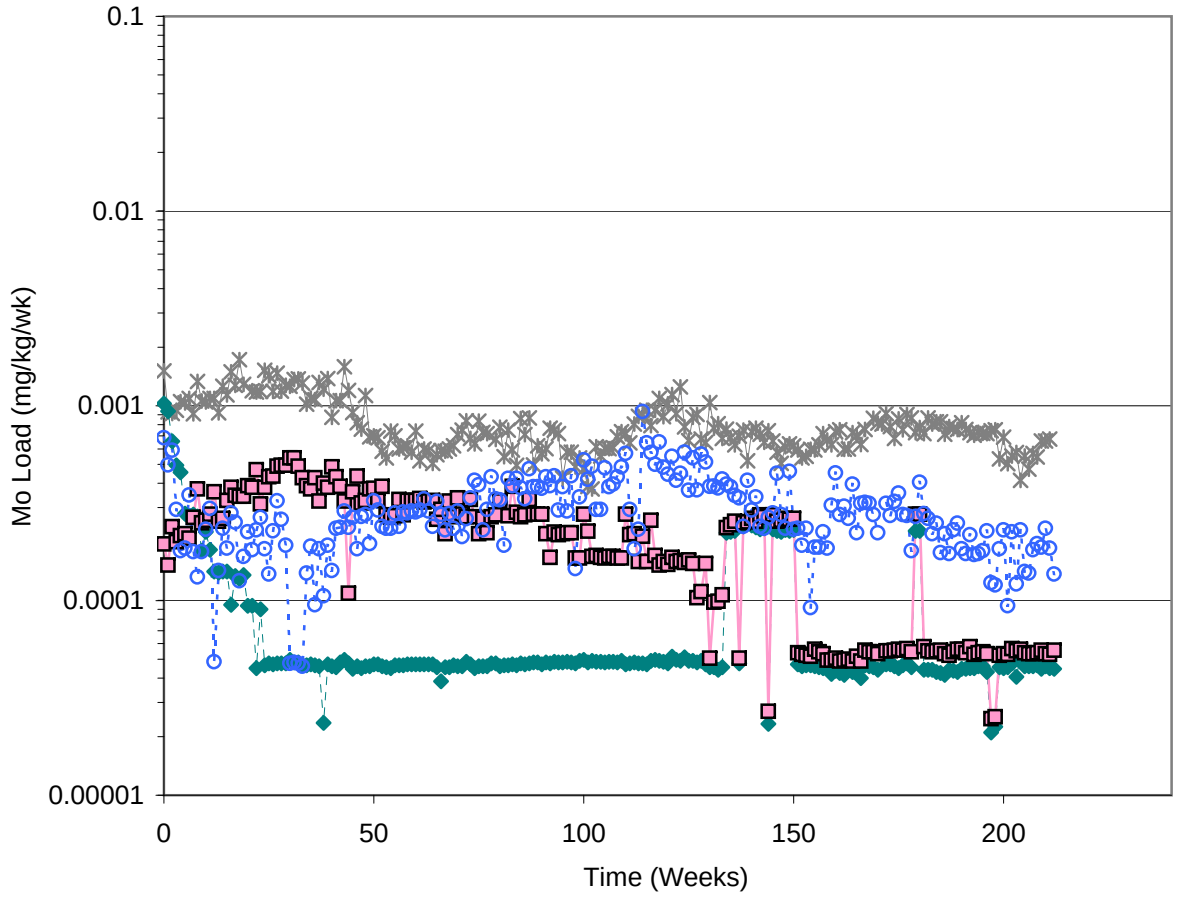


Iron Load
Operating Cells
Wolverine Mine, YK

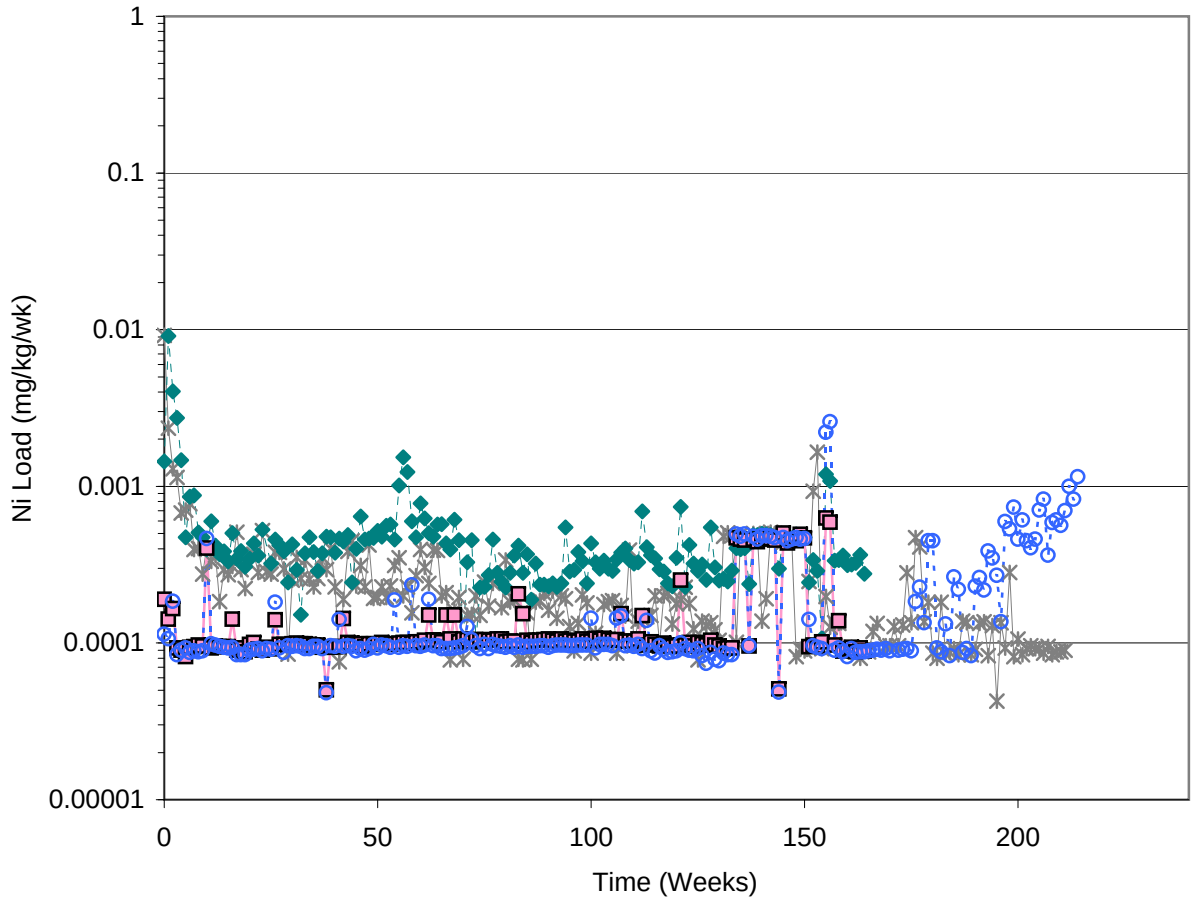
Mine Rock

March 2010 | FIGURE 90

TC 53920



Molybdenum Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 91

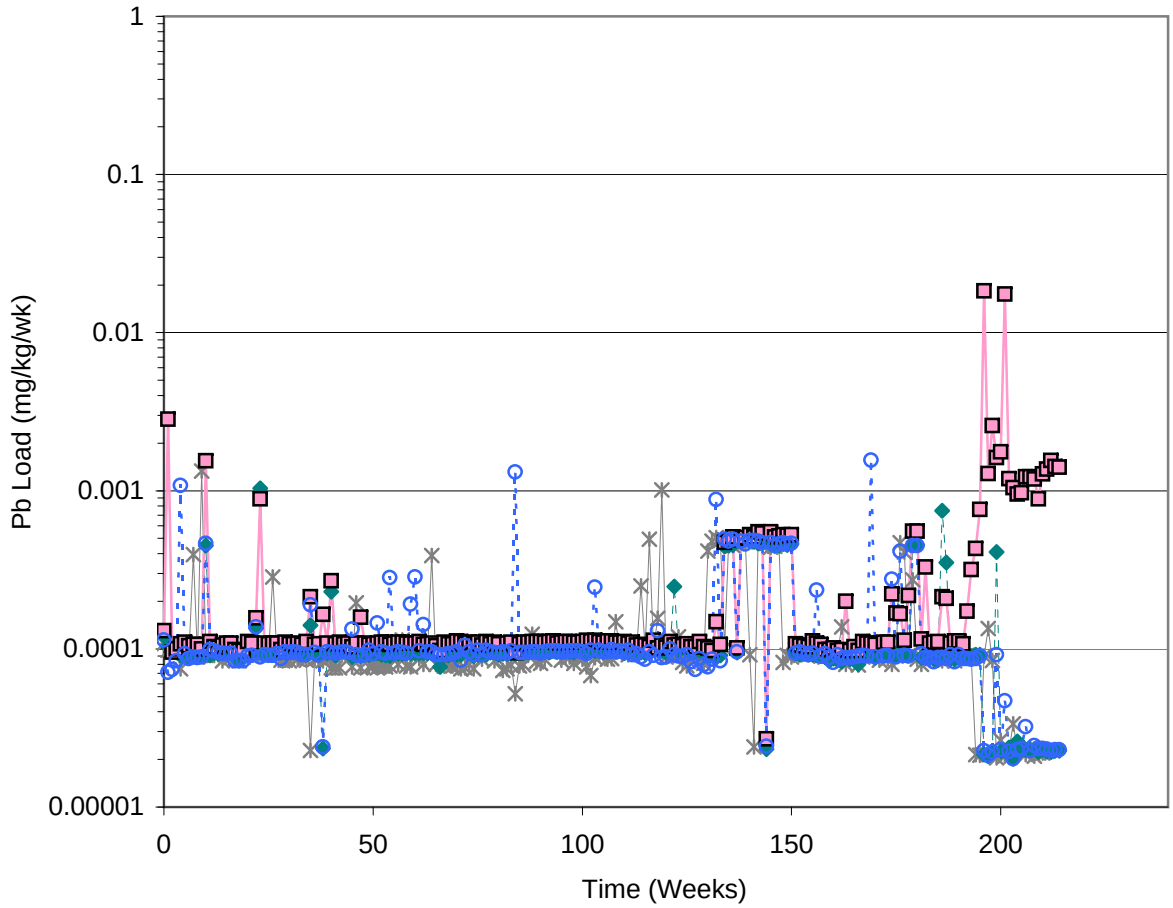


Nickel Load
Operating Cells
Wolverine Mine, YK

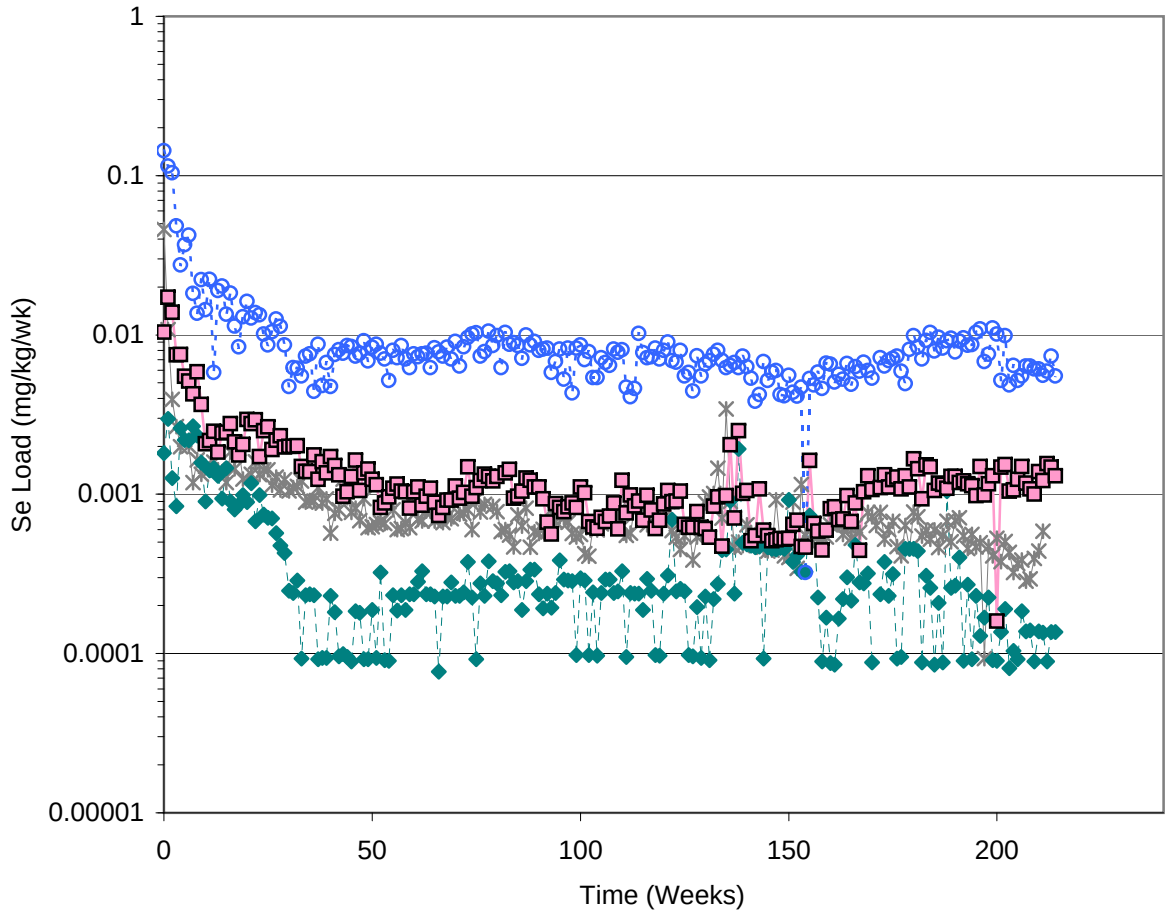
Mine Rock

March 2010 | FIGURE 92

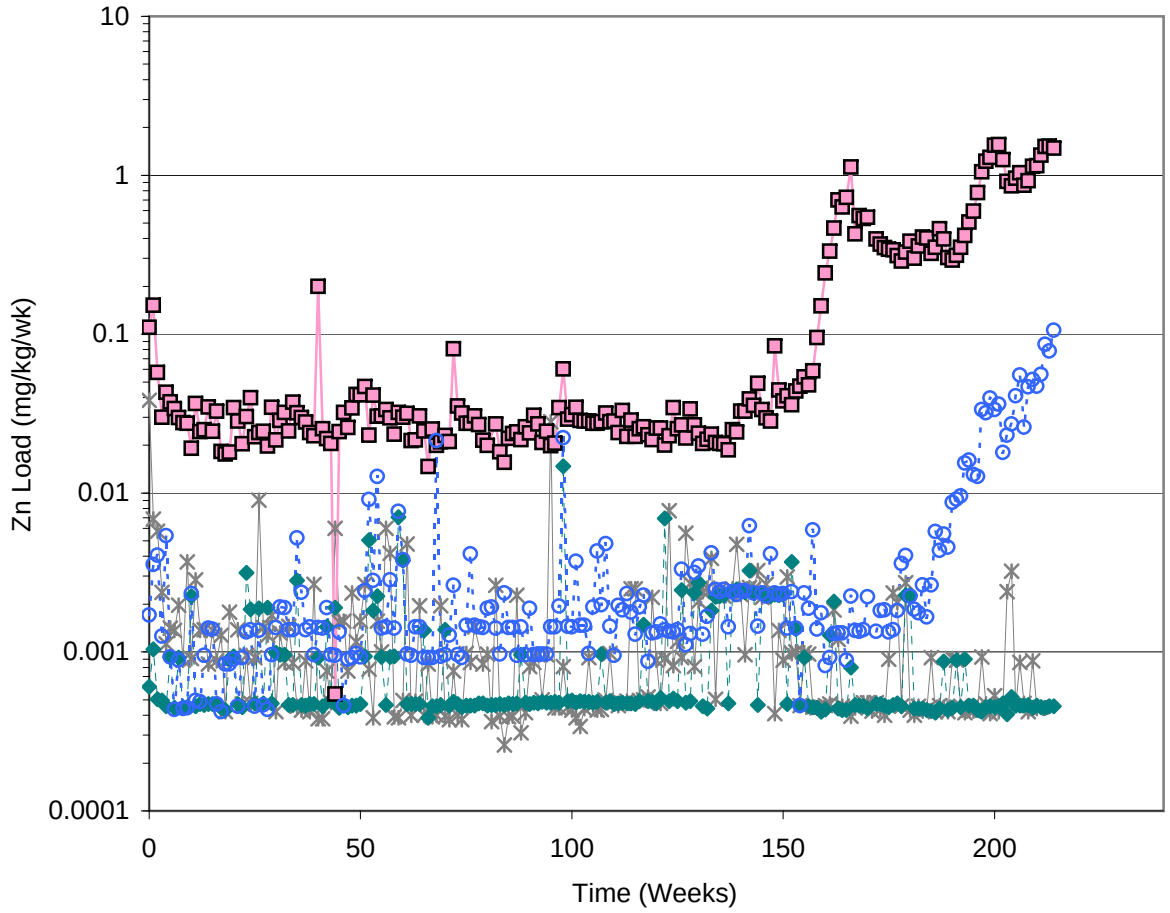
TC 53920



Lead Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 93



Selenium Load Operating Cells Wolverine Mine, YK	
Mine Rock	
March 2010	FIGURE 94

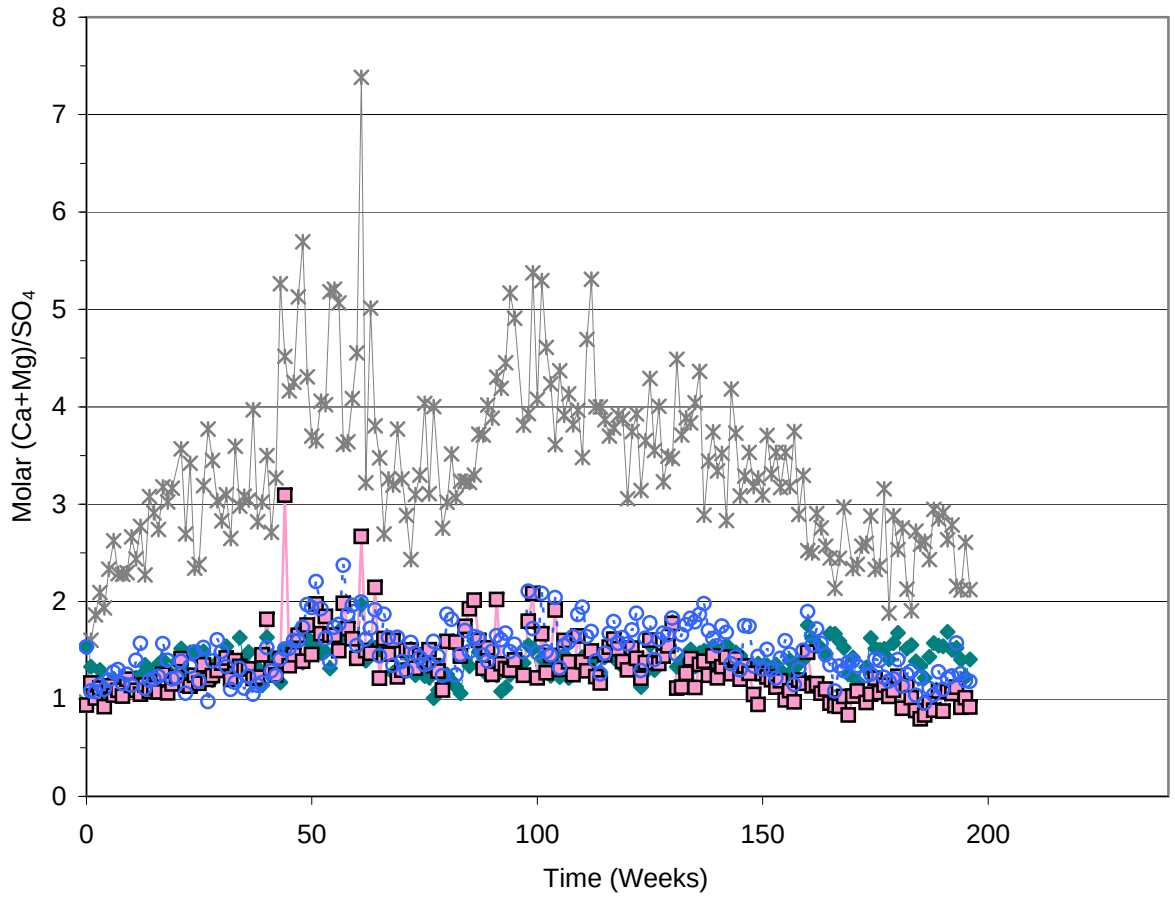


Zinc Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2010 | FIGURE 95

TC 53920



Molar $(Ca+Mg)/SO_4$ Load
Operating Cells
Wolverine Mine, YK

Mine Rock

March 2010 | FIGURE 96

Appendix E: Environmental Monitoring Reports

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: May 4th, 2009	Inspector(s): Billie Maje
Site Name: Access Road	Location/Co-ordinates: Km 0-3
Site Location Description: Key drainages along the road and areas of concern during freshet.	
Weather Conditions: Hot and Sunny temperatures ranging from -2°C to 22°C.	
Part 2 – Site Assessment	
Activity: Monitor erosion on the road, spring runoff, creeks and culverts.	
Site Description: Flows are high with a snow cover at all the creeks along the access road. Water has started to cross the access road at Km 2 where ditching is not adequate and/or culverts are not installed.	
Assessed Risk: medium, requires action	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Ditching and armouring of banks to be improved; culverts to be installed as necessary. Silt fence or erosion matting installed in areas that are high risk for sediment control.	
Mitigation Condition: No mitigation done as of yet.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Will monitor general condition and progress as the season progresses.	
Monitoring Frequency: Every other day	
Reporting Requirements: Weekly, individual reports will be issued for problem areas.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road Km 0-3	**Date:** May 4th
	
05/04/09 Km 2 Water crossing the road, no ditching and no culvert put into place. Looking U/C.	**05/04/09** Road is being eroded away due to the flow across the road. Looking N
	
05/04/09 Flows across the road going in to settling pond below. Sedimentation into vegetation	**05/04/09** Flow rate very high. Water is coming from the banks on the other side of the road which are melting.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: May 5th, 2009	Inspector(s): Billie Maje
Site Name: Creeks along site & access road	Location/Co-ordinates: Km0-Km26
Site Location Description: Key drainages along the road	

Weather Conditions:

Date	Weather Conditions	Temperature
05-May-09	Sunny with some cloud	15°C

Part 2 – Site Assessment
Activity: Monitor Creek/Road conditions for background purposes.
Site Description: Spring melt has started most creeks have a mid range flow or ice covers.
Assessed Risk: N/A
Photos Attached: Yes (14)
Samples Taken: No
Additional Information Attached: No

Part 3 –Mitigation Requirements
Mitigation Required: None
Mitigation Condition: N/A

Part 4 –Monitoring Requirements
Follow-up Monitoring: When snow and ice is completely gone.
Monitoring Frequency: None
Reporting Requirements: None

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road (creeks)	**Date:** May 5th, 2009
	
05/05/09 Pitch Creek Km 3 – upstream	**05/05/09** Pitch Creek Km 3 - downstream
	
05/05/09 Putt Creek Km 3 – upstream	**05/05/09** Putt Creek Km 3 - downstream

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road (creeks) **Date:** May 5th, 2009



05/05/09 Mulligan Creek Km 5 - upstream



05/05/09 Mulligan Creek Km 5 - downstream



05/05/09 Bunker Creek Km 10.5 - upstream



05/05/09 Bunker Creek Km 10.5 - downstream

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road (creeks) **Date:** May 5th, 2009



05/05/09 Chip Creek Km 15.5 - upstream



05/05/09 Chip Creek Km 15.5 - downstream



05/05/09 Hawkowl Creek Km 23.5 - upstream



05/05/09 Hawkowl Creek Km 23.5 - downstream

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road (creeks)	**Date:** May 5th, 2010
	
05/05/09 Go Creek Km 26 - upstream	**05/05/09** Go Creek Km 26 - downstream

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th - 12th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Creeks along site & access road	Location/Co-ordinates: Km0 - Km32
Site Location Description: Key drainages along the road	
Weather Conditions: Typical spring weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: Monitor Creek/Road conditions during spring runoff	
Site Description: Road is in good repair	
Assessed Risk: N/A	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Creek flow and ditch water levels monitored due to snow melt.	
Monitoring Frequency: During snow melt and heavy rains.	
Reporting Requirements: None	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road **Date:** June 6th



06/06/09 Km 5



06/06/09 Km 10



06/06/09 Km 15



07/06/09 Erosion control Km 15.5

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 7th - 13th ,2009	Inspector(s): Jaymie Skidmore
Site Name: Access Road	Location/Co-ordinates: Km 26.2 - Km 27 – Access Road
Site Location Description: Access road section between Landfill and Batch Plant. Area is located in the Go Creek drainage, and is >200m from Go Creek. Road section is previously disturbed, and is undergoing further construction.	
Weather Conditions: Typical summer weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: Access road in this location is being raised.	
Site Status: Complete	
Assessed Risk: N/A	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing construction due to the pipeline to be installed from the mill to the tailings.	
Monitoring Frequency: During heavy rains and construction.	
Reporting Requirements: as needed.	

Wolverine Project
Environmental Inspection Form

Site Name: Access Road **Date:** July 7th - 13th



10/07/09 Km 26-27



10/07/09 Km 26-27



13/07/09 Km 26-27

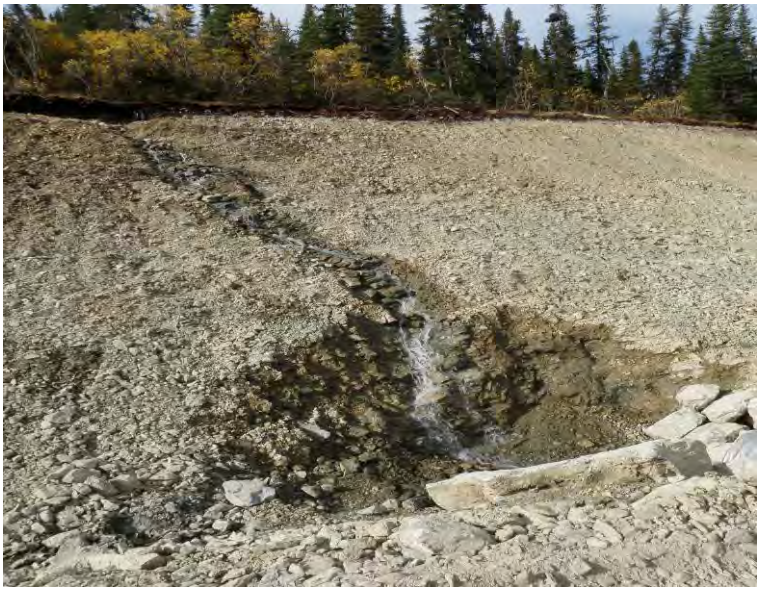


13/07/09 Km 26-27

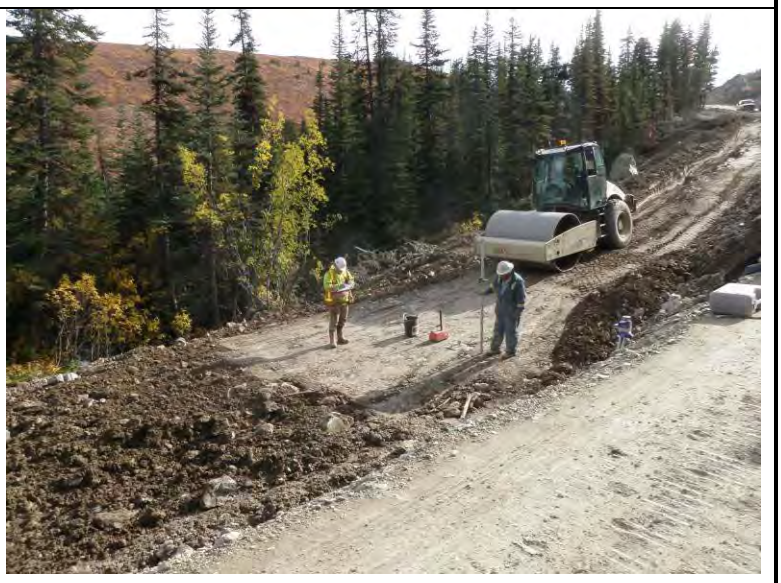
Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 12th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Access Road	Location/Co-ordinates: Km 14 to Km 16
Location Description: 2 km section of access road. Wooded area with steep embankments parallel to road. Consisting of natural run offs, drainages, small creeks and streams; Bogey creek, Chip Creek.	
Weather Conditions: Typical fall weather, temperatures ranging from 0°C- 12°Cwith periods of rain.	
Part 2 – Site Assessment	
Activity: -Ongoing excavation, cutting, filling, ditching, and clearing. -Culvert installed at Km 14.9 -Organic and overburden material stockpiled parallel to road.	
Site Status: -Expanding road. -Reducing grade of road. -Erosion control installed as needed. -Installing Culverts. -Repairing Culverts. (due to underground flows) -Ditching. -Cutting and filling area.	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitoring.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing through construction	
Monitoring Frequency: As needed.	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access road Km 14-16	**Date:** September 12th
	
09/11/09 Culvert installation km 15. (excavated)	**09/11/09** Culvert installation km 15. (excavated)
	
09/11/09 Culvert installation km 15. (back filled)	**09/11/09** Culvert installation km 15. (water inlet)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access road Km 14-16	**Date:** September 12th
	
09/11/09 Culvert installation km 15. (water outlet)	**09/12/09** Culvert repair 15.5 (underground water flow)
	
09/11/09 Cutting and filling.	**09/11/09** Portion of road expanded. Km 15

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access road Km 14-16	**Date:** September 12th
	
09/11/09 Portion of road expanded. Km 15	**09/12/09** Borrow area. Km15.75
	
09/11/09 Organic stock pile.	**09/12/09** Bogey creek.

Wolverine Project

Environmental Monitoring Form

Part 1 – Site Description	
Date: September 15th - 21st ,2009	Inspector(s): Billie Maje
Site Name: Access Road	Location/Co-ordinates: Km 14
Site Location Description: Rock outcropping just past km 14, 50m x 50m with very thin organic layer and stunted spruce trees. Rocky conditions and steep slopes.	
Weather Conditions: Typical fall conditions, light rains, temperatures ranging from 2°C to 10 °C.	
Part 2 – Site Assessment	
Activity: - Culvert installed at Km 14. - Grade has been taken down between Km 14 - KM 15.5. - Excavator contouring banks.	
Site Status: - The culvert has been installed and material has been put overtop and road is up to level of desired grade. - The site is about 65% complete.	
Assessed Risk: None	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Bank sides to be seeded when job is complete to prevent erosion.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: When construction is complete at Km 14.	
Monitoring Frequency: Every 2 days	
Reporting Requirements: Report	





09/17/09 Detour on the left, culvert installation below. (Looking down chain)

09/17/09 Photo looking up chain.
Description same as photo #1.

09/20/09 Material put back over top culvert.
CAT and packer levelling road to desired grade.

09/20/09 Bank sides re-contoured.
Creek in the photo is Chip creek.





Wolverine Project

Environmental Monitoring Form

Part 1 – Site Description	
Date: September 26th -27th , 2009	Inspector(s): Billie Maje
Site Name: Access Road	Location/Co-ordinates: Km 21
Site Location Description: There is a small spring that runs through in this area; Organics have all been pulled back from previous construction. Large spruce populates the area.	
Weather Conditions: Typical Fall conditions. Temperatures ranging from -4°C to 2°C. Ground has been freezing overnight.	
Part 2 – Site Assessment	
Activity: - Installed a French drain and moving the road over a foot. - Lowering the grade of the hill. - D10 CAT pushing material up on top to widen the road.	
Site Status: - The construction is 10% complete. - Running a small pump to divert small spring into organics.	
Assessed Risk: No	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Continue to monitor while construction is ongoing.	
Monitoring Frequency: Daily	
Reporting Requirements:	



09/26/09 Construction starts. French drain already put into place. CAT widens the road.



09/26/09 Road is moving over to the left. Photo facing down chain.



09/26/09 A closer look at the French drain.



09/27/09 An overview photo. Labourers setting up pump**.** Looking down chain.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Access road	Location/Co-ordinates: Access Road - K11 and K22
Site Location Description: Access road between km 11 and 12 is a heavily wooded area roughly 1 Km from Bunker Creek. Km 14-17 spans a road section with steep slopes on either side, there is very little vegetation. Mulligan Creek is situated at approximately Km 15.5. Km19-22 traverses an old burn, there are no nearby water bodies, and small vegetation.	
Weather Conditions: Typical fall/winter conditions. Some snow with cool temperatures ranging from 0°C to -12°C.	
Part 2 – Site Assessment	
Activity: The access road has been widened in the following locations. Km 11-12 14-17 19-22	
Site Status: Complete	
Assessed Risk: N/A	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Road widened in sections from km 11 to km 20.	
Monitoring Frequency: During heavy rains and construction.	
Reporting Requirements: When conditions change	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road **Date:** October 10th



10/10/09 Km 11.2 looking toward camp.



10/10/09 Km 11.2 looking south toward gate.



10/10/09 Km 14.2 looking toward camp.



10/10/09 Km 15.3 looking toward camp.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Access Road	**Date:** October 10th
	
10/10/09 Km 16 looking toward camp.	**10/10/09** Km 16-17 looking toward camp.
	
10/10/09 Km 19 hill looking toward camp.	**10/10/09** Km 21 hill looking toward camp.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: February 3rd - 16th , 2009	Inspector(s): Jennie Gjertsen and Billlie Maje
Site Name: Arctic Camp – new trailer install	Location/Co-ordinates: arctic camp
Site Location Description: Arctic Camp is located at km 25 of the Access road on the West side of the road. Area for new trailer unit install is well drained and within the project's scope of disturbance. Trailers are to be tied into existing water and sewage systems and total capacity of camp is not to exceed 50 people, so as not to trigger a need for a water license.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Leveling of site commenced - Trailer units hauled onto site, more to come - Installation and connection of units ongoing	
Site Description: Units require additional tying in to current system	
Assessed Risk: Low	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached:	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: none	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring during installation Occupancy to be monitored	
Monitoring Frequency: weekly	
Reporting Requirements: as required	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic – new trailer install	**Date:** February 3rd - 16th
	
02/13/09 New trailer units (facing NW)	**02/13/08** New units location (facing S)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: February 18th – March 2nd, 2009	Inspector(s): James Spencer
Site Name: Arctic Camp – new trailer install	Location/Co-ordinates: arctic camp
Site Location Description: Arctic Camp is located at km 25 of the Access road on the West side of the road. Area for new trailer unit install is well drained and within the project's scope of disturbance. Trailers are to be tied into existing water and sewage systems and total capacity of camp is not to exceed 50 people, so as not to trigger a need for a water license.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Trailer units hauled onto site, more to come - Installation and connection of units ongoing - Water tank Installed for hauling of water from Hawkowl Creek	
Site Description: ACL 42 man camp 60% complete w/ permanent power connected, sewer and water storage connected. Generator set install Propane Hook ups Water Services - Piping and heat trace	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached:	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: none	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring during installation Occupancy to be monitored	
Monitoring Frequency: weekly	
Reporting Requirements:	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic – new trailer install	**Date:** February 18th – March 2nd , 2009
	
02/26/09 New trailer units (facing S)	**02/26/09** New Generator set and Envirotank (facing S)
	
02/26/09 New Water Tank (in Sea-Can) and plumbing services (Facing N)	**02/26/09** New Propane tanks (Facing W)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 3rd – 23rd , 2009	Inspector(s): Jennie Gjertsen
Site Name: Arctic Camp – new trailer install	Location/Co-ordinates: arctic camp
Site Location Description: Arctic Camp is located at km 25 of the Access road on the West side of the road. Area for new trailer unit install is well drained and within the project's scope of disturbance. New trailers are to have a separate water source (Hawkowl Creek) and waste system, so as not to trigger a need for a water license.	
Weather Conditions: Typical March conditions, some snowfall and accumulation, temperatures ranging from -25°C to -5°C.	
Part 2 – Site Assessment	
Activity: - Installation and connection of units ongoing - Water tank Installed for hauling of water from Hawkowl Creek	
Site Description: New Arctic camp is almost complete, waiting for further info from EMR as to 50 man rule	
Assessed Risk: Low	
Photos Attached: no	
Samples Taken: No	
Additional Information Attached:	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring during installation, Occupancy to be monitored, water source and waste deposit to be monitored should the total capacity exceed 50 men between the two camps	
Monitoring Frequency: weekly	
Reporting Requirements:	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 31st – April 6th , 2009	Inspector(s): Robin McCall/Mary McDougall/Billie Maje
Site Name: Arctic camp extension	Location/Co-ordinates: Km 25
Site Location Description: The Arctic Camp is located on the West side of the Access Road at KM 25. The area at the South end of the Camp has been cleared, leveled and graded to make room for the installation of a maintenance shop. This area is well drained and within the project's scope of disturbance.	
Weather Conditions: Typical spring weather; sunny with some clouds. Light snowfall and accumulation, temperatures ranging from -10°C to 2°C.	
Part 2 – Site Assessment	
Activity: The area at the south end of the Arctic Camp has been cleared, leveled and graded. A liner has been installed to capture hydrocarbons from maintenance activity.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: At closure of the camp, the soil from area within the liner should be tested for contamination, excavated and transported to the LTF to be reclaimed if required.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring complete	
Monitoring Frequency: None	
Reporting Requirements: None	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic Camp extension	**Date:** March 31st – April 6th
	
03/31/09 Cleared area on the south side of Arctic camp, which is where the coverall will be installed (facing north).	**04/02/09** Area for coverall building (facing west).
	
04/03/09 Liner is installed to capture hydrocarbons (facing west).	**04/05/09** Structure is being erected (facing north west).

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic Camp Extension	**Date:** March 31st – April 6th
	
04/06/09 Coverall erected (facing north).	**04/06/09** Coverall building at Arctic (facing west).

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 8th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Arctic camp	Location/Co-ordinates: Km 25
Site Location Description: The Arctic Camp is located on the West side of the Access Road at KM 25. Go Creek lies approximately 1km to the north and also to the west. This area is well drained and within the project's scope of disturbance.	
Weather Conditions: Typical spring weather, sunny with some clouds. Periods of Rain 5°C to 30°C	
Part 2 – Site Assessment	
Activity: Camp is being expanded to accommodate a growing work force.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: n/a	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring complete Photo update due to camp expansion.	
Monitoring Frequency: Arctic Shop area inspection to be done weekly.	
Reporting Requirements: Arctic inspection report to be done weekly.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic Camp Expansion	**Date:** June 8th
	
06/08/09 Completed maintenance shop.	**06/08/09** Overview of Arctic camp.
	
06/08/09 North end of the Arctic camp with new bunk additions.	**06/08/09** South end storage area lay down area addition.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date : July 30th, 2009	Inspector(s): Billie Maje
Site Name: Arctic camp at Km 0	Location/Co-ordinates: Km 0 laydown
Site Location Description: Large cleared area, Arctic Construction was previously based there at km 0 when constructing the road in 2007. No creeks are present in the area.	
Weather Conditions: Typical summer conditions. Temperatures ranging from 10°C to 25°C	
Part 2 – Site Assessment	
Activity: - Trailers put into place and levelled. - Sewer system has not been set up yet. - Fuel storage tank into place. - Generator in place.	
Site Description: Everything is currently on hold. Camp is partially set up, but is not occupied.	
Assessed Risk: None.	
Photos Attached: Yes (6)	
Samples Taken: No.	
Additional Information Attached: None.	
Part 3 –Mitigation Requirements	
Mitigation Required:	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: When the camp has been started up and is occupied.	
Monitoring Frequency: Weekly	
Reporting Requirements: Under Arctic Construction Permits.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic camp at Km 0	**Date:** July 30th
	
07/30/09 A look at the camp, generator and propane.	**07/30/09** fuel tank
	
07/30/09 Septic holding tank	**07/30/09** Septic field location

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic camp at Km 0	**Date:** July 30th
	
07/30/09 Security office at the gate.	**07/30/09** Office complex, sewage system not yet set up.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 1st, 2009	Inspector(s): Jaymie Skidmore
Site Name: Arctic camp at Km 0	Location/Co-ordinates: Km 0 laydown
Site Location Description: Large cleared are located at km 0 gate house adjacent to the Campbell Highway. Dense wooded area, no creeks or other types of water bodies in the area.	
Weather Conditions: Typical fall weather 0 to 12°C with periods of rain.	
Part 2 – Site Assessment	
Activity: -Camp is now occupied	
Site Status: - Trailers put into place and levelled. - Fuel storage tank into place. - Generator in place.	
Assessed Risk: None	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Camp is now in liveable conditions and is currently occupied by ~12 people.	
Monitoring Frequency: Weekly	
Reporting Requirements: Under Arctic Construction Permits	

Wolverine Projec
Environmental Inspection Form – Photos

Site Name: Arctic camp at Km 0	**Date:** September 1st
	
09/01/09 Overview of Gate camp.	**09/01/09** Spill kit.
	
09/01/09 Gate parking area.	**09/01/09** Bunk house and office trailer.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic camp at Km 0	**Date:** September 1st
	
09/01/09 Gate house and storage area.	**09/01/09** Incinerator area.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 13th - 21st , 2009	Inspector(s): Billie Maje
Site Name: Arctic Camp	Location/Co-ordinates: Arctic camp Km 25.5
Site Location Description: Arctic Camp is located at km 25.5 of the Access road on the West side of the road. Area for new trailer unit install is well drained and within the project's scope of disturbance. Additional units are being brought up from Km 0 temporary construction camp.	
Weather Conditions: Typical winter weather. Temperatures ranging from -5°C to -16°C.	
Part 2 – Site Assessment	
Activity: - Pad built and leveled with CAT. - Km 0 trailers moved to Km 25.5 - Fuel tank moved from its location and shipped out.	
Site Status: Arctic camp is still occupied. Trailers are located there for winter storage.	
Assessed Risk: Low.	
Photos Attached: Yes (4)	
Samples Taken: No.	
Additional Information Attached: None.	
Part 3 –Mitigation Requirements	
Mitigation Required: None. The fuel tank area was determined not to be contaminated, weekly inspections when tank was located there; very clean area. No samples taken.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: None	
Monitoring Frequency: Bi-monthly	
Reporting Requirements: None.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Arctic Camp	**Date:** November 13th- 21st
	
10/25/09 Km 0 trailers unoccupied.	**11/13/09** Fuel tank moved from its location. (Note: That is not the fuel tank on truck trailer.)
	
11/19/09 Trailers moved from Km 0 to Km 25.5 for winter storage. Pad surveyed and built.	**11/20/09** Trailer re-location on the up chain side of Km 25.

Wolverine Project
Environmental Inspection Form

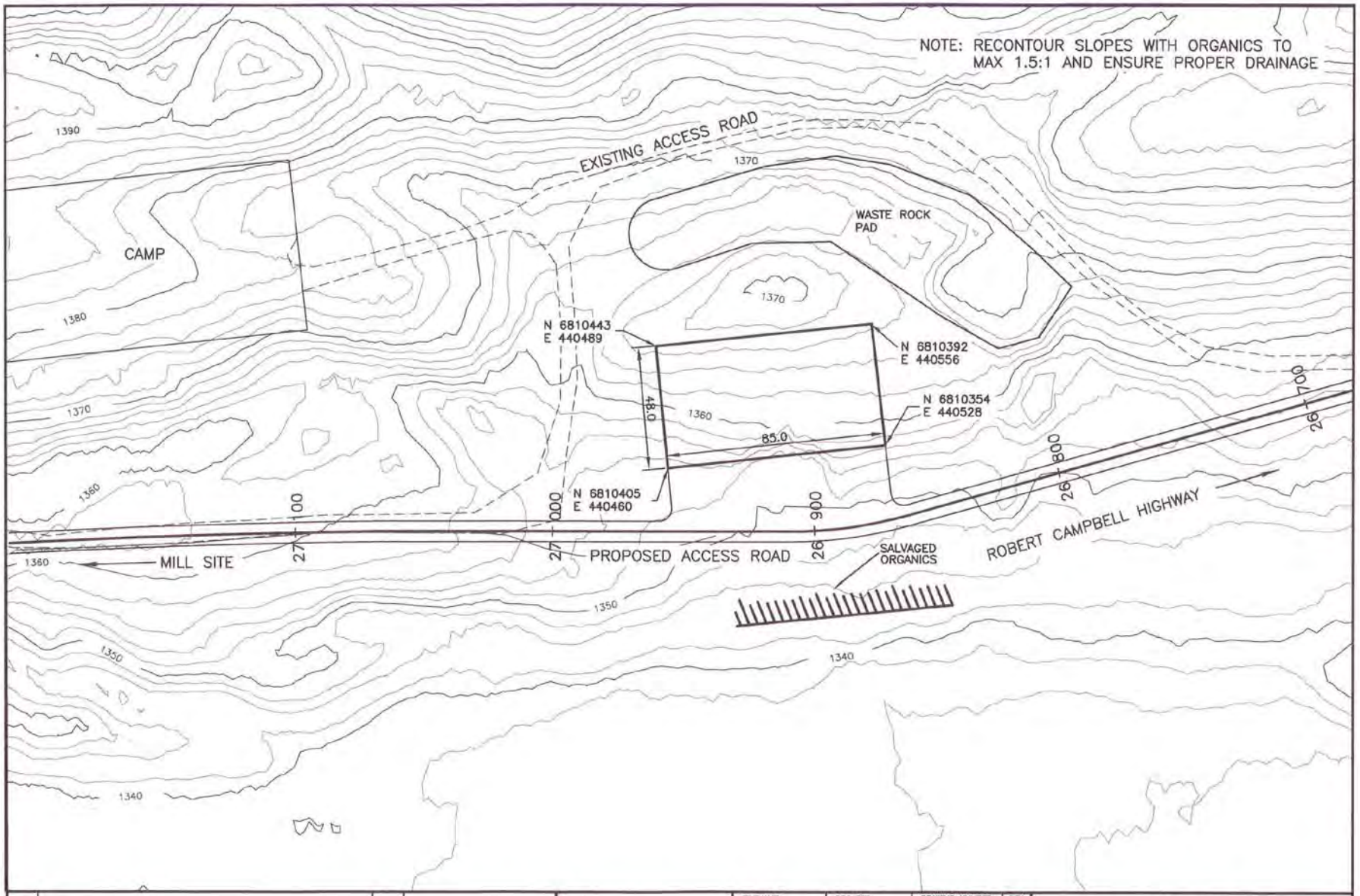
Part 1 – Site Description	
Date: February 6th - 16th , 2009	Inspector(s): Jennie Gjertsen and Billie Maje
Site Name: K 27.3 Side borrow	Location/Co-ordinates: Km 27+300 access road
Site Location Description: Area under development is a borrow source at km 27 + 300 of the access road. To the east the area is limited by the Waste Rock Pad; to the west there is the low lying bog area which is just south of the divide between the Wolverine Creek and Go creek drainages (in Go Creek drainage). There is a seep that flows in the spring at the southern end of the site. The site was already disturbed as it was used as a borrow source previously, and is being expanded.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Extended stripping and stockpiling of organics - started Feb 6th - Leveling and excavation of site started - Improvements to access road to the borrow source	
Site Description: Area has been stripped and cleared to open up borrow material. Access into the site has been approved.	
Assessed Risk: Low	
Photos Attached: Yes (7)	
Samples Taken: No	
Additional Information Attached: Yes (drawing)	
Part 3 –Mitigation Requirements	
Mitigation Required: Mitigation needs to be assessed when snow melts and proximity to open water can be gauged. Likely a need for culvert installation before snow melt	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring to be done once General site plan is approved and work commences on concrete batch plant and access road at this location.	
Monitoring Frequency: daily during periods of snow melt and heavy rain in spring	
Reporting Requirements: report as changes occur	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: 27 +300 Borrow source	**Date:** February 6th - 16th
	
02/07/09 Organics stripped and cleared (facing SE)	**02/07/09** Toe of stockpile to be cleared to end of vegetation. (facing S)
	
02/08/09 Leveling. (facing SE)	**02/10/09** Improvements to borrow access. (facing SE)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: 27 +300 Borrow source	**Date:** February 6th - 16th
	
02/10/09 Clearing a pad.(facing S)	**02/12/09** Opened Borrow source. (facing SE)
	
02/13/09 Improved access. (facing S)	



NO	DESCRIPTION	BY	DATE
	ISSUE/REVISIONS		

SECTION:	
SCALE: 1:2000	DATE
DESIGNED BY: JTQ	01/30/2009
DRAWN BY: RSC	01/30/2009
CHECKED BY:	
APPROVED BY:	

FILENAME	PROJECT	DRAWING NUMBER	REV
QDARP.DWG	E09004	PIT26-9R	0

YES

YUKON ENGINEERING SERVICES

YUKON ZINC ACCESS ROAD

QUARRY DEVELOPMENT AND REHABILITATION PLAN

Plan km 26+900 Pit

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: February 18th - March 2nd, 2009	Inspector(s): James Spencer
Site Name: Batch Plant/ Km 26.2 Access Road	Location/Co-ordinates: Km 27+300 to Km 26 +200
Site Location Description: Area under development is a batch plant and aggregate plant for concrete at km 27 + 300 of the access road. To the east the area is limited by the Waste Rock Pad; to the west there is the low lying bog area which is just south of the divide between the Wolverine Creek and Go creek drainages (in Go Creek drainage). There is a seep that flows in the spring at the southern end of the site. The site was already disturbed as it was used as a borrow source previously, and is being expanded.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Ditching of new access road. - Leveling and excavation of batch plant site 95% complete - Access road completed from km 26.2- km 27.2 - Culvert installed at km 27 (new road) , a historical Surveillance Network Monitoring water site 42B	
Site Description: Area has been stripped and cleared to open up material to level a pad and allow for routing of traffic to the low side of the Waste Rock Pad. Access into the site has been approved.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Mitigation needs to be assessed when snow melts and proximity to the wetted perimeter can be gauged. Will need silt fence installed once ground thaws	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring to be re-established in spring when mitigation features are in place or if any activity warrants monitoring to continue.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring	
Reporting Requirements: Report as changes occur.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** Feb. 18th- March 2nd
	
02/22/09 Looking SW at SW corner of Batch Plant Pad cut and fill.	**02/22/09** Looking South from Batch Plant Pad at earthworks preparation for culvert install.
	
02/23/ Batch Plant Pad looking SW from Km 27 at cut and fill activities.	**02/23/09** Batch Plant Pad looking SW at cut and fill activities.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** Feb. 18th- March 2nd
	
02/27/09 Access Road looking South from Batch Plant Pad.	**02/27/09** Looking South from New Camp Pad at Batch Plant Pad.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 3rd – 23rd , 2009	Inspector(s): Jennie Gjertsen
Site Name: Batch Plant/ Km 26.2 Access Road	Location/Co-ordinates: Km 27+300 to Km 26 +200
Site Location Description: Area under development is a batch plant and aggregate plant for concrete at km 27 + 300 of the access road. To the east the area is limited by the Waste Rock Pad; to the west there is the low lying bog area which is just south of the divide between the Wolverine Creek and Go creek drainages (in Go Creek drainage). There is a seep that flows in the spring at the southern end of the site. The site was already disturbed as it was used as a borrow source previously, and is being expanded.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Completion of new access road. - Leveling and drain rock filling of batch plant site.	
Site Description: Batch plant site and access road have been completed.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Mitigation needs to be assessed when snow melts and proximity to the wetted perimeter can be gauged. Will need silt fence installed once ground thaws. Water volume of runoff through culvert needs to be monitored.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring to be re-established in spring when mitigation features are in place or if any activity warrants monitoring to continue.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: Report as changes occur.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** March 3rd – 23rd
	
03/05/09 Work clearing snow on mill bypass road, work stopped until plans submitted for approval (facing N).	**03/07/09** Looking South. Continued excavation of east side slope.
	
03/07/09 Mill bypass road – work stopped.	**03/11/09** Batch Plant Pad looking SE at completed access road.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** March 3rd – 23rd
	
03/16/09 Southern entrance to competed access road at 26.3**.**	**03/21/09** Drain rock brought in for batch plant pad surfacing.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 29th – May 9th ,2009	Inspector(s): Billie Maje
Site Name: Batch Plant/ Km 26.2 Access Road	Location/Co-ordinates: Km 27+300 to Km 26 +200
Site Location Description: Area under development is a batch plant and aggregate plant for concrete at km 27 + 300 of the access road. To the east the area is limited by the Waste Rock Pad; to the west there is the low lying bog area which is just south of the divide between the Wolverine Creek and Go creek drainages (in Go Creek drainage). There is a seep that flows in the spring at the southern end of the site. The site was already disturbed as it was used as a borrow source previously, and is being expanded.	
Weather Conditions: Typical May spring conditions, sunny/ partly cloudy, temperatures ranging from °-2C to 20°C.	
Part 2 – Site Assessment	
Activity: - Ditching of the batch plant to catch runoff. - The plant has been brought in and set up. - Hauling of crush material from 17.5 borrow for use in cement	
Site Description: Batch plant site and access road have been completed	
Assessed Risk: Low	
Photos Attached: Yes (5)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none required at this time.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Water volume of runoff through culvert needs to be monitored, pH values in runoff water should be monitored for signs of contamination	
Monitoring Frequency: Daily during periods of heavy rain in spring.	
Reporting Requirements: Report as changes occur.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** April 29th – May 9th
	
05/08/09 Overview of Batch Plant.	**05/08/09** Excavating of excess material.
	
04/30/09 Ditching to catch all runoff. Looking east towards WRP.	**04/30/09** Ditch work has been completed, all runoff drains into culvert. See photo #5 Looking east.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** April 29th – May 9th
	
05/08/09 The end of the batch plant pad. Culvert catches all runoff. Looking D/C.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th – 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Batch Plant/ Km 27.2 Access Road	Location/Co-ordinates: Km 27- 27+300
Site Location Description: Area under development is a batch plant and aggregate plant for concrete at km 27 + 300 of the access road. To the east the area is limited by the Waste Rock Pad; to the west there is the low lying bog area which is just south of the divide between the Wolverine Creek and Go creek drainages (in Go Creek drainage). There is a seep that flows in the spring at the southern end of the site. The site was already disturbed as it was used as a borrow source previously, and is now being used as a batch plant laydown.	
Weather Conditions: Typical May spring conditions, sunny, partly cloudy, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Batch plant complete. - Ditching of the batch to catch runoff complete. - Hauling of materials to site is ongoing. - Plant is now up and running. Batch tests have been done.	
Site Description: Batch plant is operational	
Assessed Risk: Low	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Water volume of runoff through culvert needs to be monitored, pH values in runoff water should be monitored for signs of contamination	
Monitoring Frequency: weekly or as conditions change	
Reporting Requirements: Report as changes occur.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Batch Plant Pad	**Date:** June 4th – 10th
	
06/08/09 Side view of completed batch plant.	**06/08/09** Overview of completed batch plant.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 20th – May 19th, 2009	Inspector(s): RM, JG, JS, JS, MM, MK, BM
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex

Site Location Description:

The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path.

The IC will be situated on mostly pre disturbed area; tree removal, grubbing, organic and overburden removal will need to be done to prepare site for infrastructure.

Weather Conditions: Spring conditions, some melting during day and freezing at night. Some snowfall events and some rain activity at the end of the reporting period. Temperatures ranging from -10°C to 20°C.

Part 2 – Site Assessment

Activity:

- Snow removal
- Grubbing and organic removal to stockpiles
- Construction office trailer installed
- fill material excavated for IC ditches #3 and #4 final elevations (ditch work ongoing)
- Ditch #1 upper portion complete
- Excess overburden (40,000m^3) hauled to north of portal area as per Joe Hanrath (EMR) approval
- Cut and fill balance trying to be achieved, EBA on site to monitor compaction requirements

Site Status:

- some of the mill pad site has reached final elevations
- Internal ditching still required

Assessed Risk: Low

Photos Attached: No

Samples Taken: No

Additional Information Attached: none

Part 3 –Mitigation Requirements

Mitigation Required: Make note of sedimentation or sloughing of piles as ice and snow melt, ensure proper mitigations measures (eg. Silt fencing) is installed, if required. Ensure that lining of ditches follows in a timely manner. Develop a plan to deal with mill site spring to be directed into IC Ditch #1 and into Wolverine creek.

Mitigation Condition: Good

Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitor entire job site including associated organic and overburden piles

Monitoring Frequency: Daily

Reporting Requirements: Weekly as construction continues

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th – 12th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC will be situated on mostly pre-disturbed area; tree removal, grubbing, organic and overburden removal will need to be done to prepare site for infrastructure.	
Weather Conditions: Spring conditions. Temperatures ranging from 2°C to 20°C.	
Part 2 – Site Assessment	
Activity: - Cutting and filling ongoing - Pad being packed - Springs popped up on north end of pad. Water being pumped to ditch 1. -	
Site Status: - Some of the mill pad site has reached final elevations - Internal ditching still required, ditch 2 not started yet	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Develop a plan to deal with mill site spring to be directed into IC Ditch #1 and into Wolverine creek. Currently somewhat significant sediment loading due to freshly disturbed ground.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including associated organic and overburden piles, gensets, light towers and heavy equipement. Monitor mill spring water for sediment loading reduction	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** June 4th - 12th
	
06/04/09 Overview of Mill Pad.	**06/04/09** Springs on Mill Pad. Being pumped.
	
06/11/09 Overview of Mill Pad.	**06/11/09** Excavation and packing.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 15th – 22nd, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC will be situated on mostly pre-disturbed area; tree removal, grubbing, organic and overburden removal will need to be done to prepare site for infrastructure.	
Weather Conditions: Spring conditions, temperatures ranging from 10°C to 20°C.	
Part 2 – Site Assessment	
Activity: - Construction office trailer installed - Mill pad springs still visible. Pumping excess water into ditch 1 from 4 wells. - Mill foundation has started. - Ditch 2 not yet excavated.	
Site Status: - some of the mill pad site has reached final elevations - Internal ditching still required	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and overburden piles. Make note of sedimentation or sloughing of piles as ice and snow melt, ensure proper mitigations measures (e.g. Silt fencing) is installed if required. Ensure that lining of ditches follows in a timely manner.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including associated organic and overburden piles	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date** June 15th - 22nd
	
06/18/09 Mill seep water showing in photo.	**06/18/09** Ditch 1 on the left of photo.
	
06/20/09 Excavating mill pad.	**06/20/09** Overview of mill pad(Looking west)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date** June 14th - 22nd
	
06/22/09 Overview of Mill Pad area. Looking South	**06/22/09** Overview of mill foundation.
	
06/22/09 North end of mill pad. Genset and fuel pad.	**06/22/09** Upper section of mill pad. Fuel pad.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 7th – 13th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure.	
Weather Conditions: Typical summer weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Engineering office complex installed. - Mill pad springs still visible. Pumping excess water into ditch 1 from 4 wells/collection areas. Sediment loading has decreased - Mill foundation ongoing.	
Site Status: - Internal ditching still required - Excavation ongoing. - Ditch 2 not yet excavated. - Ditch 1 not yet lined.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and overburden piles. Ensure proper mitigations measures (e.g. Silt fencing) is installed if required. Ensure that lining of ditches follows in a timely manner.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date** July 7th - 13th
	
07/08/09 Foundation of mill pad.	**07/08/09** Mill overview.
	
07/08/09 Looking South.	**07/08/09** Mill seep and foundation.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 21st – August 3rd, 2009	Inspector(s): Billie Maje
Site Name: Industrial Complex Area	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches have been built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure.	
Weather Conditions: Typical summer conditions. Temperatures ranging from 10°C to 27°C.	
Part 2 – Site Assessment	
Activity: - Mill pad springs still visible. Pumping excess water into ditch 1 is ongoing - Mill foundation has started. - Fuel pad started.	
Site Status: - Some of the mill pad site has reached final elevations. - Internal ditching still required.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: Plan needs to be developed for mill seep, completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** July 21st – August 3rd
	
07/21/09 Overview of Industrial Complex foundation.	**07/27/09** Closer look of the foundation.
	
07/27/09 IDL is working on the foundation, water coming from a culvert that's set into the ground and hooked up to pumps.(see photo #4)	**07/27/09**Four culverts set into the ground approx. 40ft below at different locations around the mill pad. Pumps are in place to control natural underground water levels.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** July 21st – August 3rd
	
07/27/09 Overview of mill pad area. (facing north)	**08/01/09** Fuel storage tanks put on upper level. Hazy in the background from forest fires.
	
08/03/09 Overview of mill pad foundation.	**08/03/09** Overview of mill pad/ upper level.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 4th - 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure.	
Weather Conditions: Typical summer weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Foundation ongoing for various buildings on mill pad. - Reco wall installation ongoing below the Procon office in preparation of Crusher installation. - Concentrate load out building steel installation started.	
Site Status: - Excavation ongoing. - Ditch 2 not yet excavated. - Ditch 1 not yet lined. - Mill pad springs, pumping to ditch 1 ongoing - Gen-set pad in final stages. - Fuel storage pad in final stages. - Concentration load out building steel installation ongoing.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Plan needs to be developed for mill seep, completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date** August 4th - 10th
	
08/05/09 Fuel storage and gen-set pads.	**08/05/09** Concentrate Load out building.
	
08/05/09 Mill building.	**08/05/09** Warehouse Cold Storage and Assay Lab.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date** August 4th - 10th
	
08/05/09 Reco wall.	**08/05/09** Concentrate Load out building.
	
08/07/09 Concentrate load out building steel installation started.	**08/08/09** Concentrate load out building steel installation ongoing.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 10th - 17th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial complex (IC) excavation	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure.	
Weather Conditions: Typical summer weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Foundation ongoing for various buildings. - Mill, Concentrate load out, Assay Lab and cold storage under construction. - Reco wall installation ongoing in lower portal area in preparation of Crusher installation. - Concentrate load out building steel installation started. - Concentrate load out building's paneling started.	
Site Status: - Excavation ongoing. - Ditch 2 not yet excavated. - Ditch 1 not yet lined. - Mill pad springs still visible. Pumping excess water into ditch 1 from 4 wells. - Gen-set pad in final stages. - Fuel storage pad in final stages. - Concentrate load out building steel finished.	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Plan needs to be developed for mill seep, completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** Aug 10th - 17th
	
08/10/09 Concrete load out building.	**08/10/09**
	
10/10/09 Foundation for Mill	**08/10/09** Assay lab and cold storage.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** Aug 10th - 17th
	
08/13/09 Siding being installed on CLO building.	**08/13/09** Mill building under construction.
	
08/17/09 Siding being installed on CLO building.	**08/17/09** Mill building under construction.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex / Reco Wall	**Date** Aug 10th - 17th
	
08/11/09 Reco wall below Procon.	**08/11/09**. Reco wall below mill pad.
	
08/16/09 Reco wall below CLO building.	**08/17/09** Reco wall behind sumps 1 and 2.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 21st , 2009	Inspector(s): Billie Maje
Site Name: Industrial Complex	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches have been built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC will be situated on mostly pre disturbed area; tree removal, grubbing, organic and overburden removal has been done to prepare site for infrastructure.	
Weather Conditions: Typical Fall conditions. Temperatures ranging from 3°C to 12°C.	
Part 2 – Site Assessment	
Activity: - Mill pad springs still visible. Pumping excess water into ditch 1 from 2 wells. - Another well pumps water to drills located on magazine road far north of mill site. - Mill foundation has started on one end and mill building erect on the other.	
Site Status: - All construction of foundation and building on going. - Internal ditching still required.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Plan needs to be developed for mill seep, completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

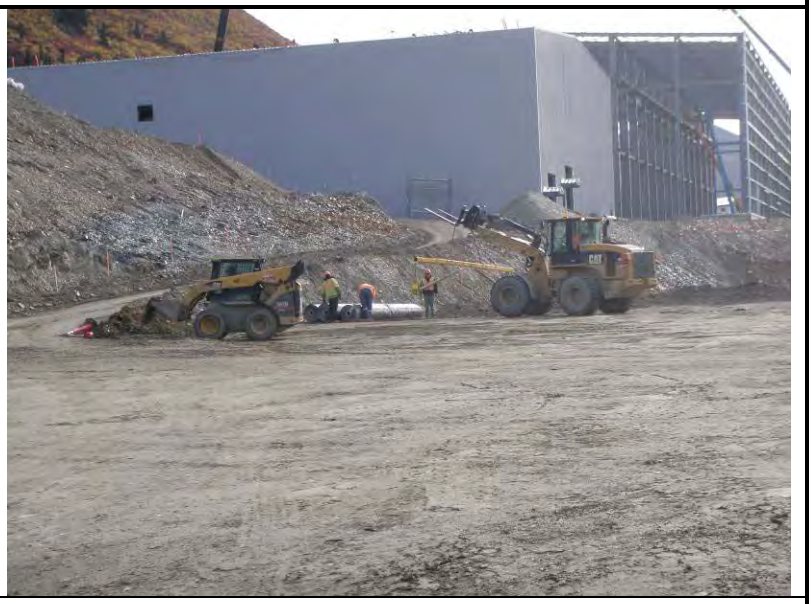
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** August 21st
	
08/21/09 Overview of mill building. Construction ongoing.(facing north)	**08/21/09** Closer look of the foundation.
	
08/21/09 Mill building from another view. Water pumps set up and being pumped into ditch 1.	**08/21/09** Mill building on the north side. Fueling station on the right side of photo.(facing south)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 10th - 12th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical Fall weather, temperatures ranging from 0°C to 12°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Foundation ongoing for various buildings. - Mill building steel installation ongoing. - Crusher building under construction. - Culvert installed for Ditch 2. - Liner installation onto crusher loading pad	
Site Status: - Mill, Concentrate load out, Assay Lab and Cold Storage buildings under construction. - Ditch 2 not yet excavated. - Ditch 1 not yet lined. - Mill pad springs still visible. Pumping excess water into ditch 1 from 4 wells. - Concentrate load out building finished. - Reco wall finished.	
Assessed Risk: Low	
Photos Attached: Yes (14)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Plan needs to be developed for mill seep, completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** September 10th
	
09/12/09 Mill building.	**09/12/09** Mill building.
	
09/12/09 Spring drainage ditch.	**09/12/09** CLO building.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** September 10th
	
09/12/09 Fuel pad.	**09/12/09** Gen-set pad.
	
09/12/09 Overview of Mill and CLO buildings.	**09/12/09** Overview of Mill pad.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex / Reco Wall /Crusher	**Date:** September 10th
	
09/12/09 Crusher building.	**09/12/09** Reco wall below portal.
	
09/12/09 Reco wall below mill pad.	**09/11/09** Installing liner onto crusher loading pad.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Upper Portal Crusher loading Pad (CL)	**Date:** September 10th
	
09/11/09 Area cleared for crusher loading pad.	**09/13/09** Completed liner installation.

Wolverine Project

Environmental Monitoring Form

Part 1 – Site Description	
Date: Sept. 15th - 29th , 2009	Inspector(s): Billie Maje
Site Name: Industrial Complex	Location/Co-ordinates:
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are to be built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC will be situated on mostly pre-disturbed area; tree removal, grubbing, organic and overburden removal will need to be done to prepare site for infrastructure.	
Weather Conditions: Typical Fall conditions. Temperatures ranging from -4°C to 12°C. Ground has been freezing overnight.	
Part 2 – Site Assessment	
Activity: - Construction of the mill ongoing. - Beams for the crusher building erected.	
Site Status: - Construction of the mill ongoing. Beams for the crusher building erected.	
Assessed Risk: No	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and overburden piles. Ensure proper mitigations measures (eg. Silt fencing) is installed if required. Ensure that lining of ditches follows in a timely manner.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site.	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly as construction continues.	

	
09/25/09 Overview of Mill site.	**09/25/09** Close up of the mill.
	
09/25/09 Beams erect at crusher building.	**09/25/09** Looking south; down on crusher building.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical Fall weather, temperatures ranging from 0°C to -12°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Mill building outside paneling installation ongoing. - Crusher building under construction. - Concrete pours are continuous.	
Site Status: - Mill, CLO, and Crusher under construction. - Ditch 2 not yet excavated. - Ditch 1 not yet lined. - Mill pad springs not visible. Ditch has been filled in, now conveying water through ditch and culverts into ditch 1 with no surface flow influence	
Assessed Risk: Low	
Photos Attached: Yes (7)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, CLO, Crusher	**Date:** October 10th
	
10/10/09 Mill building.	**10/10/09** CLO building. (concrete being poured inside)
	
10/10/09 Looking south over mill pad area.	**10/10/09** Crusher building in lower portal area.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** October 10th
	
10/10/09 Spring drainage ditch filled in (north).	**10/10/09** Spring drainage ditch filled in (south).
	
10/10/09 Excavation started on Gen-set pad.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 30th- November 2nd, 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical Fall/winter weather, temperatures ranging from -5°C to -15°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Crusher building under construction. - Concrete pours are continuous. - External work has slowed. - Internal work is ongoing.	
Site Status: - Mill, CLO, and Crusher under construction.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: completion of ditches (including lining) before mill operation commences	
Mitigation Condition: excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, CLO, Crusher	**Date:** October 30th
	
10/30/09 Gen-set pad concrete poured.	**11/02/09** Construction in preparation for Gen-sets.
	
10/30/09 Mill and office trailers.	**11/02/09** Mill overview.

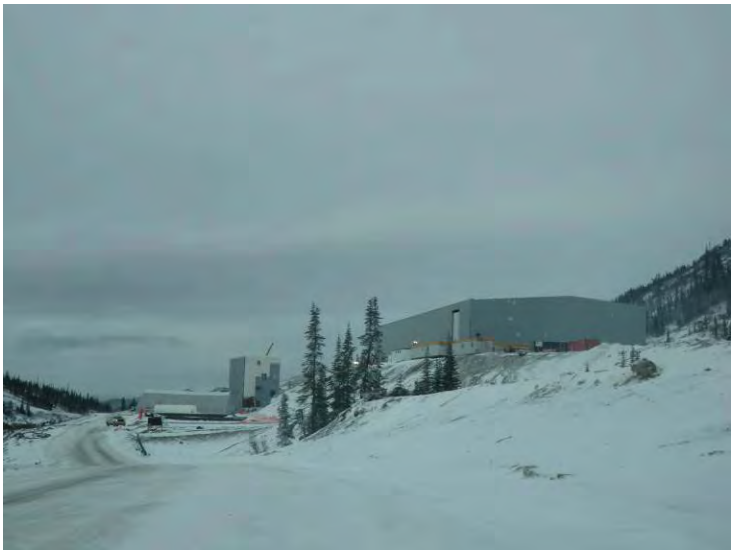
Wolverine Project

Environmental Inspection Form

Part 1 – Site Description	
Date: November 10th –17th , 2009	Inspector(s): Billie Maje
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. Infrastructure preparation complete and underway. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical winter weather, temperatures ranging from 0°C to -16°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Crusher building under construction. - Concrete pours are continuous. - External work has slowed. - Internal work is ongoing.	
Site Status: - Mill, CLO, and Crusher under construction. - Final ditching on hold till spring - - Conveyer tower pad complete - Fuel Tank Farm building a concrete pad in the fuelling area. - Gen-set concrete pad hoarded in.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project

Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, CLO, Crusher	**Date:** November 10th -17th
	
10/30/09 Crusher building. Siding being put up.	**11/02/09** Crusher being insulated.
	
10/30/09 Internal work has started. Note when photo was taken.	**11/12/09** Same photo as #3 different week, wall on crusher building is complete.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, CLO, Crusher	**Date:** November 10th -17th
	
11/12/09 Gen-set pad concrete poured and leveled.	**11/13/09** Gen set pad insulated for wind cover and 2 sea-cans brought in for the gen sets.
	
10/15/09 Material loaded into crusher building pad. Material comes from Km27 borrow.	**11/15/09**

Wolverine Project
Environmental Inspection Form

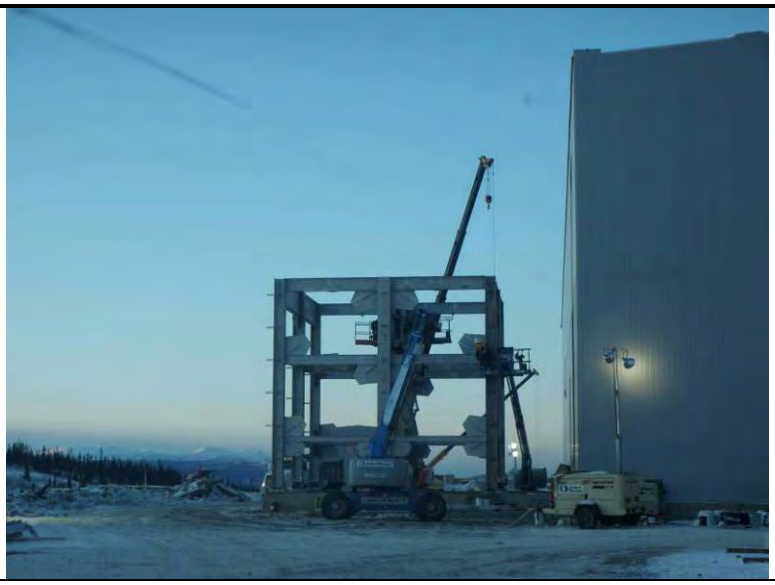
Part 1 – Site Description	
Date: November 30th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical Fall weather, temperatures ranging from -5°C to -15°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Crusher building under construction (loading bay). - Concrete pours are continuous. - External work has slowed. - Internal work is ongoing in all buildings (mill, CLO, and crusher). - Construction on conveyer footings started.	
Site Status: - Mill, CLO, and Crusher under construction. - Ditching on hold till spring	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project

Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, Crusher	**Date:** November 30th
	
11/30/09 Crusher building.	**11/30/09** Crusher area.
	
11/30/09 Excavating for conveyer footings.	**11/30/09** Crusher.

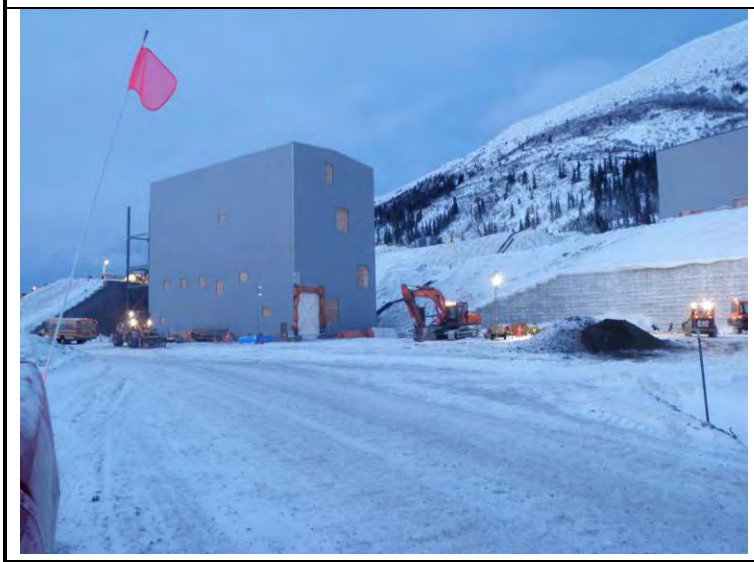
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex	**Date:** November 23rd
	
11/30/09 Mill building.	**11/30/09** Pouring concrete.
	
11/30/09 Mill area.	**11/30/09** West side of the mill building.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: December 17th- 22nd, 2009	Inspector(s): Billie Maje
Site Name: Industrial Complex (IC)	Location/Co-ordinates: Industrial complex
Site Location Description: The industrial complex at the Wolverine site is situated between Km 27.5 and Km 29 on the access road. The area primarily falls within the Wolverine watershed. Collection ditches are built around the entire complex to contain any surface water runoff that comes in contact with material that could contaminate the water, and directs it to the water treatment sump #2 where it will be tested and treated if required. IC Ditch #1 will act to collect and divert a source of the headwaters of Wolverine creek and divert it around the IC and deposit it into its natural path. The IC is situated in a mostly pre disturbed area; tree removal, grubbing, organic and overburden removal was completed to prepare site for infrastructure	
Weather Conditions: Typical winter weather, temperatures ranging from -10°C to -25°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Crusher building under construction (loading bay). - Concrete pours are complete for the winter period. - External work has slowed. - Internal work is ongoing in all buildings (mill, CLO, and crusher). - Construction on conveyer footings started.	
Site Status: - Mill, CLO, and Crusher under construction. - Ditching on hold until spring - Gen-set pad in final stages. - Fuel storage pad in final stages. - Conveyer pad complete. - Christmas holidays a lot of people are gone, only a small crew working.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: completion of ditches (including lining) before mill operation commences	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor entire job site including; associated organic and overburden piles, worksites, fuel areas, generators	
Monitoring Frequency: 3-4 times a week	
Reporting Requirements: Every two weeks as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex Mill, Crusher	**Date:** December 17th-22nd
	
12/18/09 Crusher building.	**12/18/09** Excavating for conveyer footings.
	
12/18/09 Mill site.	**12/18/09** Generators.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 21st- August 3rd,2009	Inspector(s): Billie Maje
Site Name: Reco Wall	Location/Co-ordinates: Km 28.1
Site Location Description: The reco wall is located below truck shop/portal. Area is pre disturbed and gravel surrounds the area. Wall begins at the km 28 sign.	
Weather Conditions: Typical summer conditions. Temperatures ranging from 10°C to 30°C.	
Part 2 – Site Assessment	
Activity: - Screen lay down on levelled pad. - Drain rock lay down. - Geotextile then lay down. - Shale rock, and the packed down with a packer and also a hand packer.	
Site Description: The wall has a few different levels of materials, drain rock and shale rock, Geotextile in between levels.	
Assessed Risk: None.	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: None.	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: When wall is complete.	
Monitoring Frequency: daily for monitoring photos.	
Reporting Requirements: Include in IC report moving forward	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Reco Wall	**Date:** July 21st- August 3rd
	
07/24/09 Overview. Bob CAT levelling out materials laid in by excavator. (facing east)	**07/25/09** Pad levelled and screen is being laid out.(facing east)
	
07/28/09 Overview of the reco wall. (facing west)	**07/28/09** View of wall looking on the outside of the wall.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Reco Wall	**Date and Time:** July 21st- August 3rd
	
07/30/09 Inside look of the wall with a few more lifts.	**07/25/09** Overview.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 21st , 2009	Inspector(s): Billie Maje
Site Name: Reco Wall	Location/Co-ordinates: Km 28.1
Site Location Description: The reco wall is located below truck shop/portal and runs behind lower sumps. Area is pre disturbed and gravel surrounds the area. Wall begins at the km 28 sign.	
Weather Conditions: Typical Fall conditions. Temperatures ranging from 3°C to 12°C.	
Part 2 – Site Assessment	
Activity: - Screen lay down on levelled pad. - Drain rock lay down. - Geotextile then lay down. - Shale rock, and the packed down with a packer and also a hand packer.	
Site Description: The wall has a few different levels of materials, drain rock and shale rock, Geotextile in between levels.	
Assessed Risk: None.	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None.	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: When wall is complete.	
Monitoring Frequency: daily for monitoring photos.	
Reporting Requirements: report in industrial complex report moving forward	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Reco Wall	**Date:** August 21st
	
08/21/09 Overview of the reco wall. Excavator hauling materials dumped by rock trucks.(facing south)	**08/21/09** Retaining wall, mill building in the rear. (facing east)
	
08/21/09 Overview of the reco wall. (facing east)	**08/21/09** Rock trucks hauling in behind lower sumps.

Wolverine Project
Environmental Inspection Form-Photos

Part 1 – Site Description	
Date: April 9th – 13th, 2009	Inspector(s): Jennie Gjertsen and Billie Maje
Site Name: Industrial complex Ditch 1	Location/Co-ordinates: North of Industrial complex site
Site Location Description: Ditch 1 is a diversion ditch that runs from the northeastern corner of the industrial complex site, along the eastern slope, and then west into the valley basin. Its purpose is to collect and intercept water that would naturally drain into the Wolverine Creek watershed before potential contamination at the industrial complex, and deposit it into its natural destination. The eastern portion of the ditch runs in a natural draw and will be culverted west at the south end of the mill site.	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -15°C to 5°C.	
Part 2 – Site Assessment	
Activity: - Organics and snow removal was started April 9th and was added to the existing snow and organics piles. - Surveying of ditch done by YES	
Site Status: Work started at northeastern portion	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Mitigation to be assessed as ditch work continues and snow melt increases from upper slopes.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring should be ongoing during snow melt, and as construction continues.	
Monitoring Frequency: Every other day during construction and then also during periods of snow melt and heavy rain.	
Reporting Requirements: Weekly as construction continues	

Wolverine Project
Environmental Inspection Form-Photos

Site Name: Industrial Complex – Ditch 1	**Date:** April 9th – 13th
	
04/09/09 Overview (facing north)	**04/10/09** Organics and snow stripping on the right (facing north)
	
04/10/09 Organics and snow stripping on the left (facing south)	**04/12/09** Overview of mill pad.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 14th – 20th, 2009	Inspector(s): Jennie Gjertsen
Site Name: Industrial complex Ditch 1	Location/Co-ordinates: Upslope diversion around Industrial complex site
Site Location Description: Ditch 1 is a diversion ditch that runs from the northeastern corner of the industrial complex site, along the eastern slope, and then west into the valley basin. Its purpose is to collect and intercept water that would naturally drain into the Wolverine Creek watershed before potential contamination at the industrial complex, and deposit it into its natural destination. The eastern portion of the ditch runs in a natural draw and will be culverted west at the south end of the mill site.	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -10°C to 10°C.	
Part 2 – Site Assessment	
Activity: - Organics removal continues - Surveying and staking continues	
Site Status: Snow removal on upper ditch complete, organics removal from upper ditch consolidated and haul continues.	
Assessed Risk: Low	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Mitigation to be assessed as ditch work continues and snow melt increases from upper slopes.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring should be ongoing during snow melt, and as construction continues.	
Monitoring Frequency: Every other day during construction and then also during periods of snow melt and heavy rain.	
Reporting Requirements: Weekly as construction continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex – Ditch 1	**Date:** April 14th – 20th
	
04/15/09 Organics stripping on the right (facing north)	**04/18/09** Organics stripping on the left (facing south)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: May 5th - 9th, 2009	Inspector(s): Billie Maje/Melissa Kirby
Site Name: Ditch 1	Location/Co-ordinates: NE above the Portal Area.
Site Location Description: Ditch 1 is a diversion ditch that runs from the northeastern corner of the industrial complex site, along the eastern slope, and then west into the valley basin. Its purpose is to collect and intercept water that would naturally drain into the Wolverine Creek watershed before potential contamination at the industrial complex, and deposit it into its natural destination. The eastern portion of the ditch runs in a natural draw and will be culverted west at the south end of the mill site.	
Weather Conditions: Typical spring weather, temperatures ranging from 2°C to 20°C.	
Part 2 – Site Assessment	
Activity: - Ditching continues. - Stripping is complete	
Site Description: - Ditch 1 is approximately 25% complete. - Organics and strippings have been brought to designate organic stockpiles. - Ditch Profile is complete along 80% of ditch length.	
Assessed Risk: Low	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Needs to be lined with a geosynthetic liner to reduce seepage from the ditch, and contain rip rap to mitigate flow energy.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring mitigation features (i.e., silt fencing, geosynthetic liner are in place or if any activity warrants monitoring to continue.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: Bi-weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 1	**Date:** May 5th
	
05/05/09 Looking along Ditch 1 at the northern most ends, where it begins.	**05/05/2009** Looking N (U/C) along the E side of the future mill site. Ditch blocking has been put into place, and will be lined with geosynthetic liner.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th - 14th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Ditch 1	Location/Co-ordinates: NE above the Portal and Mill Area.
Site Location Description: Ditch 1 is a diversion ditch that runs from the northeastern corner of the industrial complex site, along the eastern slope, and then west into the valley basin. Its purpose is to collect and intercept water that would naturally drain into the Wolverine Creek watershed before potential contamination at the industrial complex, and deposit it into its natural destination. The eastern portion of the ditch runs in a natural draw and will be culverted west at the south end of the mill site.	
Weather Conditions: Typical spring weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Ditch work continues - Lining with geotextile in upper portion to reduce sedimentation - Culvert installation	
Site Description: - Ditch 1 is approximately 80% complete. - Ditch 1 is currently temporarily lined part way with geotech in sections due to excessive spring water on mill pad below (on-going) - Ditch Profile is complete along 100% of ditch length. - The culverts have been installed which allow the water to run under the mill bypass road and lower bypass road into the organics below the lower portal area.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: ABA samples were taken of rock blocks in ditch (results pending)	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Needs to be lined with a geosynthetic liner to reduce seepage from the ditch, and contain rip rap to mitigate flow energy (ongoing)	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring every other day	
Monitoring Frequency: Daily during periods of heavy rain	
Reporting Requirements: Bi-weekly or as necessary.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 1	**Date:** June 4th - 14th
	
06/05/09 Looking along ditch 1 from south end. Liner has begun to be installed.	**06/05/09** South end where first culvert runs under mill bypassroad.
	
06/05/09 Culvert run off from upper bypass to lower by pass road.	**06/05/09** Culvert under lower bypass road run off into organics.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 15th - 22nd , 2009	Inspector(s): Jaymie Skidmore
Site Name: Ditch 1	Location/Co-ordinates: NE above the Portal and Mill Area.
Site Location Description: Ditch 1 is a diversion ditch that runs from the northeastern corner of the industrial complex site, along the eastern slope, and then west into the valley basin. Its purpose is to collect and intercept water that would naturally drain into the Wolverine Creek watershed before potential contamination at the industrial complex, and deposit it into its natural destination. The eastern portion of the ditch runs in a natural draw and will be culverted west at the south end of the mill site.	
Weather Conditions: Typical spring weather, temperatures ranging from 10°C to 25°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Ditch work and mitigation efforts ongoing - Ground seep water that has daylighted on the millpad during excavation is being pumped into ditch 1 to prevent erosion and sediment loading on the mill pad	
Site Description: - Ditch 1 is approximately 90% complete. - Ditch 1 is currently temporarily lined part way with geotech in sections due to excessive spring water on mill pad below. (on-going) - Culverts and lower rip rap installed	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: Needs to be lined with a geosynthetic liner to reduce seepage from the ditch, and contain rip rap to mitigate flow energy(ongoing).	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Continue to monitor mill seep and sediment loading in ditch 1 water	
Monitoring Frequency: Every other day	
Reporting Requirements: Bi-weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 1	**Date:** June 15th - 22nd
 **06/22/09** North end of Ditch. Still no change.	 **06/22/09** South end of ditch. Still no change.
 **06/22/09** Side of Ditch outside wall slide off due to water from storm. Geotech and rocks set in place for repair.	 **06/22/09** Spring water from Mill Pad being pumped into Ditch 1.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 7th – 13th, 2009	Inspector(s): Jennie Gjertsen and Billie Maje
Site Name: Ditches 3 and 4	Location/Co-ordinates: South end of Lower Portal Area
Site Location Description: Ditches 3 and 4 surround the downslope (mostly western) perimeter of the industrial complex. Their purpose is to collect all the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps. The longest portion of the ditches runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner and/or rip rap	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -15°C to °5C.	
Part 2 – Site Assessment	
Activity: - Almost all of the organics have been stripped from the ditch 3 and 4, most was side cast adjacent to Wolverine Creek, some was hauled to organic stockpile - Fill to achieve final grade of ditches is being brought in from Mill pad excavation.	
Site Status: Work continues , 10% done	
Assessed Risk: Med – due to proximity to Wolverine Creek and the high grade of the slope	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: The markers delineating the toe slope have been covered with snow/dirt, and should be reinstalled before proceeding. Ensure proper installation and maintenance of silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Straw bales, if accessible, may be more appropriate to stop potential runoff.	
Mitigation Condition: Fair, silt fence to be installed once snow melts	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor the organics and 'strippings' which may contribute to sediment loading to Wolverine Creek during spring thaw. Monitoring should be ongoing during snow melt (regardless of construction activities proceeding or not). Mitigation measures (i.e., silt fencing) to be carried as warranted. Monitor steep slopes for sloughing and failure, especially during thaw of ground frost.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: Weekly as construction continues and lining is installed	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex - Ditches 3 and 4	**Date:** April 7th – 13th
	
04/07/09 Ditching adjacent to sump #1 and #2. (facing north)	**04/08/09** Ditch 4 and UG waste water pipeline. (facing north)
	
04/10/09 Final organics removal at Ditch 4. (facing north)	**04/10/09** Ditch 4 and UG waste water pipeline. (facing west)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 14th – 20th, 2009	Inspector(s): Jennie Gjertsen
Site Name: Ditches 3 and 4	Location/Co-ordinates: South end of Lower Portal Area
Site Location Description: Ditches 3 and 4 surround the downslope (mostly western) perimeter of the industrial complex. Their purpose is to collect all the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps. The longest portion of the ditches runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner and/or rip rap.	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -10°C to 10°C.	
Part 2 – Site Assessment	
Activity: - Fill to achieve final grade of ditches is being brought in from Mill pad excavation. - Sections of the UG waste water pipeline from sump #3 to sumps #1 and 2, being covered.	
Site Status: Work continues , ~10% done	
Assessed Risk: Medium – due to proximity to Wolverine Creek and the high grade of the slope.	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: The markers delineating the toe slope have been covered with snow/dirt, and should be reinstalled before proceeding. Ensure proper installation and maintenance of silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Straw bales, if accessible, may be more appropriate to stop potential runoff.	
Mitigation Condition: Fair, silt fence to be installed once snow melts	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor the organics and strippings which may contribute to sediment loading to Wolverine Creek during spring thaw. Monitoring should be ongoing during snow melt (regardless of construction activities proceeding or not). Mitigation measures (i.e., silt fencing) to be carried as warranted. Monitor steep slopes for sloughing and failure, especially during thaw of ground frost.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: Weekly as construction continues and lining is installed.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex - Ditches 3 and 4	**Date:** April 14th – 20th
	
04/14/09 Ditch 4 construction and filling adjacent to sump #3. (facing south)	**04/14/09** Ditch 4 construction and filling adjacent to sump #3. (facing north)
	
04/14/09 Ditch 4 construction and filling adjacent to sump #3. (facing south)	**04/14/09** Ditch 4 construction and filling, Wolverine creek downslope. (facing south**)**

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description

Date: May 12th – 18th, 2009	Inspector(s): Jennie Gjertsen/Mary McDougall/Jaymie Skidmore
Site Name: Ditches 3 and 4	Location/Co-ordinates: South end of Lower Portal Area

Site Location Description:

Ditches 3 and 4 surround the down slope (mostly western) perimeter of the industrial complex (IC).

Their purpose is to collect all the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps. The longest portion of the ditch runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner and/or rip rap

Weather Conditions:

Date	Conditions	avg. daily temp
12-May-09	light snow in the morning/sunny	0
13-May-09	cold with high winds and periods of snow and hail	-1
14-May-09	cold with high winds and periods of sun and hail	4
15-May-09	cool with periods of sunshine and cloud cover and heavy snow in evening	4
16-May-09	cool cloud cover with snow into the afternoon.	5
17-May-09	cold with cloud cover periods of snow and sun	-5
18-May-09	cool with sunshine all day	0

Part 2 – Site Assessment

Activity:

- Fill to achieve final grade of ditches is being brought in from Mill pad excavation.
- Compaction of final grade of ditch 3
- Excavation of ditch 4 started

Site Status:

- Work ongoing
- Bank upslope of Wolverine Creek has not shown signs of instability as snow/frost melt has continued. Organics still contain snow

Assessed Risk: Low

Photos Attached: Yes (3)

Samples Taken: No

Additional Information Attached: none

Part 3 –Mitigation Requirements

Mitigation Required: Silt fence needs to be installed at the toe of slope of the ditches.
Continue to monitor the organics and stripping at the toe of slope for signs of sloughing.

Mitigation Condition: Fair

Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitoring should be ongoing during snow melt (regardless of construction activities proceeding or not).

Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring, and as construction is ongoing

Reporting Requirements: Weekly as construction continues and lining is installed

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex - Ditches 3 and 4	**Date:** May 12th – 18th
	
05/15/09 Ditch 4 excavation adjacent to sump #3 (facing south)	**05/15/09** Ditch 4 excavation adjacent to sump #3 (facing south)
	
05/18/09 Ditch 4 excavation (facing south)	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description

Date: May 20th – 25th, 2009	Inspector(s): Jennie Gjertsen/Mary McDougall/Jaymie Skidmore
Site Name: Ditches 3 and 4	Location/Co-ordinates: South end of Lower Portal Area

Site Location Description:

Ditches 3 and 4 surround the downslope (mostly western) perimeter of the industrial complex (IC).

Their purpose is to collect all the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps. The longest portion of the ditches runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner and/or rip rap

Weather Conditions:

Date	Conditions	avg. daily temp
12-May-09	Light snow in the morning/sunny	0
13-May-09	Cold with high winds and periods of snow and hail	-1
14-May-09	Cold with high winds and periods of sun and hail	4
15-May-09	Cool with periods of sunshine and cloud cover and heavy snow in evening	4
16-May-09	Cool cloud cover with snow into the afternoon.	5
17-May-09	Cold with cloud cover periods of snow and sun	-5
18-May-09	Cool with sunshine all day	0

Part 2 – Site Assessment

Activity:

- Fill to achieve final grade of ditch 3 being brought in from Mill pad excavation.
- Compaction of final grade of ditch 3
- Excavation of ditch 4 continues
- Silt fence installation at toe of slope
- Culverts connecting Ditches 3 and 4 into sump #2 have been installed

Site Status: Work ongoing

Bank upslope of Wolverine Creek has not shown signs of instability as the snow/frost melt. Organics still contain some snow/ice.

Assessed Risk: Low

Photos Attached: Yes (4)

Samples Taken: No

Additional Information Attached: none

Part 3 –Mitigation Requirements

Mitigation Required: Silt fence needs to be maintained as ground continues to thaw. Reseeding bank should be carried out this summer. Lining of ditches still to be completed.

Mitigation Condition: Good – silt fence installed

Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitoring to continue for signs of sedimentation into valley and creek. Monitor failures in silt fencing installation

Monitoring Frequency: Daily during construction and rain events.

Reporting Requirements: Weekly as construction continues and lining is installed

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex - Ditches 3 and 4	**Date:** May 20th – 25th
	
05/20/09 Ditch 4 excavation adjacent to sump #3. (facing south)	**05/20/09** Silt fencing installation at toe of slope. (facing south)
	
05/25/09 Culvert connecting ditch 4 into sump #2.	**05/25/09** Culvert installation connecting ditch 4 into sump #2 (facing west)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description

Date: May 26th – June 1st , 2009	Inspector(s): Jennie Gjertsen/Robin McCall/Billie Maje
Site Name: Ditches 3 and 4	Location/Co-ordinates: South end of Lower Portal Area

Site Location Description:

Ditches 3 and 4 surround the downslope (mostly western) perimeter of the industrial complex (IC).

Their purpose is to collect all the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps. The longest portion of the ditches runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner and/or rip rap.

Weather Conditions:

Date	Conditions	avg. daily temp
26-May-09	Sunny with some clouds	15
27-May-09	Sunny with some clouds	13
28-May-09	Overcast	10
29-May-09	Snowy and windy in the morning, high overcast afternoon	1
30-May-09	High overcast, light rain	9
31-May-09	High overcast with sunny periods	11
01-Jun-09	overcast	15

Part 2 – Site Assessment

Activity:

- Final compaction and surveying of ditch 3, excavation started.
- Liner material arrived on site for ditches.
- Completion of culvert into sprung install/backfilling.

Site Status: Work ongoing.

Bank upslope of Wolverine Creek has not shown signs of instability as snow/frost melt. Organics still contain snow

Assessed Risk: Low

Photos Attached: Yes (3)

Samples Taken: No

Additional Information Attached: None

Part 3 –Mitigation Requirements

Mitigation Required: Silt fence needs to be maintained as ground continues to thaw. Reseeding bank should be carried out this summer. Lining of ditches still to be completed.

Mitigation Condition: Good

Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitoring to continue for signs of sedimentation into valley and creek. Monitor failures in silt fencing installation.

Monitoring Frequency: Daily during construction and rain events.

Reporting Requirements: Weekly as construction continues and lining is installed.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Industrial Complex - Ditches 3 and 4	**Date:** May 26th – June 1st
	
05/29/09 Backfill around culverts into sprung. (facing north)	**05/29/09** Ditch 3 culvert inlet (facing SW)
	
05/29/09 Ditch 3 excavation.(facing south)	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 30th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Ditch 3 and 4	Location/Co-ordinates: NW (Ditch 4) and SW (Ditch 3) of Upper and Lower Portal Area
Site Location Description: Ditches 3 and 4 surround the downslope perimeter of the industrial complex. Their purpose is to collect all the surface runoff for the Industrial Complex so that the water can be treated at the lower portal treatment sump, or pumped to the tailings upon completion. The longest portions of the ditches run along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction was done using fill from the industrial complex mill excavation, the ditch is lined with enviroliner.	
Weather Conditions: Typical fall weather, temperatures ranging from -5C° to 0C° periods of snow.	
Part 2 – Site Assessment	
Activity: Sediment is being removed from ditches to allow welding of the seams of the ditch liner	
Site Description: Ditches 3 and 4 are now complete	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor the organics and strippings which may contribute to sediment loading to Wolverine Ensure ongoing maintenance of the silt fence along the toe of the slope. Monitor ditch over winter months to try and prevent damage by heavy machinery.	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: when conditions change	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 3 and 4	**Date:** September 30th
 **09/12/09** Sludge removal.	 **09/12/09** Sludge removal.
 **09/12/09** Enviro liner seams being welded.	 **09/12/09** Enviro liner seams being welded.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 19th – April 6th, 2009	Inspector(s): Robin McCall
Site Name: Ditch 3	Location/Co-ordinates: South end of Lower Portal Area
Site Location Description: Ditch 3 runs from around the SW perimeter of the lower portal treatment sumps. Ditch 2 (which surrounds a portion of the mill area) will eventually conduct flow into Ditch 3. The purpose is to collect the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps, or pumped to the tailings facility upon completion. The longest portion of the ditch runs along the valley within the Wolverine Creek watershed before the creek begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner.	
Weather Conditions: Typical spring weather, temperatures ranging from -15C° to 3C°.	
Part 2 – Site Assessment	
Activity: - Snow and organics removal - Ditching work starting - Work is beginning on extending the pad at the downslope edge of the industrial complex (toward Wolverine creek) so that the ditch can be installed, as per design	
Site Status: - Ditch 3 is approximately 5% complete. - Organics and strippings have been side cast directly adjacent to Wolverine Creek (between 15 – 20 m away from creek) along with frost masses. - Ditch Profile is complete along 5% of ditch length.	
Assessed Risk: Med – due to proximity to Wolverine Creek and the high grade of the slope.	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached: Ditch drawings.	
Part 3 –Mitigation Requirements	
Mitigation Required: The markers delineating the toe slope have been covered with snow/dirt, and should be reinstalled before proceeding. Ensure proper installation and maintenance of Silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Straw bails, if accessible, may be more appropriate to stop potential runoff.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor the organics and 'strippings' which may contribute to sediment loading to Wolverine Creek during spring thaw Monitoring should be ongoing during snow melt (regardless of construction activities proceeding or not).	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: Continuous as construction continues and lining is installed	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 3	**Date:** March 19th – April 6th
	
04/04/09 Looking South along the Mill bypass road where Ditch 3 and 4 meet.	**04/04/09** Looking North along Ditch 3, which will eventually turn 90 degrees left (NE) when the temporary Mill Bypass road in no longer needed.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th – 14th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Ditch 3	Location/Co-ordinates: South end of Lower Portal Area
Site Location Description: Ditch 3 runs from around the SW perimeter of the lower portal treatment sumps. Ditch 2 (which surrounds a portion of the mill area) will eventually conduct flow into Ditch 3. The purpose is to collect the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps, or pumped to the tailings facility upon completion. The longest portion of the ditch runs along the valley within the Wolverine Creek watershed before the creek begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner.	
Weather Conditions: Typical late spring/early summer conditions. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Lining of ditch 90 % complete. - Ditching and lining of southern portion of ditch 3 - Work on ditch 2 draining into ditch 3	
Site Status: 90 % complete. Liner still needs to be welded at the seams.	
Assessed Risk: Low – downgraded as lining is nearing completion and slope stability is fine	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Maintain silt fencing as required, need to ensure seam welding of liner occurs	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ensure proper installation and maintenance of silt fence along the toe of the slope. Monitor steep slopes for sloughing and failure.	
Monitoring Frequency: Daily during periods of heavy rain	
Reporting Requirements: every two weeks as construction continues and lining is installed	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 3	**Date:** June 4th - 14th
	
06/08/09 South end where culvert crosses road.	**06/08/09** Finished construction at south end.
	
06/08/09 Enviro liner installed.	**06/08/09** Enviro liner being installed south end.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 3	**Date:** June 4th - 14th
	
06/11/09 Beginning of Ditch 3 (south end).	**06/11/09** Culvert at south end of ditch towards sump # 2.
	
06/11/09 Ditch 3 running along to sump # 2.	**06/11/09** Ditch 3 connecting to Sump # 2.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 19th – April 6th, 2009	Inspector(s): Robin McCall
Site Name: Ditch 4	Location/Co-ordinates: SW of Upper and Lower Portal Area
Site Location Description: Ditch 4 runs from around the NW perimeter of the portal treatment sumps. Ditch 6 (to be constructed) will eventually conduct flow into Ditch 4. The purpose is to collect the surface runoff for the IC so that the water can be treated at the lower portal treatment sumps, or pumped to the tailings facility upon completion. The longest portion of the ditch runs along the valley within the Wolverine Creek watershed where the creek begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. Some areas of the ditches will be lined with geotextile and/or enviroliner.	
Weather Conditions: Typical spring weather, temperatures ranging from -15°C to 3°C.	
Part 2 – Site Assessment	
Activity: - Snow and organic removal continues - Work is beginning on extending the pad at the downslope edge of the industrial complex (toward Wolverine creek) so that the ditch can be installed, as per design.	
Site Description: - Ditch 4 is approximately 15% complete. - Organics and strippings have been side cast directly adjacent to Wolverine Creek (between 15 – 20 m away from creek) along with frost masses. - Ditch Profile is complete along 30% of ditch length.	
Assessed Risk: Med – due to proximity to Wolverine Creek, and spring time conditions persist	
Photos Attached: Yes (2)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: The markers delineating the toe slope have been covered with snow/dirt, and should be reinstalled before proceeding. Ensure proper installation and maintenance of Silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Straw bales, if accessible, may be more appropriate to stop potential runoff	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitoring for spring melt. Monitor slope stability	
Monitoring Frequency: Daily during periods of snow melt and heavy rain in spring.	
Reporting Requirements: every 2 weeks until construction is complete	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 4	**Date:** March 19th – April 6th
 **03/29/09** Looking south along Ditch 4, where it connects with Ditch 3.	 **03/28/2009** Looking N along the W side of the Mill bypass road. Exposed pipe is the pipeline running from Sump #3 to the lower treatment sumps.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 29th - 30th, 2009	Inspector(s): Robin McCall/Billie Maje/ Melissa Kirby
Site Name: Discharge line from sump #3 to lower treatment sumps	Location/Co-ordinates: Downslope of upper and lower Portal Area along ditch 4.
Site Location Description: The discharge line runs south-east along the downslope perimeter of the freshwater pond/truck shop area, the propane/cold storage area and the dynamic stockpile and crusher building area. The discharge line runs along side of the Ditch 4. It is located within the Wolverine drainage, and is located 20-50m upslope of the valley bottom.	
Weather Conditions: Typical spring weather, temperatures ranging from -2°C to 12°C.	
Part 2 – Site Assessment	
Activity: - The discharge pipe line has been moved downslope, so that it runs alongside of Ditch 4. - The pipe will be buried along side of the temporary road, which has not been marked.	
Site Status: The discharge line is directly downslope perimeter of the freshwater pond/truck shop area, propane cold storage area, the dynamic stockpile and crusher building area. Will soon be buried to allow for grading of area and final ditch construction	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor pipeline to ensure that integrity is not compromised during burying	
Monitoring Frequency: During construction of the temporary road.	
Reporting Requirements: Bi-weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Discharge line from sump#3	**Date:** April 29th
 **04/29/09** The pipeline being brought down, looking U/C, behind truck shop.	 **04/29/09** Looking N (U/C) along the W side of the truck shop/Procon office. Exposed pipe is the pipeline running from Sump #3.
 **04/29/09** Looking along Ditch 4 at the southern most end. Pipeline has been cut, and tied in.	 **04/29/09** Looking N (U/C) along the W side of the Mill bypass road. Exposed pipe is the pipeline running from Sump #3 to Sumps #1 and #2.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 29th – May 11th , 2009	Inspector(s): Robin McCall/Billie Maje
Site Name: Ditch 4	Location/Co-ordinates: NW of Upper and Lower Portal Area
Site Location Description: Ditch 4 surrounds the downslope (north-western) perimeter of the industrial complex. The purpose is to collect all the surface runoff for the Industrial Complex so that the water can be treated at the lower portal treatment sump, or pumped to the tailings once it is complete. The longest portion of the ditch runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. The ditch will eventually be lined with enviroliner upon completion.	
Weather Conditions: Typical spring weather, temperatures ranging from 2°C to 20°C.	
Part 2 – Site Assessment	
Activity: - Excavation and filling to grade of the ditch, packing to compaction requirements - Discharge line moved down - Incident with D8 damaging line – incident report done - Work is beginning on extending the pad at the downslope edge of the industrial complex (toward Wolverine creek) so that the ditch can be installed, as per design. - Silt fence installation -	
Site Description: - Ditch 4 is approximately 80% complete. - Ditch Profile is complete along 50% of ditch length	
Assessed Risk: Med - to proximity to Wolverine Creek	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: Two incidents occurred. The discharge line was broken twice, see incident reports The width of the road and the discharge line is very narrow. Pipeline was not been marked.	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and strippings which may contribute to sediment loading to Wolverine Creek. Ensure proper installation and maintenance of Silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Mark discharge line.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: monitor daily during construction, to ensure ongoing structural integrity of slopes and discharge line	
Monitoring Frequency: Daily as construction is ongoing	
Reporting Requirements: Bi-weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 4	**Date:** April 29th - May 11th
 **04/29/09** The pipeline has been brought down, looking N, behind Procon shop.	 **04/29/09** Looking N along the W side of the truck shop/Procon office. Exposed pipe is the pipeline running from Sump #3. Organic stockpiled below, silt fence partially installed, (after photo taken)
 **05/07/09** Looking along ditch 4 at the northern end, equipment working on pad.	 **05/08/09** Looking N along the W side of the portal area. Exposed pipe is the pipeline running from Sump #3 to lower sumps.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 4	**Date:** April 29th - May 11th
	
05/07/09 Discharge line runs along the road (ditch4). Looking D/C.	**05/09/2009** Incident that occurred. A D8 CAT ran over the partially buried discharge line. Width of the road is very narrow.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th - 14th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Ditch 4	Location/Co-ordinates: SW of Upper and Lower Portal Area
Site Location Description: Ditch 4 surrounds the downslope (north-western) perimeter of the industrial complex. The purpose is to collect all the surface runoff for the Industrial Complex so that the water can be treated at the lower portal treatment sump, or pumped to the tailings once it is complete. The longest portion of the ditch runs along the valley where the Wolverine Creek watershed begins to form open water. Most of the ditch construction will be done using fill from the industrial complex mill excavation. The ditch is to be completely lined with enviroliner upon completion.	
Weather Conditions: Typical spring weather, temperatures ranging from 5°C to 30°C periods of rain.	
Part 2 – Site Assessment	
Activity: - Ditch lining is ongoing (lining and lock trenching) - Culvert was installed to direct water from end of ditch into sump 2	
Site Description: - Ditch 4 is 90% complete. - Ditch is 90% lined. - Liner needs to be welded at the seams.	
Assessed Risk: Low – lining is almost complete and back is stable	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and strippings which may contribute to sediment loading to Wolverine Creek. Ensure proper installation and maintenance of Silt fence along the toe of the slope, directly adjacent to Wolverine Creek. Make sure liner is welded before next fall	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor slope	
Monitoring Frequency: Weekly and daily during periods of heavy rain.	
Reporting Requirements: Bi-weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch 4	**Date:** June 4th - 14th
 **06/05/09** North end (beginning) of Ditch 4.	 **06/05/09** Ditch 4 lined.
 **06/05/09** Ditch 4 lined.	 **06/05/09** South end of Ditch. Culvert from ditch into Sump 2.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 31st - April 3rd , 2009	Inspector(s):Robin McCall/Mary McDougall/ Billie Maje
Site Name: Mill bypass road	Location/Co-ordinates: Km 27.3 N 0440 431 E 6810 369
Site Location Description: The start of the mill bypass road is at Km 27.2 just west of the concrete batch plant. The road is temporary and will be functional for the duration of the construction of the mill. The bypass extends to the West side of Sump #1 and #2. The road lies at the divide of Wolverine Creek and Go Creek drainages, and is several hundred metres upstream of where Wolverine Creek starts to form water. A treated water discharge line runs parallel along the NE side of the road approximately 10 m away. A 600 mm culvert has been installed to allow the treated discharge to flow beneath the road and into the Go Creek watershed.	
Weather Conditions: 31-Mar-09 Sunny all day. +5 01-Apr-09 Sunny with some cloud. -8 02-Apr-09 High overcast with light snow. -12 03-Apr-09 Sunny all day. +2	
Part 2 – Site Assessment	
Activity: - Clearing of snow and some of the vegetative mat - Filling and cutting of road bed - Installation of culverts	
Site Status: - Mill Bypass road is complete. - The area has been stripped and cleared to open a temporary bypass. - Access into the site has been approved by EMR.	
Assessed Risk: Moderate – until remainder of snow melts, and erosion can be assessed	
Photos Attached: Yes (7)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Silt fencing should be installed at toe of slope if erosion risk is found to be high during rainfall periods	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor discharge line and culvert. Monitor sediment control during rain, in and around the culvert. The south slope of the road should also be monitored for erosion and sedimentation during the spring.	
Monitoring Frequency: daily during periods of rainfall	
Reporting Requirements: Complete - no further actions required until decommissioning.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Mill bypass road	**Date:** March 31st - April 1st
	
03/31/09 Photo looking south taken by sump#1. The end of bypass road.	**04/01/09** Equipment building temporary bypass road (facing south)
	
04/03/09 Photo looking south. Road is going over discharge culvert. Culvert in the middle of photo.	**04/03/09** Excavator is ditching and grader making a pass over on the road. Photo taken looking north towards Sump#1. Culvert in place at the low point.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Mill bypass road	**Date:** March 31st - April 1st
	
04/03/09 Temporary by-pass looking towards Sump #1.	**04/03/09** Excavator leveling ditch. Culvert at the low point.
	
04/03/09 Temporary Road complete. Looking South.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June - October, 2009	Inspector(s): Billie Maje
Site Name: Vent Raise	Location/Co-ordinates: Km 28.5
Site Location Description: The vent raise is a second opening to the underground that allows for increased ventilation and heating, as well as an emergency exit. The area of excavation is along a steep slope with a thin organic layer. It lies >100m upslope and east of Wolverine Creek and to the north of the primary underground access portal. .	
Weather Conditions: Summer and fall conditions	
Part 2 – Site Assessment	
Activity: - Excavation of slope that then met the drill hole that leads to underground. - Multi plate installed. - Material put around multi plate then packed down.	
Site Status: - Complete.	
Assessed Risk: none	
Photos Attached: Yes (4)	
Samples Taken: ABA samples were taken of vent raise waste material	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor when spring has arrived to make sure runoff is diverted into ditch #4.	
Monitoring Frequency: Monitor daily when spring has arrived.	
Reporting Requirements: None	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Vent Raise	**Date:** October 26th
	
06/11/09 Start of vent raise construction.	**08/21/09** Vent raise entrance breaks through.
	
09/18/09 Multi-plate installation.	**10/23/09** Material put around the vent raise entrance and then packed down.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Vent Raise	**Date:** October 26th
	
10/25/09 Vent raise portal tarped for heat.	**10/25/09** Final photo.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date and Time: Aug 10th to 17th ,2009	Inspector(s): Jaymie Skidmore
Site Name: Drill Site	Location/Co-ordinates: Magazine Road
Site Location Description: Site will be used for the purpose of dewatering well drilling. Site is located on the upper access road to the explosive magazines. There are spruce trees and willows growing in organic soil. 200m up from drainage start point for ditch 1.	
Weather Conditions: Typical summer weather, temperatures ranging from 5C to +30C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Trees and other cleared in preparation for drilling on site	
Site Status: - Area cleared, ready for drill crew	
Assessed Risk: None	
Photos Attached: Yes	
Samples Taken: None	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitoring.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring:	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Drill Site	**Date: Aug 10th to Aug 17th**
	
08/10/09 Drill site pre-clearing.	**08/10/09** Drill site pre-clearing.
	
08/17/09 Drill site post-clearing.	**08/10/09** Drill site post-clearing.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-220	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16275-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83)	Drill Foreman: Clayton Bolduc
439591.127mE, 6811407.011mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 47m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16275 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16275 Site Close up Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-221	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16275-2	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83)	Drill Foreman: Clayton Bolduc
439591.127, 6811407.011	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 47m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16275 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16275 Site Close up Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-222	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16300-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439605.087mE, 6811383.083mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 39m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

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Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16300 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16300 Site Close-up Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-223	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16325-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439620.941, 6811361.066	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 39m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

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Signature Required

Drill foreman: Clayton Bolduc Date:

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Signature Required



Section 16325 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16325 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-224	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16325-2	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439620.941mE, 6811361.066mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 39m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

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Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16325 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16325 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-225	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16325-3	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439620.941mE, 6811361.066mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 39m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

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Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16325 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16325 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-226	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16350-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439634.903mE, 6811337.999mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
~~~~~~

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 36m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

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Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16325 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16325 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-227	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16350-2	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439634.903mE, 6811337.999mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 36m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16350 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16350 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-228	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16375-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439652.946mE, 6811319.002mN	
NTS # and Sheet: 105G08, Wolverine Lake	

~~~~~~

Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
~~~~~~

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 40m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16375 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16375 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-229	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16375-2	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439652.946mE, 6811319.002mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
~~~~~~

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 40m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16375 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16375 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-230	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16375-3	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439652.946mE, 6811319.002mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
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ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 40m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16375 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16375 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-231	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16400-1	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439672.077mE, 6811302.042mN	
NTS # and Sheet: 105G08, Wolverine Lake	

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Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
~~~~~~

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 30m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16400 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16400 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

Project: Wolverine (MLU LQ 00140)	Date: June
Drill Hole Number: WV09-232	Yukon Zinc Supervisor: P.Mulholland
Section Location: 16400-2	Drill Checked By: P.Mulholland/L.Battison
Core Type: NQ	Drill Company: Kluane Drilling Ltd
Easting Northing (UTM NAD83):	Drill Foreman: Clayton Bolduc
439672.077mE, 6811302.042mN	
NTS # and Sheet: 105G08, Wolverine Lake	

~~~~~~

Please check all that apply to the drill hole and elaborate where necessary.

Drill site checked before **X** and after **X** the drill was removed from the site.
If the site was not checked after the drill was removed provide a memo stating why.

1. The drill site is located on:	Lake	☐	Heavy timbered land	☐
	Swamp	☐	Clear cut	☐
	Burn	☐	Previously disturbed area	**X**
	Willowed area	☐	Other:	☐

2. The drill was moved to the site by:

Skidder	☐	Helicopter	☐
Buggy	☐	D3 & Skid	**X**
Other:			

3. Were new trails / roads made to the drill site?	Yes ☐	No **X**
If yes, did these trails / roads require special permits?	Yes ☐	No **X**
How many kilometres of trails / roads were made? None		
Were streams ☐ and/or lakes ☐ crossed? None		
Were bridges or culverts required?	Yes ☐	No **X**
Were proper stream crossing permits obtained?	Yes ☐	No ☐
Were trails reclaimed?	Yes ☐	No **X**
~~~~~~

ENVIRONMENTAL IMPACT SURVEY
FOR DIAMOND DRILL HOLES

4. Have the following been removed from the drill site?

	Yes	No	Does not apply
Fuel drums	☐	☐	☐
Garbage	☐	☐	☐
Drill equipment	☐	☐	☐
Timbers on lake	☐	☐	☐
Spilled fuel/ oil	☐	☐	☐

5. Were drill cuttings contained in a sump? Yes **X** No ☐
If yes, was the sump refilled? Yes ☐ No ☐

6. What water source was used for drilling?

Lake	☐
Creek	☐
Well water	☐
Surface runoff	☐
If surface runoff, was a sump excavated?	Yes **X** No ☐

7. How was the water transported to the drill site?

Pump	**X**
Water truck	☐
Water Tank	☐
Barrels	☐
Other (please specify)	☐

8. Has the drill site been photographed? Yes **X** No ☐ *If yes, attach photo(s).*

9. Was the hole making water? Yes ☐ No ☐
Was the hole plugged and cemented? Yes ☐ No ☐
Has the casing been removed? Yes ☐ No ☐
Was the drill site left flagged? (required) Yes **X** No ☐
Does the drill hole pose a threat to wildlife? Yes ☐ No **X**

Briefly describe the cementing procedure and whether further cleanup is required.

10. Are there other drill sites in the area not covered by this or any other environmental check list? Yes ☐ No **X** Unsure ☐

If yes or unsure, comment on condition of these drill hole sites

9. How far away is the nearest open water?
Distance (m or Km) 30m
Name of creek or lake (if applicable) Wolverine Creek

10. Are there known surficial mineral occurrences on this site?

Yes ☐ No **X** Unsure ☐

If yes, check off all that apply:

X Sulphide minerals ☐ Arsenide minerals
☐ Chloride minerals ☐ Radioactive minerals

12. Was the drill site checked by a government agency (e.g. conservation officer)?

Yes ☐ No **X** Unsure ☐

If yes, provide the date, person's name and department, and elaborate on any recommendations as necessary. Attach a copy of the inspection report if available.

For additional comments, please attach a memo.

Attachments ☐ photos ☐ maps ☐ memos ☐ other _____

Project Manager: Phil Mulholland Date:

_____
Signature Required

Drill foreman: Clayton Bolduc Date:

_____
Signature Required



Section 16400 Site Region Layout Pre Drilling Photo taken May 31st, 2009.



Section 16400 Site Closeup Layout Pre Drilling Photo taken May 31st, 2009.

Wolverine Project
Environmental Inspection Form

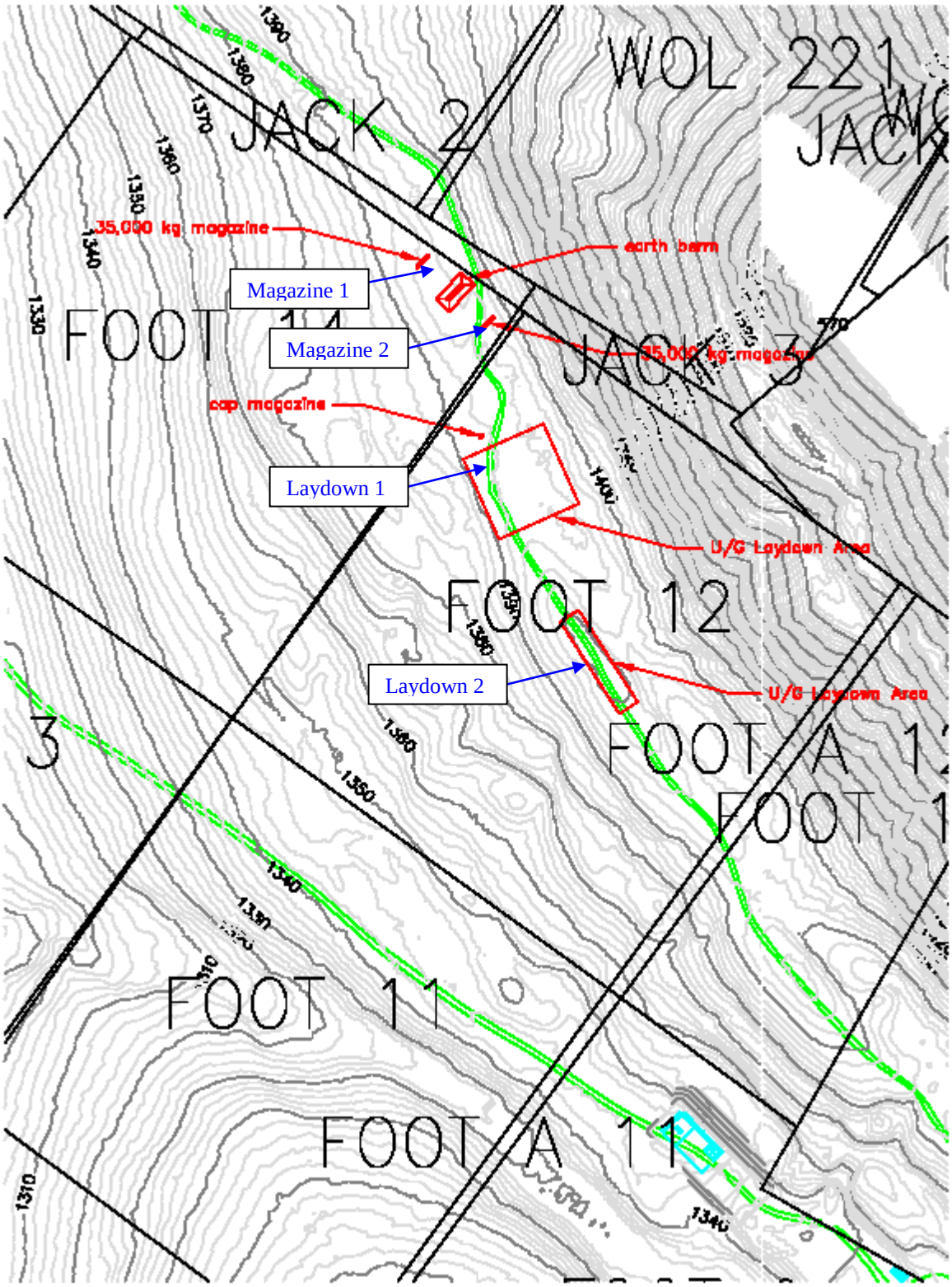
Part 1 – Site Description	
Date: February 5th -16th , 2009	Inspector(s): Billie Maje and Jennie Gjertsen
Site Name: Explosive magazine and Procon laydown	Location/Co-ordinates: old road, attached schematic
Site Location Description: Site includes proposed sites of the explosive magazines and laydown areas for Procon storage. Both areas are situated on the upper road, or the old site road which leaves the main access road at Km 28. To the east, there is a slightly lower lying area, which can fairly saturated and soft in the spring, though doesn't contain standing water at any time of the year. To the west the bank descends steeply towards the portal area. See attached schematic for sizes and relative placement of structures. The design of the explosive area calls for an earth berm to be constructed in the middle of the two mags; which will measure 55'(L)x110'(W)x 15' (H).	
Weather Conditions: Typical February conditions. Temperature ranging from -15°C to -35°C. Very light snowfall, with little accumulation.	
Part 2 – Site Assessment	
Activity: - All areas have been cleared of snow. - Locations for the magazines have been stripped of organics (of which there was not much) and organics have been stockpiled. - Four soil samples were collected for ABA testing and sent out February 10th. - Berm will not be built until results of ABA testing have been received. (est. 2 weeks)	
Site Description: All areas are cleared of snow and organics. Magazine areas have not had any excavation done, and is on hold until soil samples are received and permitting issues are resolved. Both laydown areas can be used as they are right now, and no further leveling or excavating is to be done until ABA testing is complete or an acceptable borrow material and source is used.	
Assessed Risk: None	
Photos Attached: Yes (6)	
Samples Taken: Yes, ABA samples Magazine#1- 09v 0439428, 6811831 Magazine#2- 09v 0439473, 6811757 Laydown#1- 09v 0439495, 6811593 Laydown#2- 09v 0439576, 6811434	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None at this time.	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: When work restarts in the area. No excavation to be done until site is approved.	
Monitoring Frequency: Every 2nd day when work on explosive magazine berm is commenced until completion.	
Reporting Requirements: Notify regulators re: explosive magazine move, review of scope of disturbance next fall.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Explosive magazines	**Date:** February 5th -16th
	
02/06/09 Explosive site #1 (facing S)	**02/06/09** Explosive site #1 material
	
02/06/09 Explosive site #2 in foreground, site #2 in background (facing N).	**02/12/09** Laydown #1 (facing S)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Procon Laydown areas	**Date:** February 5th -16th
	
02/12/09 Laydown #1 (facing north)	**02/12/09** Laydown #2, crest of hill (facing N).


WOL 221
JACK 2
JACK 3
FOOT 14
FOOT 12
FOOT A 11
FOOT 11
35,000 kg magazine
earth berm
Magazine 1
Magazine 2
35,000 kg magazine
cap magazine
Laydown 1
U/G Laydown Area
Laydown 2
U/G Laydown Area

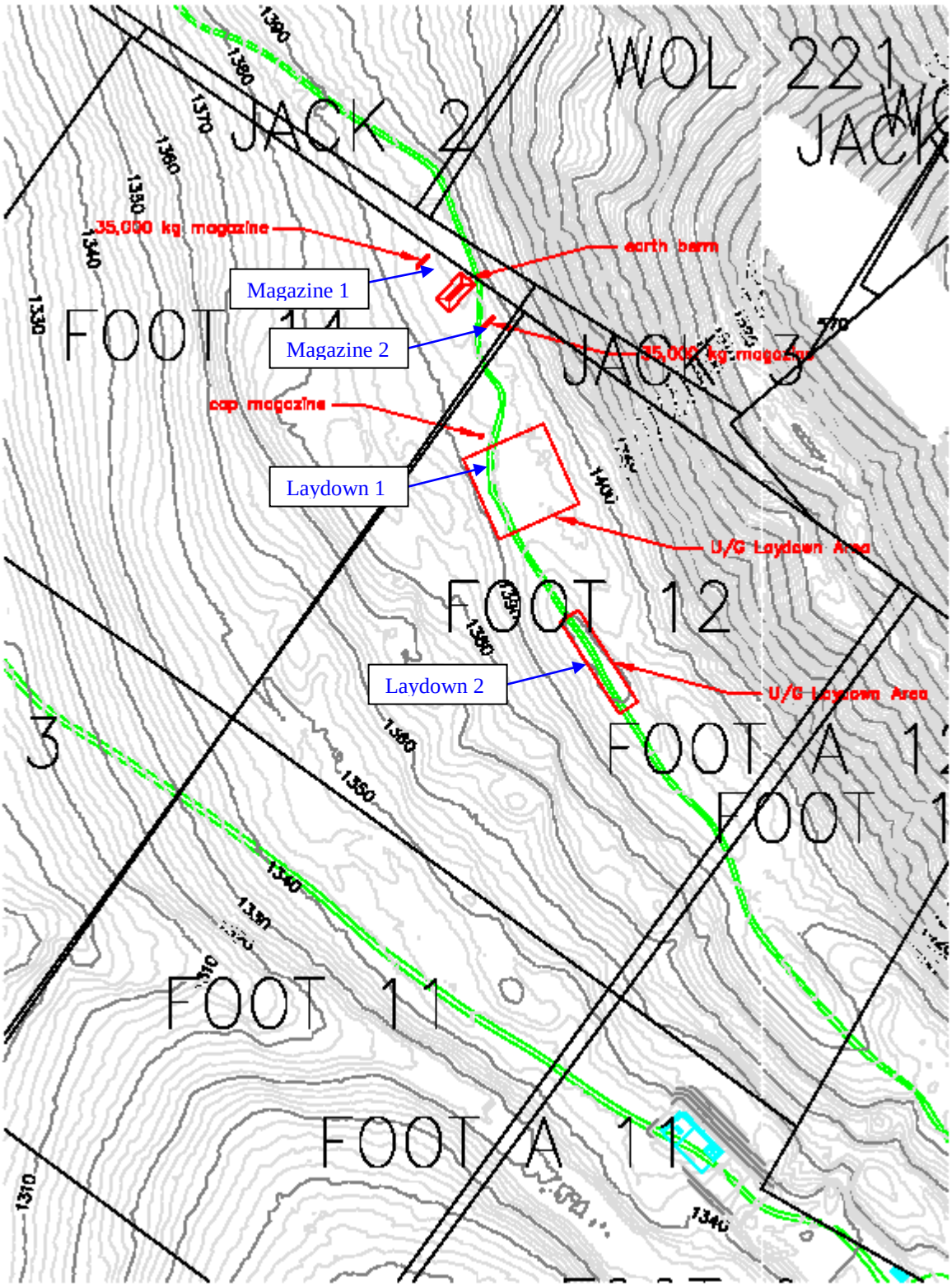
Form: EM07-01

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 11th -16th , 2009	Inspector(s): Jennie Gjertsen
Site Name: Explosive magazine and Procon lay down	Location/Co-ordinates: old road, attached schematic
Site Location Description: Site includes proposed sites of the explosive magazines and lay down areas for Procon storage. Both areas are situated on the upper road, or the old site road which leaves the main access road at Km 28. To the east, there is a slightly lower lying area, which can fairly saturated and soft in the spring, though doesn't contain standing water at any time of the year. To the west the bank descends steeply towards the portal area. See attached schematic for sizes and relative placement of structures. The design of the explosive area calls for an earth berm to be constructed in the middle of the two mags; which will measure 55'(L)x110'(W)x 15' (H).	
Weather Conditions: Typical March conditions. Temperature ranging from -25°C to -5°C. Some snowfall, with little accumulation.	
Part 2 – Site Assessment	
Activity: - Results received for metal leaching on March 11th, able to clear and level areas, and use material for berm construction. - Berm between proposed powder mags constructed March 13th – 15th. - Lay down area for Procon storage leveled, light excavation work, March 15th – 16th. - Explosive magazine move to be done in upcoming weeks.	
Site Description: All earth works in area have been completed.	
Assessed Risk: None	
Photos Attached: Yes (4)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None at this time.	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: No further monitoring is required	
Monitoring Frequency: N/A	
Reporting Requirements: Notify regulators re: explosive magazine move, review of scope of disturbance next fall	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Explosive magazines	**Date:** March 11th -16th
	
03/14/09 Explosive storage site berm (facing N)	**03/16/09** Procon lay down 1, organic stockpile in back left corner (facing SE)
	
03/16/09 Procon lay down 1 (facing NE)	**03/16/09** Explosive berm upon completion (facing S)


WOL 221
JACK 2
JACK 3
FOOT 14
FOOT 12
FOOT A 11
FOOT 11
35,000 kg magazine
earth berm
Magazine 1
Magazine 2
35,000 kg magazine
cap magazine
Laydown 1
U/G Laydown Area
Laydown 2
U/G Laydown Area

Form: EM07-01

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 13th - 22nd , 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical spring conditions, temperature ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Incinerator up and running. - Burn pit put in place. - Garbage stored, open burned and incinerated. - Garbage hauled on daily basis. - Permanent electric bear fence completed.	
Site Status: Clean and organized. Free of animal attractants. Open burning is ongoing.	
Assessed Risk: Low to no risk	
Photos Attached: Yes (3)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Fire prevention and protection kits.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Animal attractants. Water runoff into cells. Use of open pit burning and incinerator. Burying of materials.	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** June 14th - 22nd
	
06/20/09 View of bear fence and incinerator.	**06/20/09** Completed permanent bear fence.
	
06/22/09 View of storage area. (wood storage)	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 7th - 13th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical summer conditions, temperature ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Incinerator up and going. - Burn pit up and going. - Landfill area done. - Permanent bear fence has been installed. - Silt fencing installed below burn pit, landfill, and by the pond area. - First cell filled.	
Site Status: - Cleaned and organized. - Free of wildlife attractants.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Awaiting spill kits and proper signage.	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** July 7th - 13th
	
08/07/09 Clean and organized at landfill storage and burn pit area.	**08/07/09** Permanent bear fence installed around incinerator and landfill area.
	
12/07/09 Silt fencing installed below burn pit area.	**12/07/09** Bear fence gate and control box.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** July 7th - 13th
	
12/07/09 Silt fencing installed around landfill area.	**12/07/09** Steel storage organized and clean.
	
12/07/09 Steel storage.	**12/07/09** Silt fencing on old road to nearby seasonal pond area.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 21st - 26th, 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical summer conditions, temperature ranging from 10°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - The area is monitored daily by someone from the environmental dept. - Daily garbage burn. - Area was inspected and is very clean.	
Site Description: - Cleaned and organized. - Free of wildlife attractants. - Designated areas for different materials, empty concrete bags, steel, and tires. etc.	
Assessed Risk: Low	
Photos Attached: No	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Ensure cells are buried to prevent debris from flying away. Awaiting spill kits and proper signage.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for cleanliness, and wildlife signs	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: Aug 4th - 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical summer conditions, temperature ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Burn pit moved over about 10 feet. - Open pit burning ongoing. - Incinerator use ongoing. - Aerosol container put in place. - Ash waste being put in cell. - Burnable material storage sea-can put in place.	
Site Status: - Cleaned and organized. - Free of wildlife attractants.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Awaiting spill kits and proper signage.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: continue to monitor for environmental risks	
Monitoring Frequency: Daily	
Reporting Requirements: every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** Aug 4th - 10th
	
10/08/09 Ash waste in cell	**10/08/09** Aerosols and class 9 waste container
	
10/08/09 New burn pit location.	**10/08/09** Landfill cell.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** Aug 4th- 10th
	
10/08/09 Storage areas set in place for burnable materials	**10/08/09** Incinerator, Bear fence gate and class 9 waste

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date : August 21st, 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall weather conditions, temperature ranging from 3°C to 12°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Waste oil in a large container with no lid exposed to the weather by the incinerator. - Small oil pail with no lid exposed to the weather by the incinerator.	
Site Status: - Cleaned and organized. - Free of wildlife attractants	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Waste oil needs to funnelled into barrels and empties properly stored or disposed of. Awaiting spill kits and proper signage.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** August 21st
	
08/21/09 Large container filled with WO, needs to be transferred to a empty drum and brought to Special waste pad.	**08/21/09** Open waste oil buckets
	
08/21/09 Household garbage in WO barrel.	**08/21/09** Oil mixed with water in a bucket with no lid.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 12th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall weather conditions, temperature ranging from 0°C to 12°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Open pit burning ongoing. - Incinerator area cleaned and organised. - Bins for waste put in place. - Cell being filled with waste.(i.e. plastic, wood) - Wash bay installed for cement trucks.	
Site Status: - Cleaned and organized. - Free of wildlife attractants.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Awaiting proper spill kits. Signs installed with waste bins.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** September 12th
	
09/12/09 Incinerator, special waste tubs, waste bin.	**09/12/09** Fenced landfill area.
	
09/12/09 Wash bay installed.	**09/12/09** Cell filled with waste.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** September 12th
	
09/12/09 Stock pile of metal and tires.	**09/12/09** Stock pile of burnable waste.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 15th - 30th, 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall weather conditions, temperature ranging from -1°C to 5°C with periods of rain and light snow.	
Part 2 – Site Assessment	
Activity: - Shotcrete bags were dropped off at the landfill and into a cell. One rock truck full.(see photo #1)	
Site Status: - Cleaned and organized. - Free of wildlife attractants.	
Assessed Risk: Low	
Photos Attached: Yes (3)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Awaiting spill kits and proper signage	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** September 15th – 30th
	
09/28/09 Shot crete bags put into landfill cells.	**09/28/09** Incinerator area clean and organized.
	
09/28/09 Burn pit area, labourer burning sheets of scrap wood.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall/winter weather conditions, temperature ranging from 0°C to -12°C with light snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program.	
Site Status: - Cleaned and organized. - Free of wildlife attractants. - Signage up. - Garbage bins for public drop off put in place.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Awaiting spill kit	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** October 10th
	
10/10/09 Signs posted stating where to place what garbage.	**10/10/09** Clean, organized, labelled and protected landfill area.
	
10/10/09 Burn pit area. Burning waste plywood and lumber.	**10/10/09** Steel and tire storage organised, clean and labelled.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 20th , 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall/winter weather conditions, temperature ranging from 0°C to -12°C with light snow.	
Part 2 – Site Assessment	
Activity: - A new wash bay has been built and the old one has not been reclaimed yet.	
Site Status: - Cleaned and organized. - Free of wildlife attractants.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: old cement truck wash bay needs to be filled in	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** October 20th
	
10/20/09 Another wash bay for cement trucks has been built.	**10/20/09** Old wash bay still there, full of cement.
	
10/20/09 The four drums are full of burnt oil filters, and the drum marked WO is ¾ full of waste oil.	**10/20/09** Scrap lumber from batch plant mill site to be burned

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 3rd , 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall/winter weather conditions, temperature ranging from 0°C to -15°C with snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program	
Site Status: - A new wash bay has been built and the old one has been reclaimed - Power poles have been installed. - New signage for waste storage put up.	
Assessed Risk: Low	
Photos Attached: Yes (7)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily.	
Reporting Requirements: Weekly.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** November 3rd
	
11/03/09 Incinerator and power lines.	**11/03/09** Power lines.
	
11/03/09 Burn pit area.	**11/03/09** Signage.

Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** November 3rd
	
11/03/09 Tires and steels area.	**11/03/09** Wash bay reclaimed.
	
11/03/09 New wash bay.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 10th - 17th ,2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall/winter weather conditions, temperature ranging from 0°C to -12°C with light snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program.	
Site Status: - The old wash bay has been reclaimed. - A sea can has been delivered and sits within the bear fence by the incinerator, to be used as a transfer site for waste - A platform has been built at the wash bay because there was a complaint it was too steep to clean.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily.	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** November 10th - 17th
	
11/12/09 Old wash bay reclaimed.	**11/12/09** Sea can for household garbage storage area.
	
11/12/09 Ash bin for the incinerator. Once full, it is dumped into the landfill.	**11/12/09** Scrap lumber from batch plant/ mill site to be burnt. Excavator puts small piles into burn pit.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 17th - 24th, 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical Fall/winter weather conditions, temperature ranging from 0°C to -12°C with light snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program.	
Site Status: - The old wash bay has been reclaimed. - A sea can has been delivered and sits in the bear fence by the incinerator. - A platform has been built at the wash bay because there was a complaint it was too steep to clean.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Commercial Dump Permit, Air Emissions, EM every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** November 17th - 24th
	
11/20/09 Open burn pit area.	**11/15/09** Building a platform for wash bay.
	
11/16/09 Platform built.	**11/19/09** Light tower brought to wash bay.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 25th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: Km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical winter weather conditions, temperature ranging from 0°C to -20°C with light snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program.	
Site Status: - Open pit burning ongoing for a very large pile of construction waste. Signage has been updated. - The burn pit will have to be replaced due to the amount of burning it has melted down significantly.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** November 25th
	
11/25/09 New bigger sea can for household waste to be stored in.	**11/25/09** Concrete wash bay.
	
11/25/09 Burn pit to be replaced.	**11/25/09** Large pile of construction waste to be burned when permit is received.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: December 20th, 2009	Inspector(s): Billie Maje
Site Name: Landfill	Location/Co-ordinates: km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical winter weather conditions, temperature ranging from -10°C to -30°C with heavy snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program, waiting to receive new air emissions permit to increase construction waste burn size.	
Site Status: - Ash bin half full. - Three drums full of oil filters, to be burned and then brought to metal pile.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	**Date:** December 20th
	
12/20/09 Ash bin is half full.	**12/20/09** Three drums full of used oil filters.
	
12/20/09 Culvert for burn pit to be replaced. Large pile of construction waste to be burned when permit is received.	**12/20/09** Metal stockpile.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: December 31st , 2009	Inspector(s): Jaymie Skidmore
Site Name: Landfill	Location/Co-ordinates: km 26.2
Site Location Description: Lower landfill area is approximately 200m by 200m. The lower landfill area comprises the incinerator and the landfill cells, and is surrounded by an electric bear fence. The upper landfill area is contains the recyclable material stockpiles, as well as an area for open burning of construction material. Moss, lichen and willows are the most common vegetation with some small spruce trees. A seasonal spring is located at the entrance to the landfill (to the west), Go creek is located 100m south.	
Weather Conditions: Typical winter weather conditions, temperature ranging from -10°C to -30°C with snow.	
Part 2 – Site Assessment	
Activity: Ongoing waste management program.	
Site Status: - Waste management signs posted. - A drum of oil filters to be burned. - Truck batteries placed by incinerator, they were moved to special waste pad. - Awaiting burn permit to open burn construction waste. - New burn pit put in place, a burm was dug out around it.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Daily	
Reporting Requirements: Weekly	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Landfill	Date: December 31 ,2009
	
12/31/09 Batteries placed at incinerator.	12/31/09 Construction waste to be burned.
	
12/31/09 Waste management sign posted.	12/31/09 Berm dug out around burn pit.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description

Date: February 3rd - 17th , 2009	Inspector(s): Jennie Gjertsen/ Billie Maje
Site Name: New Camp	Location/Co-ordinates: K27+200 of access road

Site Location Description: Large cleared area where work is underway to construct new 205 person camp. The west side of the pad lies above a seasonally wet area, "wedge pond". The east side of the camp run up a steep slope. The area sits primarily in the Go Creek drainage, and water for the camp will be sourced from a well within that drainage. Camp effluent will be treated in a sewage treatment plant and subsequently discharged to the environment if discharge parameters are met, until the tailings facility is complete and ready to receive treated effluent water.

Weather Conditions:

Date	Weather conditions	avg. daily temp.
03-Feb-09	Heavy Snow	-30
04-Feb-09	Clear all day	-25
05-Feb-09	Clear all day	-20
06-Feb-09	Clear all day	-20
07Feb-09	Snow	-14
08-Feb-09	Clear morning, snowy evening	-10
09-Feb-09	Clear all day	-12
10-Feb-09	Sunny partly cloudy	-14
11-Feb-09	Sunny with some cloud and snowy in the afternoon	-12
12-Feb-09	Sunny with some cloud	-25
13-Feb-09	Sunny with some cloud	-19
14-Feb-09	Sunny with some cloud	-22
15-Feb-09	Sunny with some cloud	-10

Part 2 – Site Assessment

Activity:

- Start to build fire water tank
- Installation of trailers
- Y.E.S on site to look at PWTP and STP locations.

Site Description: Trailers still being installed.

Assessed Risk: None

Photos Attached: Yes (4)

Samples Taken: None

Additional Information Attached: None

Part 3 –Mitigation Requirements

Mitigation Required: None

Mitigation Condition: N/A

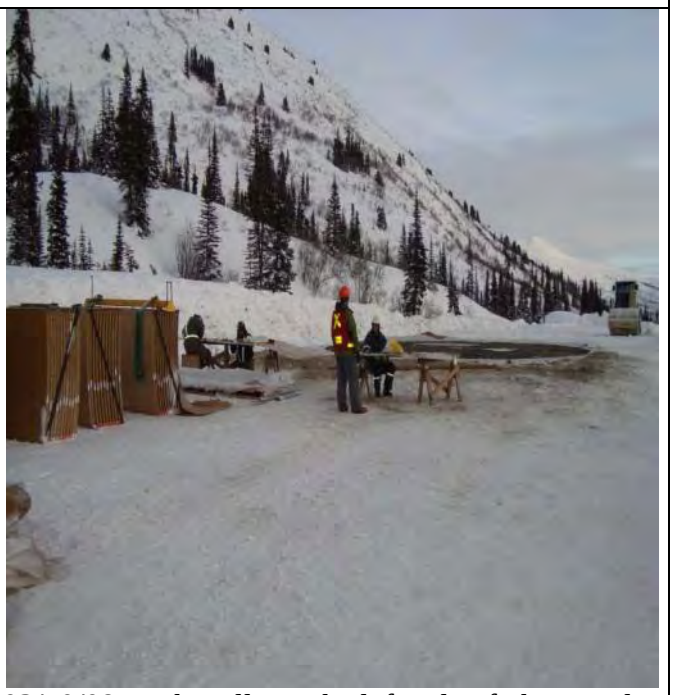
Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitor for changes for as built.

Monitoring Frequency: Weekly

Reporting Requirements: Weekly as construction progresses.

Wolverine Project
Environmental Inspection Form-Photos

Site: New Camp	**Date:** February 3rd - 17th
	
02/16/09 Installation of trailers.	**02/16/09** Trailers for the 205 man camp.
	
02/10/09 Start of the fire water tank.	**02/10/09** Tank walls on the left side of photo pad in the background.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description

Date: February 18th - March 2nd , 2009	Inspector(s): James Spencer
Site Name: New Camp	Location/Co-ordinates: K27+200 of access road

Site Location Description: Large cleared area where work is underway to construct new 205 person camp. The west side of the pad lies above a seasonally wet area, "wedge pond". The east side of the camp run up a steep slope. The area sits primarily in the Go Creek drainage, and water for the camp will be sourced from a well within that drainage. Camp effluent will be treated in a sewage treatment plant and subsequently discharged to the environment if discharge parameters are met, until the tailings facility is complete and ready to receive treated effluent water.

Weather Conditions:

Date	Weather conditions	avg. daily temp.
18-Feb-	Cloudy and light snow all day, windy	-16
19-Feb-	Clear skies in morning, cool	-22
20-Feb-	Overcast and light snow	-14
21-Feb-	Light snow	-12
22-Feb-	Clear and cool , windy, sunny in afternoon	-23
23-Feb-	Clear and cool -35 in AM,	-22
24-Feb-	Clear and cool	-18
25-Feb-	Clear and cool	-19
26-Feb-	Light snow partly cloudy	-11
27-Feb-	mixed sun and cloud	-12
28-Feb-	Clear and cool warming and sunny afternoon	-15
1-Mar-	Sunny and bright	-10
2-Mar-	Overcast in morning , clear breaks in afternoon	-8

Part 2 – Site Assessment

Activity:

- Fire Water Tank hydro test
- Installation of trailers and walkways - Cont'd
- STP pad built
- Propane Installation

Site Description: Northern Trailer has placed 43 units, Dorms #1 and 2 are signed off, Dorms # 3 and 5 plus the kitchen is being finished, Recreation Hall levelled. Awaiting remaining eight units, four this Wednesday and the remaining four next week. Completion expected March 10.

Assessed Risk: None

Photos Attached: Yes (3)

Samples Taken: None

Additional Information Attached: None

Part 3 –Mitigation Requirements

Mitigation Required: None

Mitigation Condition: N/A

Part 4 –Monitoring Requirements

Follow-up Monitoring: Monitor for changes for as built.

Monitoring Frequency: Weekly

Reporting Requirements: Every two weeks as construction progresses.

Wolverine Project
Environmental Inspection- Photos

Site: New Camp	**Date:** February 18th – March 2nd
 **02/22/09** Installation of trailers.	 **02/22/09** Propane Installation for Trailers.
 **02/27/09** Fire Water Tank 90% Complete	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 3rd – 23rd , 2009	Inspector(s): Jennie Gjertsen and James Spencer
Site Name: New Camp	Location/Co-ordinates: K27+200 of access road
Site Location Description: Large cleared area where work is underway to construct new 205 person camp. The west side of the pad lies above a seasonally wet area, "wedge pond". The east side of the camp run up a steep slope. The area sits primarily in the Go Creek drainage, and water for the camp will be sourced from a well within that drainage. Camp effluent will be treated in a sewage treatment plant and subsequently discharged to the environment if discharge parameters are met, until the tailings facility is complete and ready to receive treated effluent water.	
Weather Conditions: Temperatures ranging from -45°C to -5°C. Snowfall accumulation of less than 30cm, no periods of rainfall.	
Part 2 – Site Assessment	
Activity: - Pump shed build and install - Northern trailer off site - STP pad build - Effluent sump location selected and plans to be sent in for approval - Expansion of camp pad to the SE - Locations selected for potential organic stockpile move to allow for SE expansion	
Site Description: Units installed water lines to be hooked up in upcoming weeks. Northern trailer scheduled back on site March 23rd.	
Assessed Risk: None	
Photos Attached: Yes (7)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor changes for as built.	
Monitoring Frequency: Weekly	
Reporting Requirements: Twice monthly as construction progresses.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: New camp	**Date:** March 3rd – 23rd ,
	
03/07/09 All units in place (facing SW)	**03/07/09** Fire water tank in foreground, pump shed in background
	
03/07/09 Potable water pump shed	**03/07/09** Potable water pump shed

Wolverine Project
Environmental Inspection Form – Photos

Site Name: New Camp	**Date:** March 3rd – 23rd
	
03/21/09 South East expansion to pad	**03/21/09** South East expansion to pad
	
03/21/09 Temporary Procon dry and pad expansion (facing East)	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 4th - 14th, 2009	Inspector(s): Jaymie Skidmore
Site Name: New Camp	Location/Co-ordinates: Km 27.2
Site Location Description: Large cleared area where work is underway to construct new 205 person camp. The west side of the pad lies above a seasonally wet area, "wedge pond". The east side of the camp run up a steep slope. The area sits primarily in the Go Creek drainage, and water for the camp will be sourced from a well within that drainage. Camp effluent will be treated in a sewage treatment plant and subsequently discharged to the environment if discharge parameters are met, until the tailings facility is complete and ready to receive treated effluent water.	
Weather Conditions: Typical spring conditions, temperature ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Fire water tower built but pump house not complete. - Potable water Treatment Facility completed. - Sewage treatment plant and sump complete. - Bunks, Drys, Rec. room, and Kitchen units 80% with ongoing levelling and installation. - Office pad complete, office units just arrived being prepped for installation. - Generator setup complete. - Camp clean up ongoing.	
Site Description: Snow is gone. Camp is at 80%. Offices to be installed. Grounds to be cleaned up and staged. Camp is occupied	
Assessed Risk: None	
Photos Attached: Yes (7)	
Samples Taken: None	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor changes for as built.	
Monitoring Frequency: Weekly	
Reporting Requirements: Report change in condition	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: New camp	**Date:** June 4th - 14th
	
06/05/09 Camp pad. Bunk houses, kitchen in far back, office units to left, water treatment plant up on top of the hill.	**06/08/09** Overview of bunk units.
	
06/08/09 Camp office units, not yet assembled.	**06/08/09** Kitchen units

Wolverine Project
Environmental Inspection Form – Photos

Site Name: New Camp	**Date:** June 5th - 12th
	
06/08/09 Camp fire water pump house.	**06/08/09** Camp fire water tank located above camp.
	
06/08/09 Water treatment plant located above camp.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 21st - August 3rd , 2009	Inspector(s): Billie Maje
Site Name: YZC new camp	Location/Co-ordinates: Km 27.2
Site Location Description: Large cleared area where work is underway to construct new 205 person camp. The west side of the pad lies above a seasonally wet area, "wedge pond". The east side of the camp run up a steep slope. The area sits primarily in the Go Creek drainage, and water for the camp will be sourced from a well within that drainage. Camp effluent will be treated in a sewage treatment plant and subsequently discharged to the environment if discharge parameters are met, until the tailings facility is complete and ready to receive treated effluent water.	
Weather Conditions: Typical summer conditions, temperature ranging from 12°C to 30°C.	
Part 2 – Site Assessment	
Activity: - Miner's dry, main offices, safety and first aid buildings installed and completed. - Excavator trenching for fire line to be buried. - Levelling of buildings ongoing. - Laundry facility currently being built, behind miner's dry. - Excavator building a pad for satellite dishes. - Recreation room reclaimed. - Excavation of broken sewage pipe.	
Site Description: All offices are set up and in order, a pad for satellites has been built behind the offices, an excavator is building a trench for fire suppression lines which will be buried. Laundry facility is being built located behind the miner's dry.	
Assessed Risk: None.	
Photos Attached: Yes (11)	
Samples Taken: None.	
Additional Information Attached: None.	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor changes for as built.	
Monitoring Frequency: Weekly	
Reporting Requirements: As change in condition warrants	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: YZC camp	**Date:** July 21st - August 3rd
	
07/28/09 Main office complex. First Aid Station to the far right.	**07/27/09** Environmental office. Excavator in behind is building a pad for satellite dishes in behind offices.
	
07/28/09 First aid station, building at entrance of camp.	**07/28/09** Miner's dry, men and women's. Building to the left in the picture is a mine rescue trailer.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: YZC camp	**Date:** July 21st - August 3rd
	
07/28/09 Excavator trenching for fire lines.	**07/28/09** Trench behind dorm #1/kitchen.
	
07/28/09 Laundry facility located behind miner's dry.	**07/27/09** Recreation room.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: YZC camp	**Date:** July 21st - August 3rd
	
08/01/09 Fire suppression lines buried.	**08/02/09** Excavation of broken sewage line.
	
08/03/09 Sewage line repaired and buried.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 19th – April 6th , 2009	Inspector(s):Robin McCall/Mary McDougall/Billie Maje
Site Name: Sewer Treatment Plant	Location/Co-ordinates: Km 27.3
Site Location Description: The sewer treatment plant is located down slope of the new camp pad at Km 27.2 and it's across from the batch plant. Surrounding vegetation has been previously disturbed. To the north of the sump location is "wedge pond", a natural pond that forms during the spring and summer. The southern drainage is blocked by the site access road.	
Weather Conditions: Weather has been sunny with some cloud, light snowfall. Temperatures ranging from -10°C to 2°C.	
Part 2 – Site Assessment	
Activity: - STP has been cleared and leveled. - Sewage treatment plant installed. - Stripping cleared and organics set to the other side of the road. - Settling pond excavated.	
Site Description: Sewer treatment plant has been set up just upslope of the settling pond and the pond is waiting for the liner to be installed. Organics and snow have been cleared of the area. The settling pond has capacity to hold 7 days of treated effluent water and is approx. 500 m^3.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Sediment and erosion monitoring.	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Installation of the STP.	
Monitoring Frequency: Weekly during installation and set up.	
Reporting Requirements: None	

Wolverine Project

Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant	**Date:** March 19th – April 6th
	
03/21/09 Sewage Treatment plant.(facing west)	**03/19/04** Excavating of settling pond. Down slope of treatment plant.(facing north east)
	
04/03/09 Area for settling pond below camp, Excavator stripping organics.	**04/03/09** Excavator clearing organics and snow. Photo taken from batch plant.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 7th – 13th , 2009	Inspector(s):Jennie Gjertsen/Billie Maje
Site Name: Sewer Treatment Plant Pad and sump	Location/Co-ordinates: Km 27.2
Site Location Description: The sewer treatment plant is located down slope of the new camp pad at Km 27.2 and it's across from the batch plant. Surrounding vegetation has been previously disturbed. To the north of the sump location is "wedge pond", a natural pond that forms during the spring and summer. The southern drainage is blocked by the site access road.	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -15°C to 5°C.	
Part 2 – Site Assessment	
Activity: - STP pad is complete. - Sewage treatment plant installed, and needs to be setup - Continued surfacing/excavation in STP sump	
Site Description: Sewer treatment plant has been set up just upslope of the settling pond and the pond is waiting for the liner to be installed. The settling pond has capacity to hold 7 days of treated effluent water and is approx. 500 m^3. There is little to no environmental concern at this time.	
Assessed Risk: None	
Photos Attached: Yes (3)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Stability and erosion monitoring of bank upslope to sump and pad due to removal of organics from site.	
Monitoring Frequency: Weekly during installation and set up, more frequently during rain events	
Reporting Requirements: None	

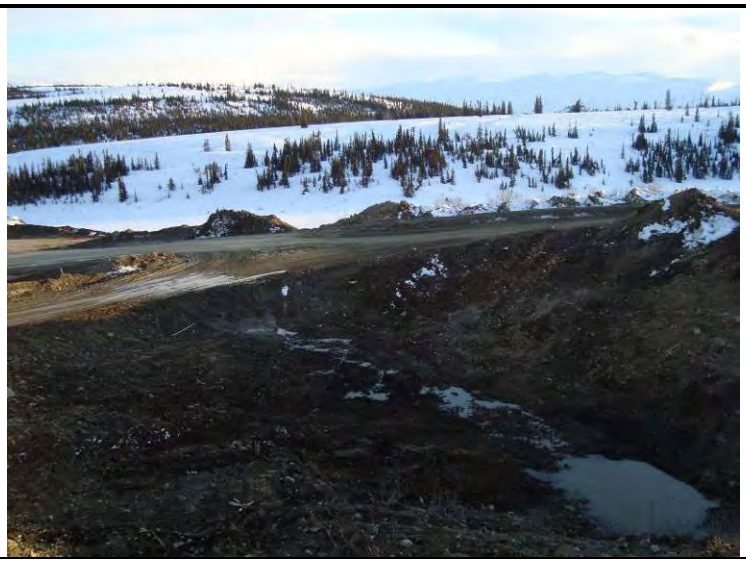
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant Pad and sump	**Date:** April 7th – 13th
	
04/10/09 Sump excavation. (facing west)	**04/10/09** Sump excavation. (facing west)
	
04/12/09 Sump excavation.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 14th – 20th , 2009	Inspector(s):Jennie Gjertsen
Site Name: Sewer Treatment Plant Pad and sump	Location/Co-ordinates: Km 27.2
Site Location Description: The sewer treatment plant is located down slope of the new camp pad at Km 27.2 and it's across from the batch plant. Surrounding vegetation has been previously disturbed. To the north of the STP sump location is "wedge pond", a natural pond that forms during the spring and summer. The southern drainage is blocked by the site access road.	
Weather Conditions: Spring conditions, some melting during day and freezing at night. Very little snowfall. Temperatures ranging from -10°C to 10°C.	
Part 2 – Site Assessment	
Activity: - Drainage piping being installed from camp to STP - Continued surfacing in STP sump - Excavation of lock trench for sump liner	
Site Description: Sewer treatment plant has been set up just upslope of the settling pond and the pond is waiting for the liner to be installed. There is little to no environmental concern at this time. Set up of infrastructure to and from STP is ongoing.	
Assessed Risk: None	
Photos Attached: Yes (4)	
Samples Taken: None	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Stability and erosion monitoring of bank upslope to sump and pad due to removal of organics from site.	
Monitoring Frequency: Weekly during installation and set up, more frequently during rain events.	
Reporting Requirements: None	

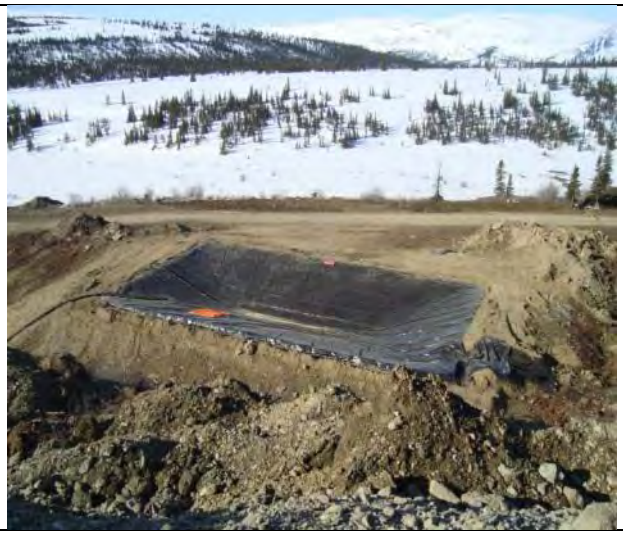
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant Pad and sump	**Date:** April 14th – 20th
	
04/14/09 Completed sump excavation. (facing west)	**04/14/09** Installation of camp to STP pipeline. (facing north)
	
04/16/09 Compacted sump excavation. (facing south)	**04/16/09** Pooling of water south of pad and sump, blocked by access road. (facing west)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 30th, 2009	Inspector(s):Robin McCall/Melissa Kirby /Billie Maje
Site Name: Sewer Treatment Plant	Location/Co-ordinates: Km 27.3
Site Location Description: The sewer treatment plant is located down slope of the new camp pad at Km 27.2 and it's across from the batch plant. Surrounding vegetation has been previously disturbed. To the north of the sump location is "wedge pond", a natural pond that forms during the spring and summer. The southern drainage is blocked by the site access road.	
Weather Conditions: Weather has been sunny with some cloud, light snowfall. Temperatures ranging from -2°C to 12°C.	
Part 2 – Site Assessment	
Activity: - Water lines have been installed. - The sump for a settling pond has been lined with enviro liner. - A technician has explained how it works. - The STP has been leaking brown water. It is unknown where the water is coming from.	
Site Description: Sewer treatment plant has been set up just upslope of a settling pond and a second settling sump has to be installed with enviro liner. The settling pond has capacity to hold 7 days of treated effluent water and is approx. 500 m^3.	
Assessed Risk: Medium - unknown leak needs to be resolved	
Photos Attached: Yes (7)	
Samples Taken: None	
Additional Information Attached: Need to talk to Norcope about where the leakage is coming from in the camp.	
Part 3 –Mitigation Requirements	
Mitigation Required: Need to determine cause of leaking	
Mitigation Condition: poor	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: daily until leak is resolved	
Reporting Requirements: None	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant	**Date:** April 30th
	
03/21/09 Lined settling pond below camp pad.	**04/30/04** Lined sump and below a second sump where the water appears. D/C
	
04/30/09 Sewer line coming in from camp.	**04/30/09** Water lines connected from STP to lined settling sump. Facing N

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant	**Date:** April 30th
	
04/30/09 Sewage Treatment plant.(facing west)	**04/30/09** Leakage coming outside the back door at STP.
	
04/30/09 Technician is looking where the leak is coming from.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: April 30th -May 7th	Inspector(s):Jaymie Skidmore
Site Name: Sewer Treatment Plant	Location/Co-ordinates: Km 27.3
Site Location Description: The sewer treatment plant is located down slope of the new camp pad at Km 27.2 and it's across from the batch plant. Surrounding vegetation has been previously disturbed. To the north of the sump location is "wedge pond", a natural pond that forms during the spring and summer. The southern drainage is blocked by the site access road.	
Weather Conditions: Weather has been sunny and hot. Temperatures ranging from 5°C to 30°C.	
Part 2 – Site Assessment	
Activity: - STP is complete. - STP sump complete.	
Site Description: Sewer treatment plant has been set up just upslope of a settling pond and a second settling sump has to be installed with enviro liner. The settling pond has capacity to hold 7 days of treated effluent water and is approx. 500 m^3.	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: STP effluent sampled to determine water quality	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: N/A	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: water sampling	
Monitoring Frequency: as required	
Reporting Requirements: None - reporting complete until conditions change	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Sewer Treatment Plant	**Date:** April 30th -May 7th
	
04/30/09 Completed STP sump. Lined and fenced.	**05/07/09** Completed STP.

Wolverine Projec
Environmental Inspection Form

Part 1 – Site Description	
Date: April 30th – May 8th , 2009	Inspector(s): Billie Maje
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Typical Spring weather. Temperatures ranging from -2°C to 22°C	
Part 2 – Site Assessment	
Activity: - Ditch B work continues, blasting and ditching. - Snow removal started Apr. 30. - Ditch B is completed May 8.	
Site Description: - The snow in and around the tailings facility is about 4 ft deep. Two CATs have been removing snow from the tailings basin. - The drill has been working in ditch B and blasting, due to frozen ground. - All or most snow has melted now and is draining into the settling sump. See photo#4	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: Further mitigation to be determined once Ditch A and B divert runoff, may want to make adjustments to the sediment control sump or install silt fencing once flow has subsided.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** April 30th - May 8th

	
04 /30/09 Photo 1 Snow removal from the tailings basin has started.	**05/05/09 Photo 2** Snow removal continues with two CAT's.
	
05/05/09 Photo 3 Snow and ice melting, water very high in sediment. Inlet of culvert. South end of tailings.	**05/05/09 Photo 4** Outlet of culvert. Go creek drainage 200 ft. Settling sump below. (in the snow)

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** April 30th - May 8th

	
04/30/09 Photo 5 Excavator completing ditch B, water truck taking water from an ephemeral creek.	**05/05/09 Photo 6** Overview of tailings basin, excavator working on ditch B.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: May 15th - June 1st, 2009	Inspector(s): BM/JS/MM
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Spring conditions, infrequent snow and rain events, temperatures ranging from -10°C to 25°C. Often freezing at night and warming during the day.	
Part 2 – Site Assessment	
Activity: - A culvert was installed at the southern end of the tailings, where an existing culvert had been crushed limiting drainage. - The existing finger drains were improved to allow for increased drainage. - Silt fencing and straw bales were installed to aid in sediment and erosion control at the south end of the facility - Water quality samples were taken above W16 so that TSS changes could be observed. Results showed no significant increase in TSS concentrations.	
Site Description: High runoff due to heavy snow is resulting in large flows within the facility, water is being diverted successfully by Ditch A and B. Water is pooling at south end and is showing signs of heavy sediment load	
Assessed Risk: Low	
Photos Attached: yes (8)	
Samples Taken: water quality at W16	
Additional Information Attached: none.	
Part 3 –Mitigation Requirements	
Mitigation Required: - Ensure stockpiles are crushed, lying flat and not an impediment to wildlife or the natural contours of the land, logged trees to be piled to prevent rotting - Drainage is required in the tailings basin to collect natural spring water - Monitor stripping piles for sediment control and determine need to re-contour and seed in the spring	
Mitigation Condition: good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly). Monitor water runoff at Ditch A and B stilling basins	
Monitoring Frequency: Daily during periods of work on site	
Reporting Requirements: Weekly while construction/development continues	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Tailings Facility	**Date:** May 15th – June 1st
	
05/15/09 Outlet into settling basin. (facing south)	**05/15/09** Inlet to south end culvert. (facing east)
	
05/15/09 Outlet of south end culverts into settling basin channel. (facing NE)	**05/15/09** Roadside contouring of organics. (facing NW)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Tailings Facility	**Date:** May 15th – June 1st
	
05/24/09 Silt fence install at south end of basin. (facing NE)	**05/24/09** Continued stripping of final organics. (facing NE)
	
05/26/09 Silt fencing around settling basin. (facing SW)	**05/26/09** Pooling of heavy sediment water at the south end. (facing N)

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 5th – 12th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Typical Spring weather. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Silt fencing installed around sump water below road on both sides. - Hay bales put in place above and below road to reduce silt and energy flow. - Thick organics being excavated to help control moisture in ground being stockpiled at k25.	
Site Description: - Snow is completely gone. - Site being heavily excavated due to excessive water. - Water is pooling in south end and running through culverts.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required:	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** June 5th -12th

	
06/05/09 View of tailings basin from south end. Silt fencing in place.	**06/05/09** peat moss being excavated to help dry the ground out.
	
06/05/09 Second culvert installed along with silt fencing and heavy rip rap.	**06/05/09** South end of tailings basin. Runoff water is pooling.

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** June 5th - 12th

	
06/12/09 Excavating wet ground.	**06/12/09** Finger drains.
	
06/12/09 Silt fencing and hay bales.	**06/12/09** Silt fencing and hay bales.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: June 15th – 22nd , 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared, and Ditch A is completed and Ditch B.	
Weather Conditions: Typical Summer weather. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Silt fencing installed around sump water below road on both sides. - Hay bales put in place above and below road to reduce silt and energy flow. - Peat moss being excavated to help control moisture in ground and stockpiled. - Finger Ditches in place. - Reclaiming old road above tailings. - Construction started on the dam base. - Solid piping X2 has been laid and buried under the future site of the dam, to continue drainage	
Site Description: - Snow is completely gone. - Site being heavily excavated due to excessive water - Air drying the materials. - Water is pooling in south end and running through culverts.	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: continued mitigation efforts – silt fencing and energy dissipation	
Mitigation Condition: Fair – sediment load still high in water basins	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** June 14th - 22nd

	
06/15/09 view of tailings basin from south end. Silt fencing in place.	**06/17/09** organic excavation to help dry the ground out.
	
06/17/09 Finger drains and organics removal	**06/18/09** South end of tailings basin. Facing north

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** June 14th - 22nd

	
06/18/09 Excavating wet ground.	**06/18/09** Finger ditches.
	
06/18/09 Finger drains and excavation to dry material	**06/18/09** Silt fencing at south end

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** June 14th - 22nd

	
06/20/09 Solid double piping to lay under future damn.	**06/20/09** Length of solid pipes run ¼ of the tailings.
	
06/22/09 Solid double piping berried.	**06/22/09** Ongoing excavation.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 7th - 13th ,2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Typical summer weather. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Piping installed under dam area. - Starter dam construction is ongoing. - Preparing area to be lined. - Silt fencing and hay bales installed in tailings settling pond area.	
Site Status: - Excavation ongoing throughout the area.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: continued upkeep of silt fencing	
Mitigation Condition: Fair, sediment load still high in water basins, but not getting to Go Creek	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** July 7th - 13th

	
08/07/09 Tailing basin being excavated.	**08/07/09** Silt fencing placed below dam.
	
12/07/09 Construction of tailings dam	**12/07/09** Overview of tailings basin.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: July 21st - 25th , 2009	Inspector(s): Billie Maje
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Typical summer weather. Temperatures ranging from 10°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Ongoing excavation. Preparing for liner installation. - Material that has been excavated is being used to build up the dam - Starter damn being raised but work is subsided. - CAT is levelling out the bottom of tailings.	
Site Description: - Excavated heavily. - Low flowing water still running but slowed. Silt fencing and hay bales in place for sediment control.	
Assessed Risk: Low	
Photos Attached: Yes (5)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: continued maintenance of current mitigation	
Mitigation Condition: Good – water flow has reduced significantly	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos



07/25/09 Overview of the tailings basin. Looking from east side.

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** July 21st - 25th

	
07/25/09 The raise on the dam work has slowed. South end of the tailings.	**07/25/09** Excavator pulling in material and CATs are pushing material down. Looking south
	
07/25/09 CAT levelling out the bottom of the tailings. Looking at the middle of the tailings	**07/25/09** Excavator and packer working in the north end of the dam

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 4th - 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Area is currently cleared and diversion ditching is in place. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project.	
Weather Conditions: Typical summer weather. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Preparing basin area for liner. - Removing rocks from basin walls. - Packing basin walls. - Excavation ongoing throughout the area. - The liner installers arrived on site. - Lock trenches being completed.	
Site Status: - Seasonal spring water flow very low. - Very dry - Starter dam construction is in final stages. - Tailings basin is in final stages. - Spill way ditches installation ongoing.	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** August 4th - 10th



08/05/09 Tailings basin.



08/05/09 North east end of tailings basin.



08/05/09 North end of Tailings.



08/05/09 Spill way ditch.

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** August 4th - 10th

	
08/05/09 Left side of Dam.	**08/05/09** Right side of Dam.
	
08/07/09 Lock trench north end.	**08/07/09** Lock trench south end.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 10th - 17th ,2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project. Once filled, the water will be sent back to the mill for process water, or treated and discharged.	
Weather Conditions: Typical summer weather. Temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Removing rocks from basin walls. - Installing sandbags. - Lining walls with sand. - Geo-tech being laid under liner along center. - Lining started. - Lock trench being filled in.	
Site Status: - Lock trench in final stages. - Spill way ditches installation ongoing. - Lining ongoing.	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: none	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** August 10th - 17th

	
08/10/09 Removing rocks from basin walls.	**08/10/09** Lock ditch and sand layer.
	
08/10/09 Installing sandbags for liner.	**08/10/09** Starting to install liner.

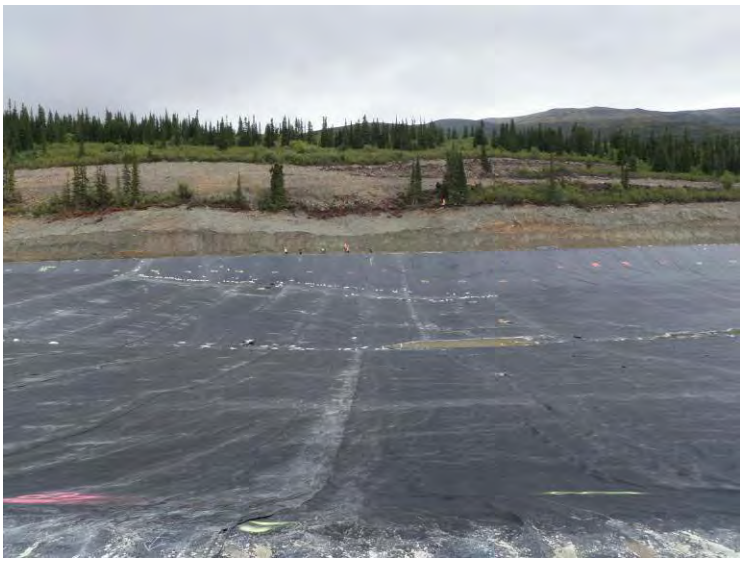
Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** August 10th - 17th

	
08/13/09 Tailings pond liner installation.	**08/13/09** Tailings pond liner installation.
	
08/13/09 Geo-tech under liner along center.	**08/13/09** South end tailings not yet lined.

Wolverine Project
Environmental Inspection Form – Photos

Site name: Tailings Facility **Date:** August 10th - 17th

	
08/17/09 Tailings pond liner.	**08/17/09** Tailings pond liner.
	
08/17/09 Tailings pond liner extending into south end.	**08/17/09** South end tailings pond liner started.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 18th - 23rd , 2009	Inspector(s): Billie Maje
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project. Once filled, the water will be sent back to the mill for process water, or treated and discharged.	
Weather Conditions: Typical early fall weather conditions. Temperatures ranging from 3°C to 12°C.	
Part 2 – Site Assessment	
Activity: One excavator working on trench around the basin.	
Site Description: Work on the lining has subsided during rainy weather. Welding cannot be done when it's raining. One excavator trenching, 30% of the lining has been completed.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Daily during periods of work on site.	
Reporting Requirements: Weekly while construction/development continues.	

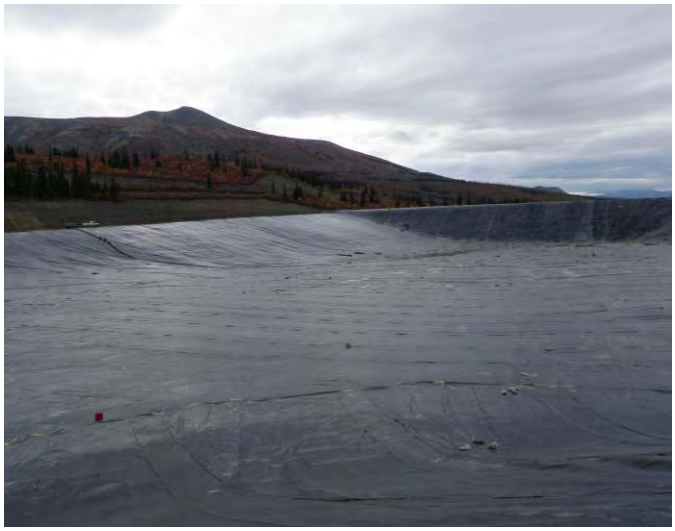
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Tailings Facility	**Date:** August 21st
	
21/08/09 Overview of the tailings basin and the progress of the lining that has started on August 11, 2009.	**21/08/09** North end of the basin looking towards the starter dam. Work has subsided due to rain. The welder can only be used during dry weather.
	
21/08/09 Excavator on the west side trenching.	**21/08/09** Close up of the excavator trenching. Looking towards the starter dam.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: September 9th-12th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Facility	Location/Co-ordinates: Km 24.2
Site Location Description: Large valley that will be the site of the future tailings facility. The entire tailings area covers approximately 2km of site scheduled for disturbance of some kind, with the pond itself being ~400m. Once complete the tailings facility will be lined with enviroliner and receive all of the waste water and tails effluent from the Wolverine Project. Once filled, the water will be sent back to the mill for process water, or treated and discharged.	
Weather Conditions: Typical Fall weather conditions. Temperatures ranging from 0°C to 12°C.	
Part 2 – Site Assessment	
Activity: None.	
Site Description: Finished installing liner and quality assurance is complete done. Layfield contractors are leaving site.	
Assessed Risk: low	
Photos Attached: Yes (5)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Monitor for sediment drainage into the wetland area and into Go Creek, monitor groundwater monitoring wells as per A-Licence (quarterly).	
Monitoring Frequency: Monitor daily over the winter months for animal tracks in facility	
Reporting Requirements: Environmental reporting complete.	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Tailings Facility	**Date:** September 9th - 12th
	
09/09/09 Emergency spill way.	**09/09/09** Tailings basin.
	
09/09/09 South end of basin.	**09/09/09** North end of basin.



Liner installation complete September 12th, 2009.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: February 18th – March 2nd , 2009	Inspector(s): James Spencer
Site Name: Ditch B	Location/Co-ordinates: Tailings Facility
Site Location Description: The Ditch runs upslope of the Tailings Facility and requires side casting of the frost as it is unsuitable for back filling. The Ditch collects water draining from the slope and the current road and diverts it away from the basin of the tailings facility. Willows, Spruce and Balsam Fir predominate.	
Weather Conditions: Typical February winter conditions, very light snowfall with little accumulation, temperatures ranging from -35°C to -10°C.	
Part 2 – Site Assessment	
Activity: - Ditch B is approximately 75% complete - Organics and stripping have been side cast along with frost masses - Ditch Profile is complete along 90% of ditch length - Work is beginning on the stilling basin	
Site Description: Ditch B is a 1260 m collection ditch located upslope of the tailings facility running parallel to the current access road between km24 and Km 23. The ditch runs to the SW and slopes at a moderate grade towards the southern end of the tailings facility from Km 0 + 000 to Km 0+ 765 and then takes a turn to the South and heads off at a 10% grade terminating at Km 1+1260 approximately 100m from Go Creek. This 495m run is contained within an 800mm culvert which drains in to a stilling basin located at the terminus of the ditch.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: Yes (drawing) Will need to attach new Ditch B drawing once the modifications are complete	
Part 3 –Mitigation Requirements	
Mitigation Required: Stilling basin to be completed, monitor the organics and stripping which may contribute to sediment loading of the ditch and stilling basin.	
Mitigation Condition: good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: ongoing	
Monitoring Frequency: Weekly during construction and as weather or activity affects the area.	
Reporting Requirements: As built	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch B	**Date:** February 18th – March 2nd
 **02/22/09** Looking across tailings basin at south end of Ditch B graded towards south end at approximately -10%.	 **02/22/09** Looking across tailings basin at north end of Ditch B graded towards south end at approximately -1.4%.
 **02/27/09** Ditch B looking North along Ditch from Km 0+765 towards 0+000.	 **02/27/09** Ditch B looking NE from the stilling basin at Km 1+260.

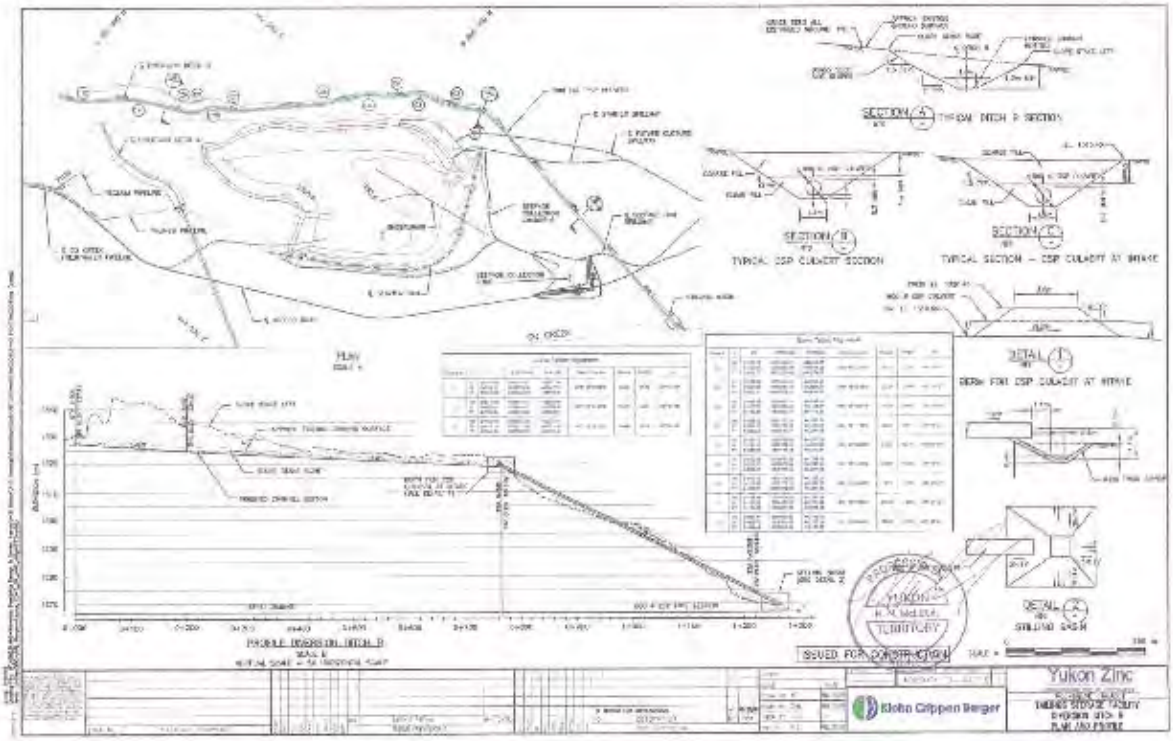


Figure 16: Tailings Facility Diversion Ditch B: Plan, Profile and Sections

Form: EM07-01

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 3rd – 17th, 2009	Inspector(s): Jennie Gjertsen
Site Name: Ditch B	Location/Co-ordinates: Tailings Facility
Site Location Description: The Ditch runs upslope of the Tailings Facility and requires side casting of the frost as it is unsuitable for back filling. The Ditch collects water draining from the slope and the current road and diverts it away from the basin of the tailings facility. Willows, Spruce and Balsam Fir predominate.	
Weather Conditions: Typical March winter conditions, some snowfall with less than 30cm of accumulation, temperatures ranging from -45°C to -5°C	
Part 2 – Site Assessment	
Activity: - Finish of ditching - Installation and backfilling of culvert - Haul of riprap for stilling basin	
Site Description: Ditch B is a 1260 m collection ditch located upslope of the tailings facility running parallel to the current access road between km24 and Km 23.The ditch runs to the SW and slopes at a moderate grade towards the southern end of the tailings facility from Km 0 + 000 to Km 0+ 765 and then takes a turn to the South and heads off at a 10% grade terminating at Km 1+1260 approximately 100m from Go Creek. This 495m run is contained within an 800mm culvert which drains in to a stilling basin located at the terminus of the ditch.	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: Stilling basin to be completed, monitor the organics and stripping which may contribute to sediment loading of the ditch and stilling basin.	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: As work continues and during spring melt	
Monitoring Frequency: Bi-Weekly during construction and as weather or activity affects the area.	
Reporting Requirements: As built.	

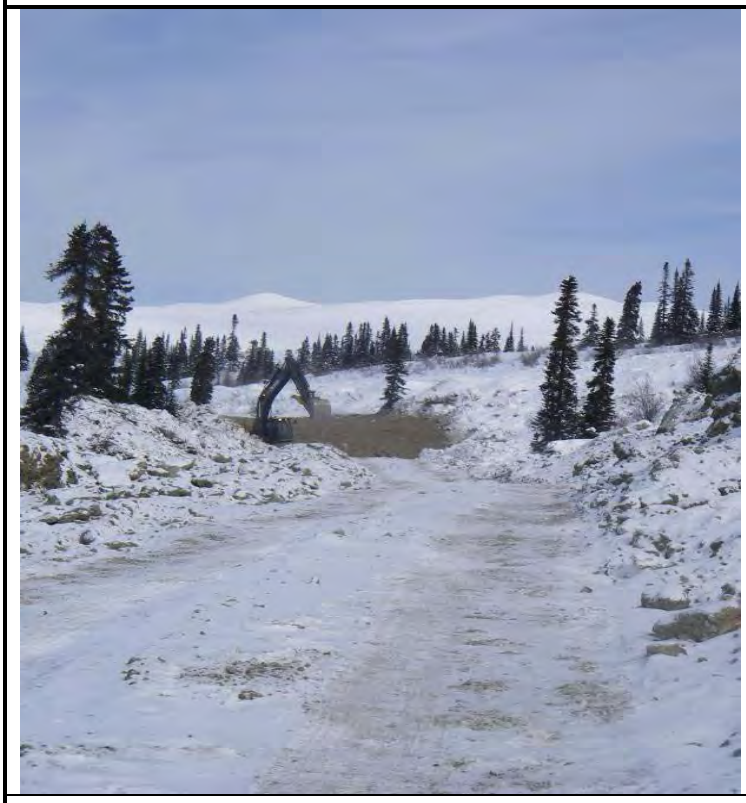
Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch B	**Date:** March 3rd – 17th
	
03/08/09 Initial ditch work for culvert installation. (facing NE)	**03/08/09** Culverts arriving onsite.
	
03/09/09 Ditching and culvert installation. (facing SW)	**03/09/09** Ditching and culvert installation. (facing SW)

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch B	**Date:** March 3rd – 17th
	
03/09/09 Rip rap stockpiled for stilling basin.	**03/09/09** Backfilling the culvert.(facing NE)
	
03/09/09 Area for stilling basin cleared. (facing SW)	**03/13/09** Culvert installation.

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch B	**Date:** March 3rd – 17th
	
03/16/09 Ditching and culvert installation. (facing SW)	**03/16/09** Ditching and culvert installation. (facing SW)
	
03/21/09 Ditching for culvert.	**03/21/09** Backfilling culvert.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: March 31st – April 6th , 2009	Inspector(s): Robin McCall/Mary McDougall/Billie Maje
Site Name: Ditch B	Location/Co-ordinates: Km 24
Site Location Description: The Ditch runs upslope of the Tailings Facility and requires side casting of the frost as it is unsuitable for back filling. The Ditch collects water draining from the slope and the current road and diverts it away from the basin of the tailings facility. Willows, Spruce and Balsam Fir predominate.	
Weather Conditions: Typical spring weather, temperatures ranging from -10°C to 2°C.	
Part 2 – Site Assessment	
Activity: Blasting and drilling has commenced in the area along Ditch B to loosen the frozen ground.	
Site Description: Ditch B is a 1260 m collection ditch located upslope of the tailings facility running parallel to the current access road between km24 and Km 23. The ditch runs to the SW and slopes at a moderate grade towards the southern end of the tailings facility from Km 0 + 000 to Km 0+ 765 and then takes a turn to the South and heads off at a 10% grade terminating at Km 1+1260 approximately 100m from Go Creek. This 495m run is contained within an 800mm culvert which drains in to a stilling basin located at the terminus of the ditch.	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: None	
Part 3 –Mitigation Requirements	
Mitigation Required: Monitor the organics and strippings which may contribute to sediment loading of the ditch and stilling basin.	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: As work continues and during spring melt.	
Monitoring Frequency: Bi-Weekly during construction and as weather or activity affects the area.	
Reporting Requirements: None	

Wolverine Project
Environmental Inspection Form – Photos

Site Name: Ditch B	**Date:** March 31st – April 6th
	
04/03/09 Ditching continues. Looking north towards Km 25.	**04/03/09** Excavator ditching, and drillers are laying their blasting pad. Looking south
	
04/03/09 Excavator working on Ditch B site. Km 24.7 Looking north	**04/03/09** Excavator working on Ditch B. Photo taken from West side of the tailings facility.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 4th - 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Pipeline	Location/Co-ordinates: Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Typical summer weather, temperatures ranging from 5°C to 30°C with periods of rain.	
Part 2 – Site Assessment	
Activity: -Clearing route from mill to tailings along west side of access road between km 24.7 to mill pad area Km 28.	
Site Status: -Route is 75% cleared. -Not cleared between km 26.2 and 27.2 (area is already disturbed). Mill located at km 28.	
Assessed Risk: low	
Photos Attached: Yes (10)	
Samples Taken: ABA sample taken. Borrowing material for route from between KM 26.2 and KM27.	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none.	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction, with special attention to Go Creek crossing, and during commissioning	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** August 4th to 10th
	
08/04/09 The tailings pond is where the line discharges.	**08/04/09** Km 25 cleared route for pipeline.
	
08/04/09 Route cleared below Arctic Camp.	**08/04/09** Route cleared through the airstrip lay down.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** August 4th to 10th
	
08/04/09 Route cleared at the end of the airstrip.	**08/07/09** South side of Go Creek crossing.
	
08/07/09 North side of Go creek crossing.	**08/10/09** Route cleared along access road from Km 26.2 to km 27.2.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** August 4th to 10th
	
08/10/09 Route cleared through km 27.2.	**08/10/09** Lower portal area.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: August 11th - September 14th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Pipeline	Location/Co-ordinates: Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Typical fall weather, temperatures ranging from 0°C to 12°C with periods of rain.	
Part 2 – Site Assessment	
Activity: - Clearing near Go Creek crossing - Clearing route into Tailings pond ongoing. - Sharp corners on route north of Go Creek are being cut out.	
Site Status: - 90% cleared - No pipeline work started	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None at this time	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction, with special attention to Go Creek crossing, and during commissioning	
Monitoring Frequency: Daily	
Reporting Requirements: every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** September 10th
	
09/14/09 Dozer approaching Go Creek crossing.	**09/14/09** Go Creek crossing area.
	
09/14/09 Flagging to mark edge of berms.	**09/14/09** Grade to come down on north side of crossing.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline **Date:** September 10th



09/14/09 Pipeline will cross road through culverts.



09/14/09 Dozer clearing trees by Go Creek.



09/14/09 Red paint marking where side will be cut out and straightened.



09/14/09 Red paint marking where side will be cut out and straightened.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 10th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Pipeline	Location Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Typical fall/winter conditions. Some snow with cool temperature ranging from 0 to -12°C.	
Part 2 – Site Assessment	
Activity: - Clearing route from mill to tailings along west side of access road between km 24.7 to mill pad area Km 28. - The permanent HDPE tailings line installation has begun. - Treated effluent water is being pumped from the Sewage Treatment Plant (STP) to the tailings facility. - Installed culverts under airstrip access road and at km 25.1. - The temporary pipeline was commissioned on September 21st	
Site Status: -Route is 90% cleared. -Not cleared off road between km 26.2 and 27.2. Mill located at km 28. -A 2” temporary pipeline has been installed to pump treated effluent water from STP and underground untreated discharge water	
Assessed Risk: Low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction, with special attention to Go Creek crossing, and during commissioning.	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline **Date:** October 10th



10/10/09 Slurry line from STP.



10/10/09 STP line “T’s” into sump discharge line.



10/10/09 Temporary line along Km 27 to tailings.



10/10/09 Slurry line crossing at Go Creek.

Wolverine Project
Environmental Inspection Form – Photos

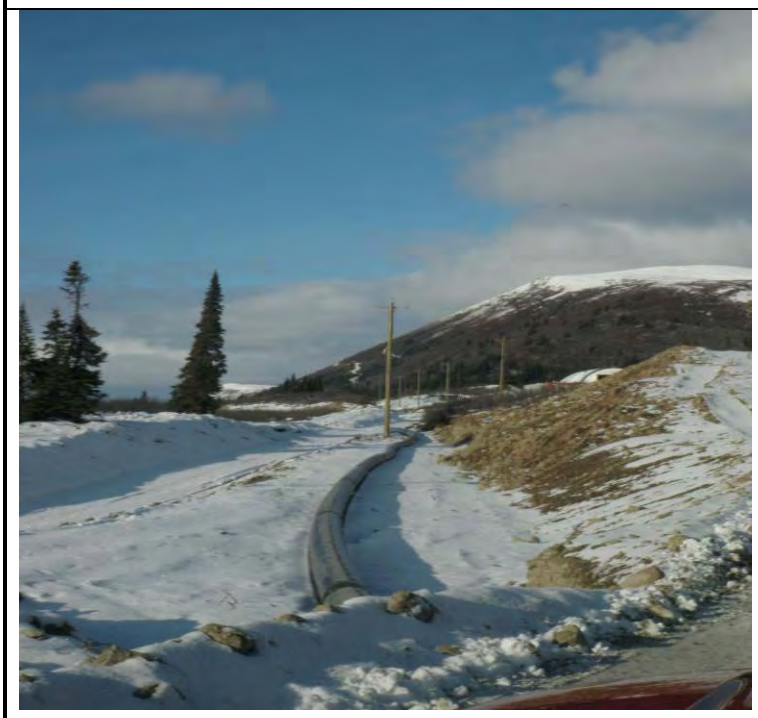
Project Name: Pipeline	**Date:** October 10th
	
10/10/09 Culvert installation at Km 25.1.	**10/10/09** Pipeline route crossing at 25.1.
	
10/10/09 Temporary line through airstrip lay down.	**10/10/09** Pipeline storage at airstrip.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 3rd , 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Pipeline	Location Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Typical fall/winter conditions. Some snow with cool temperature ranging from 0 to -12°C.	
Part 2 – Site Assessment	
Activity: -The permanent HDPE tailings line installation has begun. - Underground water is continuously being pumped to tailings from water treatment ponds. - Treated effluent water is being pumped from the Sewage Treatment Plant (STP) to the tailings facility.	
Site Status: -Route 100% cleared. -80% of the permanent tailings line is installed. - Temporary line has been installed and is still in use -All crossings have been installed. (25.2, Go Creek, 27.2)	
Assessed Risk: Low	
Photos Attached: Yes	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None at this time	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction, with special attention to Go Creek crossing, and during commissioning. Monitor discharge end daily to ensure there is no ice buildup or blockages	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline **Date:** November 3rd



11/03/09 Pipeline from Km 25 runs behind Arctic Camp.



11/03/09 Pipeline runs through airstrip lay down area.

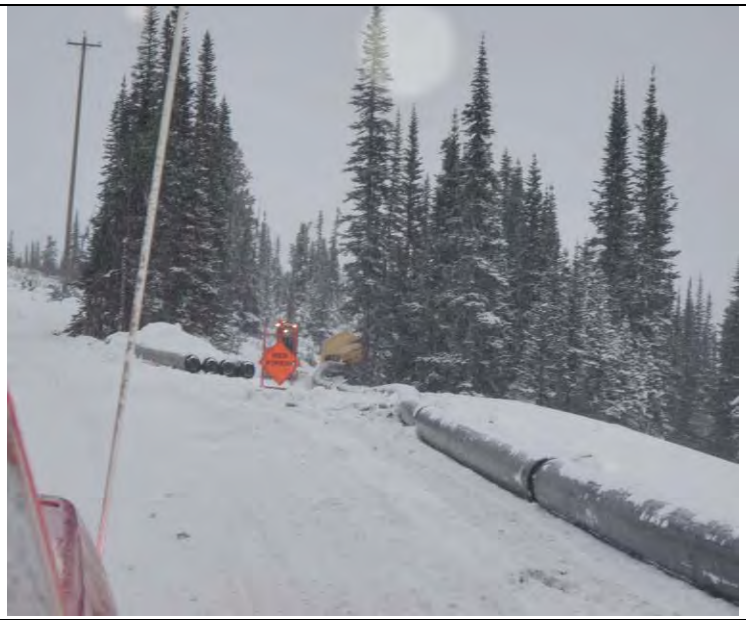
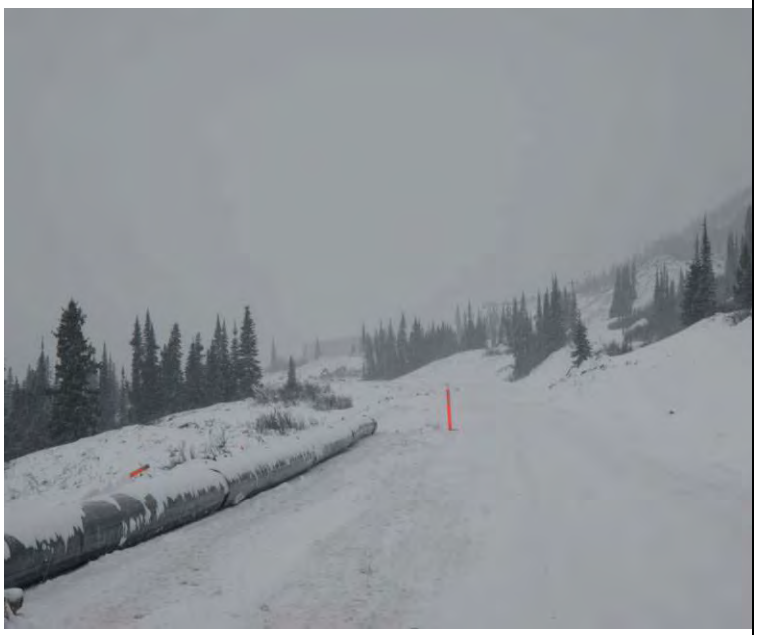


11/03/09 Go Creek crossing.



11/03/09 Airport road crossing.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** November 3rd
	
11/03/09 Continuing on to Km 26.2	**11/03/09** Km 26.2 welding is ongoing.
	
11/03/09 Km 26.2 facing towards the mill.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 10th -17th , 2009	Inspector(s): Billie Maje
Site Name: Tailings Pipeline	Location Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Winter conditions. Some snow with cool temperature ranging from 0 to -12°C.	
Part 2 – Site Assessment	
Activity: - The permanent tailings line installation is ongoing - Underground water is continuously being pumped to tailings from water treatment ponds. - Treated effluent water is being pumped from the Sewage Treatment Plant (STP) to the tailings facility.	
Site Status: - 85% of permanent tailings line installed. - The temporary line has been installed and still in use.	
Assessed Risk: low	
Photos Attached: Yes (8)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction, with special attention to Go Creek crossing, and during commissioning. Monitor discharge end daily to ensure there is no ice buildup or blockages	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** November 10th – 17th
	
11/15/09 Km 25 welding work at tailings.	**11/16/09** Km 25 welding work at tailings.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 18 - 20th, 2009	Inspector(s): Billie Maje
Site Name: Tailings Pipeline	Location Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Winter conditions. Some snow with cool temperature ranging from 0 to -25°C.	
Part 2 – Site Assessment	
Activity: -The permanent tailings line installation is complete and commissioned. - Work to continue on permanent tailings discharge line - Underground water is continuously being pumped to tailings from water treatment ponds. - Treated effluent water is being pumped from the Sewage Treatment Plant (STP) to the tailings facility.	
Site Status: - The temporary slurry line has been decommissioned, but left in place - Water is now being pumped from the sumps, leak test done on the 19th.	
Assessed Risk: low	
Photos Attached: Yes (11)	
Samples Taken: No	
Additional Information Attached: none	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Good.	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction. Monitor discharge end daily to ensure there is no ice buildup or blockages	
Monitoring Frequency: Daily at end of pipe	
Reporting Requirements: When conditions change	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** November 18th - 20th, 2009
	
11/18/19 Junction in front of Batch Plant.	**11/19/09** End of pipe. Black spot in the background is old pipeline.
	
11/20/09 Final work. Insulating cuff links are being installed.	

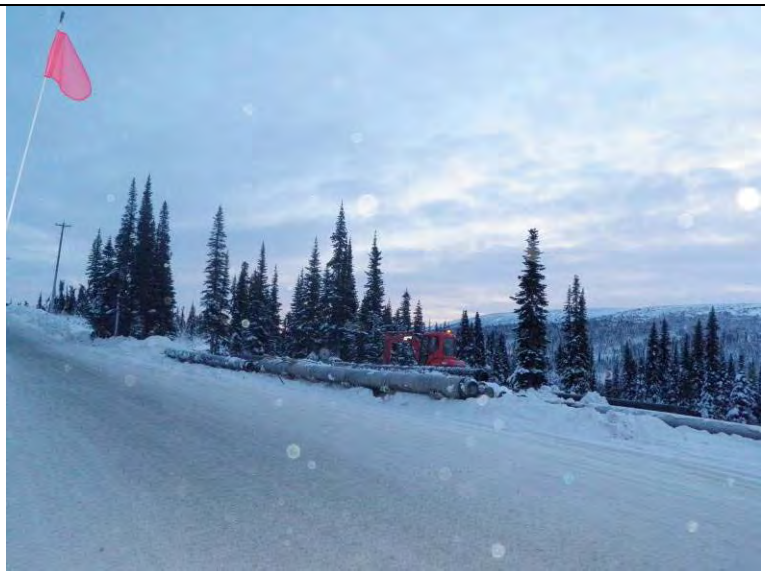
Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 25th – December 14th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Tailings Pipeline	Location Km 24.2 (tailings) to Km 27.4 (mill pad)
Site Location Description: The tailings discharge pipeline and reclaim pipeline are designed to convey water and tailings to and from the camp/mill/ industrial complex and tailings facility. The pipeline design is a large insulated double walled HDPE pipe, with welding between sections. The area cleared is along the south side of the access road starting at the Mill and ending at the Tailings pond. Newly disturbed area consists of some small spruce trees, but mainly small willows and a vegetative bed of moss and lichen. The pipeline will start within the wolverine creek drainage (large distance from Creek itself >300m) and travel into the Go Creek drainage and eventually crossing the creek itself.	
Weather Conditions: Winter conditions. Some snow with cool temperature ranging from 0 to -30°C.	
Part 2 – Site Assessment	
Activity: -The permanent discharge line installation is ongoing	
Site Status: - Underground water is continuously being pumped to tailings from water treatment ponds. - Treated effluent water is being pumped from the Sewage Treatment Plant (STP) to the tailings facility.	
Assessed Risk: low	
Photos Attached: Yes (10)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction. Monitor discharge end daily to ensure there is no ice buildup or blockages	
Monitoring Frequency: Daily at end of pipe	
Reporting Requirements: When conditions change	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** November 25th – December 14th, 2009
	
11/30/09 Outlet into tailings pond.	**11/30/09** Pipeline runs behind Arctic Camp.
	
11/30/09 Through lay down area.	**11/30/09** Go Creek crossing.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** November 25th – December 14th, 2009
	
11/25/09 Continuing on to Km 26.2	**11/25/09** Km 26.2 welding is ongoing.
	
11/25/09 Km 26.2 facing towards the mill.	**12/07/09** Slurry line and reclaim line running along road.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Pipeline	**Date:** December 14th
	
12/13/09 Km 27 pipeline without a berm.	**12/14/09** Km 27 pipeline with a berm.

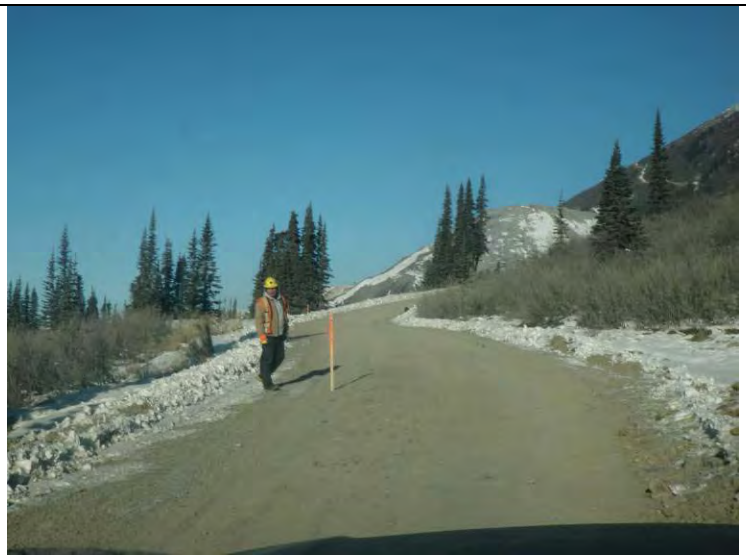
Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 14th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Power line	Location/Co-ordinates: Mill Gen-set pad to Tailings Facility.
Site Location Description: Area cleared through the trees up into YZC gen-set pad down behind the medic trail, above the waste rock pad entering the old road at km 27 running along it then crossing the new access road at km 26.2. Will run along south side of road ending at the Tailings pond.	
Weather Conditions: Typical fall/winter weather, temperatures ranging from 0°C to -12°C with periods of snow.	
Part 2 – Site Assessment	
Activity: -Route cleared from mill site to YZC camp gen-set through the trees above YZC camp to km 27 on old road where it continues down until 26.2 where it crosses new access road and starts to run along south side until it reaches the -Being cleared by slashers.	
Site Status: -80% cleared.	
Assessed Risk: Low	
Photos Attached: Yes (18)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction.	
Monitoring Frequency: Every other day	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 14th
	
10/14/09 The route starts here above the gen-set pad.	**10/14/09** The route entering the YZC gen-set pad.
	
10/14/09 Route runs along behind the first aid shack.	**10/14/09** Route runs along above the old road into YZC camp.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 14th
	
10/14/09 The route will come onto the old road at old km 27 from the right side.	**10/14/09** A slasher checking the flag on the old road.
	
10/14/09 Old road flagged for clearing.	**10/14/09** End of old road km 26.2. End of the flagging on north side of road.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 14th
	
10/14/09 Power line crosses road at km 26.2 from north to south side of road.	**10/14/09** Right side of airstrip entrance flagged.
	
10/14/09 Left side of airstrip entrance flagged.	**10/14/09** North side of go creek at km 26 flagged.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 14th
	
10/14/09 Along Km 26.	**10/14/09** KM 25.9 area below road south of Go Creek.
	
10/14/09 Along the road above the airstrip lay down area.	**10/14/09** Along the road above the airstrip lay down area.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 14th
	
10/14/09 Flagging posts marking the power line route along the top of the airstrip lay down.	**10/14/09** Power poles erect. Est. 25-30 poles are in place, last known work area was at the airstrip.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 16th , 2009	Inspector(s): Jaymie Skidmore
Site Name: Power line	Location/Co-ordinates: Mill Gen-set pad to Tailings Facility.
Site Location Description: Area cleared through the trees up into YZC gen-set pad down behind the medic trail, above the waste rock pad entering the old road at km 27 running along it then crossing the new access road at km 26.2. Will run along south side of road ending at the Tailings pond. Area cleared consists of trees and a creek crossing such as Go Creek.	
Weather Conditions: Typical fall/winter weather, temperatures ranging from 0°C to -12°C with periods of snow.	
Part 2 – Site Assessment	
Activity: -Route cleared from mill site to YZC gen-set through the trees above YZC camp to km 27 on old road where it continues down until 26.2 where it crosses new access road and starts to run along south side until it reaches the -Being cleared by Dozer.	
Site Status: -90% cleared.	
Assessed Risk: Low	
Photos Attached: Yes (3)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: none	
Mitigation Condition: Good	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction.	
Monitoring Frequency: Every two days	
Reporting Requirements: Every two weeks or as conditions change	

Wolverine Project
Environmental Inspection Form – Photos

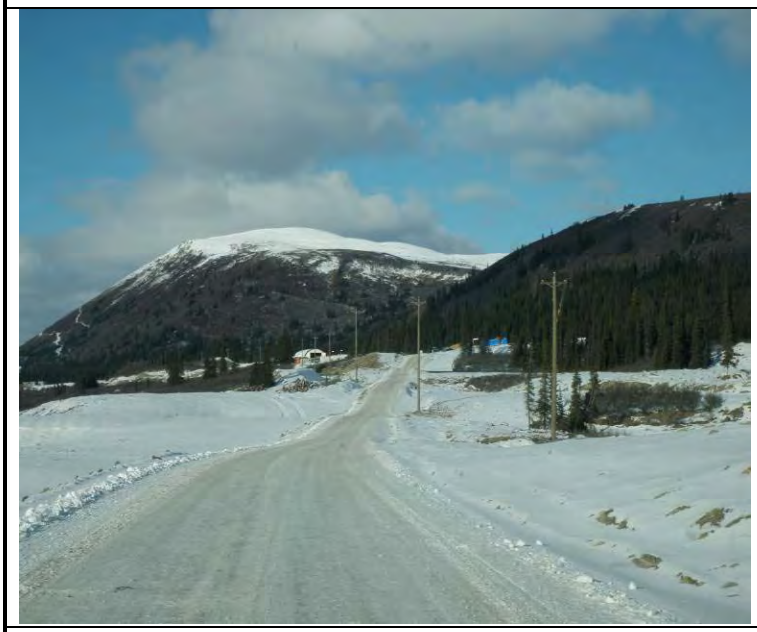
Project Name: Power line	**Date:** October 16th
	
10/16/09 Dozer starting to clear above old road at waste rock pile.	**10/16/09** Looking through airstrip lay down towards YZC.
	
10/16/09 Airstrip lay down looking towards arctic camp.	

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: October 28th – November 2nd, 2009	Inspector(s): Jaymie Skidmore
Site Name: Power line	Location/Co-ordinates: Mill Gen-set pad to Tailings Facility
Site Location Description: Area cleared through the trees up into YZC gen-set pad down behind the medic trail, above the waste rock pad entering the old road at km 27 running along it then crossing the new access road at km 26.2. Will run along south side of road ending at the Tailings pond.	
Weather Conditions: Typical fall/winter weather, temperatures ranging from 0°C to -20°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Power pole installation is ongoing.	
Activity: - Power poles are 90% erect from gen set pad along to tailings facility. - Route is 100% cleared	
Assessed Risk: Low	
Photos Attached: Yes (12)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None.	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction	
Monitoring Frequency: Every other day	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line **Date:** October 28th – November 2nd



10/28/09 Power poles crossing road at 25.2 from below Arctic camp to Tailings pond.



10/28/09 Power poles running below Arctic camp.

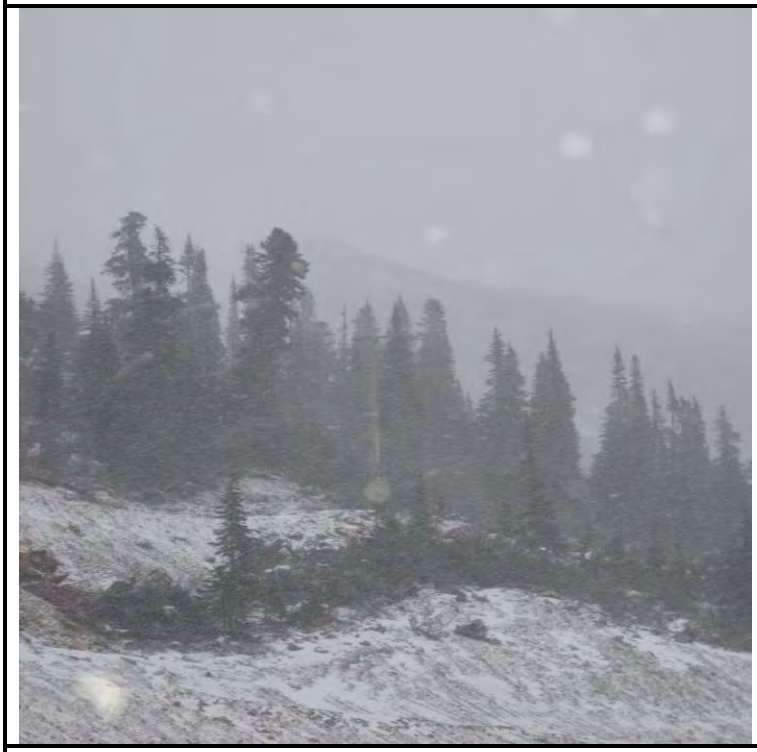


10/28/09 Power poles running along airstrip lay down area.



10/28/09 Power poles run along south side of road along km 26.1.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 28th – November 2nd
	
10/29/09 Power poles running through old access road from old km 27 to km 26.2 where it crosses over to south side of access road.	**10/29/09** Power line running along old access road. New access road in sight.
	
10/30/09 Final power poles being installed across from gen-set pad.	**10/30/09** Installing of the power poles across from the gen-set pad.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** October 28th – November 2nd
	
10/29/09 Power line crossing road over to Gen-set pad.	**10/29/09** Power lines continuing towards vent raise.
	
10/30/09 Power line with Gen-set pad in background.	**11/02/09** Power lines entering landfill.

Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 10th -17th , 2009	Inspector(s): Billie Maje
Site Name: Power line	Location/Co-ordinates: Mill Gen-set pad to Tailings Facility.
Site Location Description: Area cleared through the trees up into YZC gen-set pad down behind the medic trail, above the waste rock pad entering the old road at km 27 running along it then crossing the new access road at km 26.2. Will run along south side of road ending at the Tailings pond.	
Weather Conditions: Typical fall/winter weather, temperatures ranging from 0°C to -12°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Power pole installation completion - Power line installation ongoing	
Status: - Power poles are 100% installed	
Assessed Risk: Low	
Photos Attached: Yes (4)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Waiting for lines to be installed.	
Monitoring Frequency: Every other day	
Reporting Requirements: Every two weeks	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** November 10th -17th
	
11/13/09 Power lines not yet installed.	**11/13/09** Power poles running above YZC camp started with power lines.
	
11/14/09 Power lines at fuel farm.	**11/15/09** Power lines at WRP.

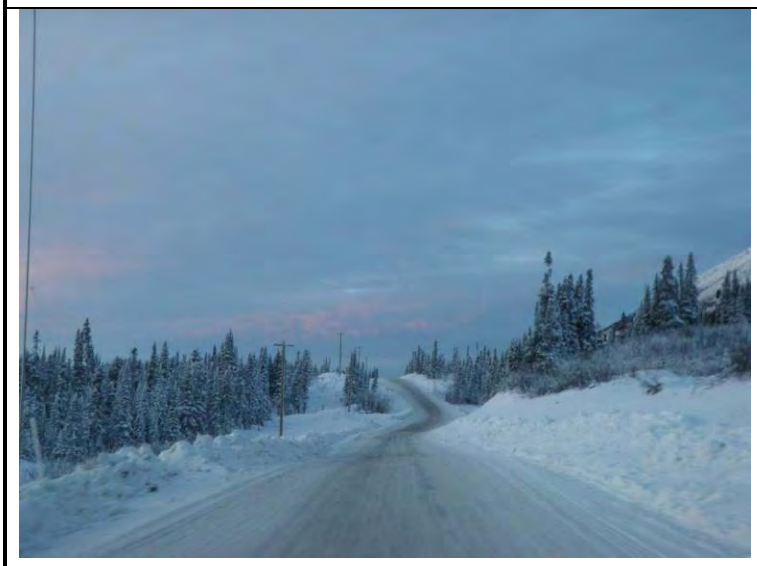
Wolverine Project
Environmental Inspection Form

Part 1 – Site Description	
Date: November 18th - 29th, 2009	Inspector(s): Jaymie Skidmore
Site Name: Power line	Location/Co-ordinates: Mill Gen-set pad to Tailings Facility.
Site Location Description: Area cleared through the trees up into YZC gen-set pad down behind the medic trail, above the waste rock pad entering the old road at km 27 running along it then crossing the new access road at km 26.2. Will run along south side of road ending at the Tailings pond.	
Weather Conditions: Typical fall/winter weather, temperatures ranging from 0°C to -20°C with periods of snow.	
Part 2 – Site Assessment	
Activity: - Power line stringing is on hold as Arctic Power is not on site	
Status: -Power poles are 100% erect from gen set pad along to tailings facility. -The power lines are approx. 50% installed	
Assessed Risk: Low	
Photos Attached: Yes (6)	
Samples Taken: No	
Additional Information Attached: No	
Part 3 –Mitigation Requirements	
Mitigation Required: None	
Mitigation Condition: Excellent	
Part 4 –Monitoring Requirements	
Follow-up Monitoring: Ongoing during construction.	
Monitoring Frequency: Daily	
Reporting Requirements: Every two weeks during installation	

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** November 18th – 29th
	
11/28/09 Cables have been strung from sump 3 area poles.	**11/28/09** Cables continue through gen-set pad.
	
11/28/09 Cables run behind YZC camp along old road km 27 to km 26.2.	**11/28/09** Cables stop at km 26.2 area.

Wolverine Project
Environmental Inspection Form – Photos

Project Name: Power line	**Date:** November 18th – 29th
	
11/29/09 There is no cable past 26.2.	**11/29/09** Power poles at tailings pond.

Appendix F: Acid Base Accounting and Shake Flask Testing Lab Reports

ALS Chemex
EXCELLENCE IN ANALYTICAL CHEMISTRY
ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alschemex.com

To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 1-OCT-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09101398

Project: Wolverine

P.O. No.:

This report is for 2 Rock samples submitted to our lab in Vancouver, BC, Canada on 16-SEP-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06	Sulfate Sulfur-carbonate leach	LECO
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO

To: YUKON ZINC CORPORATION
ATTN: ALS CHEMEX

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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ALS Canada Ltd.
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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 1-OCT-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09101398

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01
Old Road Km 26.8		3.34	2.5	2	1	4	5.5	1.60	0.08	0.07	0.01
Airstrip Laydown Composite		2.80	0.9	4	1	5	6.4	5.33	0.03	0.02	0.01

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 18-FEB-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09012568

Project: Wolverine

P.O. No.: S100392

This report is for 1 Rock sample submitted to our lab in Vancouver, BC, Canada on 5-FEB-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
CRU-QC	Crushing QC Test
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06	Sulfate Sulfur-carbonate leach	LECO
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO

To: **YUKON ZINC CORPORATION**
ATTN: ALS CHEMEX

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Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 18-FEB-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09012568

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01	S-GRA06a S % 0.01
Km 11 Aggregate		1.56	0.6	4	1	5	6.7	8.00	0.02	<0.01	0.02	<0.01

Comments: ** CORRECTED COPY for addition of PO number **

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To: **YUKON ZINC CORPORATION**
701-475 HOWE ST
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Finalized Date: 28-MAY-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09049898

Project: Wolverine

P.O. No.: S100392

This report is for 1 Rock sample submitted to our lab in Vancouver, BC, Canada on 20-MAY-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

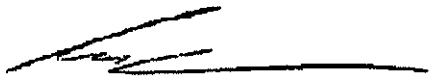
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06	Sulfate Sulfur-carbonate leach	LECO
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO

To: **YUKON ZINC CORPORATION**
ATTN: ALS CHEMEX

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Signature: 
Colin Ramshaw, Vancouver Laboratory Manager

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 28-MAY-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09049898

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01	S-GRA06a S % 0.01
DITCH #1 DITCH BLOCK		2.52	22.8	-19	1	4	6.7	0.18	0.73	0.66	0.07	0.50

Comments: ** CORRECTED COPY for addition of PO number **

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 1-SEP-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09083648

Project: Wolverine

P.O. No.:

This report is for 1 Soil sample submitted to our lab in Vancouver, BC, Canada on 7-AUG-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO
S-GRA06	Sulfate Sulfur-carbonate leach	LECO

To: **YUKON ZINC CORPORATION**
ATTN: ALS CHEMEX

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Signature:

Colin Ramshaw, Vancouver Laboratory Manager

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 1-SEP-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09083648

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01
K 26.6		4.22	<0.3	5	1	5	5.7	32.00	<0.01	<0.01	<0.01

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To: **YUKON ZINC CORPORATION**
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 8-JUL-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09063946

Project: Wolverine

P.O. No.: S100392

This report is for 2 Rock samples submitted to our lab in Vancouver, BC, Canada on 25-JUN-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06	Sulfate Sulfur-carbonate leach	LECO
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO

To: **YUKON ZINC CORPORATION**
ATTN: ALS CHEMEX

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Signature:

Colin Ramshaw, Vancouver Laboratory Manager

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 8-JUL-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09063946

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01
VENT RAISE (A3) WASTE		6.12	42.2	-22	1	20	7.8	0.47	1.35	0.03	1.32
VENT RAISE WASTE COMPOSI'		7.92	20.9	17	2	38	8.5	1.81	0.67	0.02	0.65

Comments: ** CORRECTED COPY for addition of PO number **

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To: YUKON ZINC CORPORATION
701-475 HOWE ST
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Finalized Date: 1-MAY-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09040007

Project: Wolverine

P.O. No.: S100392

This report is for 5 Soil samples submitted to our lab in Vancouver, BC, Canada on 27-APR-2009.

The following have access to data associated with this certificate:

LAURA BATTISON PAMELA OHARA	MARY MCDOUGALL MIKE WALDEGGER	JILL MOORE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO
S-GRA06	Sulfate Sulfur-carbonate leach	LECO

To: YUKON ZINC CORPORATION
ATTN: ALS CHEMEX

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Signature:

Colin Ramshaw, Vancouver Laboratory Manager

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Phone: 604 984 0221 Fax: 604 984 0218 www.alschemex.com

To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 1-MAY-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09040007

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01	S-GRA06a S % 0.01
STP SUMP		4.08	1.3	3	1	4	5.0	3.20	0.04	0.03	0.01	<0.01
DITCH 1		4.58	0.3	2	1	2	5.0	6.40	0.01	0.01	<0.01	<0.01
MILL SITE		4.74	1.6	6	1	8	6.8	5.12	0.05	0.03	0.02	<0.01
MILL BYPASS Rd		5.56	1.9	9	1	11	7.6	5.87	0.06	0.05	0.01	<0.01
DITCH B		5.06	0.3	3	1	3	5.1	9.60	0.01	0.02	<0.01	<0.01

Comments: ** CORRECTED COPY for addition of PO number **

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To: **YUKON ZINC CORPORATION**
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 11-MAR-2009
This copy reported on 18-FEB-2010
Account: MPO

CERTIFICATE VA09023063

Project: Wolverine

P.O. No.: S100392

This report is for 1 Soil sample submitted to our lab in Vancouver, BC, Canada on 4-MAR-2009.

The following have access to data associated with this certificate:

LAURA BATTISON	MELISSA KIRBY	MARY MCDOUGALL
JILL MOORE	PAMELA OHARA	MIKE WALDEGGER

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	
S-GRA06a	Sulfate Sulfur (HCl leachable)	
OA-VOL08	Basic Acid Base Accounting	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-CAL06	Sulfide Sulfur (calculated)	LECO
S-GRA06	Sulfate Sulfur-carbonate leach	LECO

To: **YUKON ZINC CORPORATION**
ATTN: ALS CHEMEX

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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Phone: 604 984 0221 Fax: 604 984 0218 www.alschemex.com

To: YUKON ZINC CORPORATION
701-475 HOWE ST
VANCOUVER BC V6C 2B3

Finalized Date: 11-MAR-2009
Account: MPO

Project: Wolverine

CERTIFICATE OF ANALYSIS VA09023063

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	OA-VOL08 MPA tCaCO3/1000t 0.3	OA-VOL08 NNP tCaCO3/1000t 1	OA-VOL08 FIZZ RAT Unity 1	OA-VOL08 NP tCaCO3/1000t 1	OA-ELE07 pH Unity 0.1	OA-VOL08 Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-CAL06 S % 0.01	S-GRA06a S % 0.01
Sump #3 Excavation Stockpile		2.16	1.3	-1	1	0	5.6	0.00	0.04	<0.01	0.04	0.01

Comments: ** CORRECTED COPY for addition of PO number **

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: Mary McDougall
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Report Date: 02-OCT-09 16:56 (MT)
Version: FINAL

Lab Work Order #: **L820901** **Date Received:** **21-SEP-09**

Project P.O. #: S100386
Job Reference:
Legal Site Desc:
CofC Numbers:
Other Information:

Comments:

Lindsay Jones
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS Canada Ltd.
Part of the **ALS Laboratory Group**
1988 Triumph Street, Vancouver, BC V5L 1K5
Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com
A Campbell Brothers Limited Company

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L820901-1				
	Description					
	Sampled Date	06-AUG-09				
	Sampled Time					
	Client ID	K 26.6				
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	0.59				
Leachable Anions & Nutrients	pH (pH)	7.52				
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	1.99				
	Antimony (Sb)-Leachable (mg/L)	0.00044				
	Arsenic (As)-Leachable (mg/L)	0.0022				
	Barium (Ba)-Leachable (mg/L)	0.0383				
	Beryllium (Be)-Leachable (mg/L)	<0.00050				
	Bismuth (Bi)-Leachable (mg/L)	<0.00050				
	Boron (B)-Leachable (mg/L)	0.010				
	Cadmium (Cd)-Leachable (mg/L)	0.000066				
	Calcium (Ca)-Leachable (mg/L)	1.25				
	Chromium (Cr)-Leachable (mg/L)	0.00509				
	Cobalt (Co)-Leachable (mg/L)	0.00196				
	Copper (Cu)-Leachable (mg/L)	0.0499				
	Iron (Fe)-Leachable (mg/L)	3.18				
	Lead (Pb)-Leachable (mg/L)	0.00954				
	Lithium (Li)-Leachable (mg/L)	<0.0050				
	Magnesium (Mg)-Leachable (mg/L)	0.735				
	Manganese (Mn)-Leachable (mg/L)	0.0610				
	Mercury (Hg)-Leachable (mg/L)	<0.000050				
	Molybdenum (Mo)-Leachable (mg/L)	0.00203				
	Nickel (Ni)-Leachable (mg/L)	0.00616				
	Phosphorus (P)-Leachable (mg/L)	<0.90				
	Potassium (K)-Leachable (mg/L)	1.01				
	Selenium (Se)-Leachable (mg/L)	<0.00050				
	Silicon (Si)-Leachable (mg/L)	8.99				
	Silver (Ag)-Leachable (mg/L)	0.000069				
	Sodium (Na)-Leachable (mg/L)	2.35				
	Strontium (Sr)-Leachable (mg/L)	0.00331				
	Thallium (Tl)-Leachable (mg/L)	<0.00010				
	Tin (Sn)-Leachable (mg/L)	<0.00050				
	Titanium (Ti)-Leachable (mg/L)	0.118				
	Uranium (U)-Leachable (mg/L)	0.000144				
	Vanadium (V)-Leachable (mg/L)	0.0086				
	Zinc (Zn)-Leachable (mg/L)	<0.010				

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2974-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: Mary McDougall
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Report Date: 06-AUG-09 18:15 (MT)
Version: FINAL

Lab Work Order #: L796495 **Date Received:** 23-JUL-09

Project P.O. #: S100386
Job Reference:
Legal Site Desc:
CofC Numbers:

Other Information:

Comments:

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L796495-1	L796495-2			
	Description					
	Sampled Date					
	Sampled Time					
	Client ID	VENT RAISE (A3)	VENT RAISE WASTE COMPOSITE			
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	0.57	<0.10			
Leachable Anions & Nutrients	pH (pH)	7.93	8.19			
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	0.086	0.132			
	Antimony (Sb)-Leachable (mg/L)	0.0147	0.0164			
	Arsenic (As)-Leachable (mg/L)	<0.0050	<0.0050			
	Barium (Ba)-Leachable (mg/L)	0.0681	0.111			
	Beryllium (Be)-Leachable (mg/L)	<0.0025	<0.0025			
	Bismuth (Bi)-Leachable (mg/L)	<0.0025	<0.0025			
	Boron (B)-Leachable (mg/L)	<0.050	<0.050			
	Cadmium (Cd)-Leachable (mg/L)	0.00074	<0.00025			
	Calcium (Ca)-Leachable (mg/L)	30.4	26.5			
	Chromium (Cr)-Leachable (mg/L)	<0.0025	<0.0025			
	Cobalt (Co)-Leachable (mg/L)	<0.00050	<0.00050			
	Copper (Cu)-Leachable (mg/L)	0.032	0.026			
	Iron (Fe)-Leachable (mg/L)	0.095	<0.090			
	Lead (Pb)-Leachable (mg/L)	0.0070	0.0040			
	Lithium (Li)-Leachable (mg/L)	<0.025	<0.025			
	Magnesium (Mg)-Leachable (mg/L)	7.97	4.20			
	Manganese (Mn)-Leachable (mg/L)	0.0989	0.0613			
	Mercury (Hg)-Leachable (mg/L)	0.000194	<0.000050			
	Molybdenum (Mo)-Leachable (mg/L)	0.00945	0.0152			
	Nickel (Ni)-Leachable (mg/L)	<0.0025	<0.0025			
	Phosphorus (P)-Leachable (mg/L)	<0.90	<0.90			
	Potassium (K)-Leachable (mg/L)	9.05	12.9			
	Selenium (Se)-Leachable (mg/L)	0.399	0.0276			
	Silicon (Si)-Leachable (mg/L)	2.17	2.94			
	Silver (Ag)-Leachable (mg/L)	<0.00025	<0.00025			
	Sodium (Na)-Leachable (mg/L)	0.63	0.97			
	Strontium (Sr)-Leachable (mg/L)	0.0789	0.121			
	Thallium (Tl)-Leachable (mg/L)	<0.00050	<0.00050			
	Tin (Sn)-Leachable (mg/L)	<0.0025	<0.0025			
	Titanium (Ti)-Leachable (mg/L)	<0.030	<0.030			
	Uranium (U)-Leachable (mg/L)	0.00102	0.00352			
	Vanadium (V)-Leachable (mg/L)	<0.0050	<0.0050			
	Zinc (Zn)-Leachable (mg/L)	<0.050	<0.050			

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2974-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: Mary McDougall
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Report Date: 25-JUN-09 17:15 (MT)
Version: FINAL

Lab Work Order #: L778116 **Date Received:** 15-JUN-09

Project P.O. #:
Job Reference:
Legal Site Desc:
CofC Numbers:
Other Information:

Comments: Shake Flask Test.

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L778116-1				
	Description					
	Sampled Date	18-MAY-09				
	Sampled Time					
	Client ID	DITCH#1 DITCH BLOCK				
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	<0.10				
Leachable Anions & Nutrients	pH (pH)	6.48				
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	0.910				
	Antimony (Sb)-Leachable (mg/L)	0.00047				
	Arsenic (As)-Leachable (mg/L)	<0.0010				
	Barium (Ba)-Leachable (mg/L)	1.33				
	Beryllium (Be)-Leachable (mg/L)	<0.00050				
	Bismuth (Bi)-Leachable (mg/L)	<0.00050				
	Boron (B)-Leachable (mg/L)	<0.010				
	Cadmium (Cd)-Leachable (mg/L)	0.000058				
	Calcium (Ca)-Leachable (mg/L)	2.15				
	Chromium (Cr)-Leachable (mg/L)	0.00100				
	Cobalt (Co)-Leachable (mg/L)	0.00021				
	Copper (Cu)-Leachable (mg/L)	0.0184				
	Iron (Fe)-Leachable (mg/L)	1.63				
	Lead (Pb)-Leachable (mg/L)	0.00640				
	Lithium (Li)-Leachable (mg/L)	<0.0050				
	Magnesium (Mg)-Leachable (mg/L)	0.363				
	Manganese (Mn)-Leachable (mg/L)	0.0845				
	Mercury (Hg)-Leachable (mg/L)	0.000201				
	Molybdenum (Mo)-Leachable (mg/L)	0.00145				
	Nickel (Ni)-Leachable (mg/L)	0.00286				
	Phosphorus (P)-Leachable (mg/L)	<0.30				
	Potassium (K)-Leachable (mg/L)	3.85				
	Selenium (Se)-Leachable (mg/L)	0.00132				
	Silicon (Si)-Leachable (mg/L)	8.20				
	Silver (Ag)-Leachable (mg/L)	0.000056				
	Sodium (Na)-Leachable (mg/L)	0.449				
	Strontium (Sr)-Leachable (mg/L)	0.0422				
	Thallium (Tl)-Leachable (mg/L)	<0.00010				
	Tin (Sn)-Leachable (mg/L)	<0.00050				
	Titanium (Ti)-Leachable (mg/L)	0.015				
	Uranium (U)-Leachable (mg/L)	0.000100				
	Vanadium (V)-Leachable (mg/L)	0.0027				
	Zinc (Zn)-Leachable (mg/L)	0.022				

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2974-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
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Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
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Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: Mary McDougall
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Report Date: 14-MAY-09 11:01 (MT)
Version: FINAL

Lab Work Order #: L759446 **Date Received:** 05-MAY-09

Project P.O. #:
Job Reference:
Legal Site Desc:
CofC Numbers:

Other Information:

Comments:

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample ID	L759446-1	L759446-2	L759446-3	L759446-4	
Description					
Sampled Date					
Sampled Time					
Client ID	STP SUMP	DITCH 1	MILL SITE	DITCH B	
Grouping / **Analyte**					
SOIL					
Physical Tests % Moisture (%)	0.14	0.63	4.45	0.34	
Leachable Anions & Nutrients pH (pH)	6.39	6.48	6.58	6.61	
Leachable Metals Aluminum (Al)-Leachable (mg/L)	0.356	0.403	0.0101	1.60	
Antimony (Sb)-Leachable (mg/L)	0.00017	0.00011	<0.00010	0.00020	
Arsenic (As)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	0.0011	
Barium (Ba)-Leachable (mg/L)	0.328	0.0183	0.139	0.0841	
Beryllium (Be)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Bismuth (Bi)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Boron (B)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd)-Leachable (mg/L)	0.000507	<0.000050	<0.000050	0.000052	
Calcium (Ca)-Leachable (mg/L)	1.03	0.24	7.94	0.98	
Chromium (Cr)-Leachable (mg/L)	0.00078	0.00119	<0.00050	0.00372	
Cobalt (Co)-Leachable (mg/L)	0.00448	0.00080	<0.00010	0.00262	
Copper (Cu)-Leachable (mg/L)	0.0324	0.0304	0.0104	0.0979	
Iron (Fe)-Leachable (mg/L)	2.43	1.36	0.072	5.19	
Lead (Pb)-Leachable (mg/L)	0.00575	0.00235	<0.00050	0.00527	
Lithium (Li)-Leachable (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
Magnesium (Mg)-Leachable (mg/L)	0.575	0.118	0.377	0.704	
Manganese (Mn)-Leachable (mg/L)	0.394	0.0540	0.00140	0.175	
Mercury (Hg)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Molybdenum (Mo)-Leachable (mg/L)	0.00024	0.00011	0.00141	0.00018	
Nickel (Ni)-Leachable (mg/L)	0.00937	0.00262	<0.00050	0.00506	
Phosphorus (P)-Leachable (mg/L)	<0.30	<0.30	<0.30	<0.30	
Potassium (K)-Leachable (mg/L)	1.26	0.785	0.966	0.900	
Selenium (Se)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Silicon (Si)-Leachable (mg/L)	9.41	6.56	2.75	15.0	
Silver (Ag)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	
Sodium (Na)-Leachable (mg/L)	1.45	1.39	0.503	1.59	
Strontium (Sr)-Leachable (mg/L)	0.00649	0.00128	0.0337	0.00404	
Thallium (Tl)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	
Titanium (Ti)-Leachable (mg/L)	0.090	0.082	<0.010	0.312	
Uranium (U)-Leachable (mg/L)	0.000052	0.000063	<0.000010	0.000103	
Vanadium (V)-Leachable (mg/L)	0.0022	0.0014	<0.0010	0.0051	
Zinc (Zn)-Leachable (mg/L)	0.083	<0.010	<0.010	0.014	

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

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MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2974-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

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Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Certificate of Analysis

YUKON ZINC CORPORATION

ATTN: MELISSA KIRBY

701 - 475 HOWE STREET

VANCOUVER BC V6C 2B3

Reported On: 23-MAR-09 05:28 PM

Lab Work Order #: L742356 **Date Received:** 16-MAR-09

Project P.O. #:

Job Reference: SUMP#3 EXCAVATION STOCKPILE

Legal Site Desc:

CofC Numbers:

Other Information:

Comments:

Andre Langlais
Account Manager

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ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L742356-1				
	Description					
	Sampled Date					
	Sampled Time					
	Client ID	SUMP#3 EXCAVATION STOCKPILE				
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	1.02				
Leachable Anions & Nutrients	pH (pH)	6.92				
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	0.185				
	Antimony (Sb)-Leachable (mg/L)	0.00659				
	Arsenic (As)-Leachable (mg/L)	0.0058				
	Barium (Ba)-Leachable (mg/L)	0.121				
	Beryllium (Be)-Leachable (mg/L)	<0.0025				
	Bismuth (Bi)-Leachable (mg/L)	<0.0025				
	Boron (B)-Leachable (mg/L)	0.560				
	Cadmium (Cd)-Leachable (mg/L)	0.00061				
	Calcium (Ca)-Leachable (mg/L)	543				
	Chromium (Cr)-Leachable (mg/L)	<0.0025				
	Cobalt (Co)-Leachable (mg/L)	0.00199				
	Copper (Cu)-Leachable (mg/L)	0.240				
	Iron (Fe)-Leachable (mg/L)	3.39				
	Lead (Pb)-Leachable (mg/L)	0.00674				
	Lithium (Li)-Leachable (mg/L)	0.051				
	Magnesium (Mg)-Leachable (mg/L)	117				
	Manganese (Mn)-Leachable (mg/L)	0.441				
	Mercury (Hg)-Leachable (mg/L)	0.000545				
	Molybdenum (Mo)-Leachable (mg/L)	0.0126				
	Nickel (Ni)-Leachable (mg/L)	0.0184				
	Phosphorus (P)-Leachable (mg/L)	<0.60				
	Potassium (K)-Leachable (mg/L)	40.3				
	Selenium (Se)-Leachable (mg/L)	0.0141				
	Silicon (Si)-Leachable (mg/L)	9.90				
	Silver (Ag)-Leachable (mg/L)	0.00038				
	Sodium (Na)-Leachable (mg/L)	320				
	Strontium (Sr)-Leachable (mg/L)	4.63				
	Thallium (Tl)-Leachable (mg/L)	<0.00050				
	Tin (Sn)-Leachable (mg/L)	<0.0025				
	Titanium (Ti)-Leachable (mg/L)	0.134				
	Uranium (U)-Leachable (mg/L)	0.00584				
	Vanadium (V)-Leachable (mg/L)	<0.0050				
	Zinc (Zn)-Leachable (mg/L)	0.059				

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2794-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: PAMELA LADYMAN
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Reported On: 27-FEB-09 05:52 PM

Lab Work Order #: L737044 **Date Received:** 25-FEB-09

Project P.O. #:
Job Reference: WOLVERINE - 1614
Legal Site Desc:
CofC Numbers:
Other Information:

Comments:

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS Canada Ltd.
Part of the **ALS Laboratory Group**
1988 Triumph Street, Vancouver, BC V5L 1K5
Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com
A Campbell Brothers Limited Company

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L737044-1				
	Description					
	Sampled Date	02-FEB-09				
	Sampled Time					
	Client ID	KM 11 AGGREGATE				
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	<0.10				
Leachable Anions & Nutrients	pH (pH)	7.03				
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	4.65				
	Antimony (Sb)-Leachable (mg/L)	0.00129				
	Arsenic (As)-Leachable (mg/L)	0.0049				
	Barium (Ba)-Leachable (mg/L)	0.277				
	Beryllium (Be)-Leachable (mg/L)	<0.00050				
	Bismuth (Bi)-Leachable (mg/L)	<0.00050				
	Boron (B)-Leachable (mg/L)	0.027				
	Cadmium (Cd)-Leachable (mg/L)	0.000283				
	Calcium (Ca)-Leachable (mg/L)	1.52				
	Chromium (Cr)-Leachable (mg/L)	0.0172				
	Cobalt (Co)-Leachable (mg/L)	0.00362				
	Copper (Cu)-Leachable (mg/L)	0.0194				
	Iron (Fe)-Leachable (mg/L)	7.31				
	Lead (Pb)-Leachable (mg/L)	0.00658				
	Lithium (Li)-Leachable (mg/L)	<0.0050				
	Magnesium (Mg)-Leachable (mg/L)	2.48				
	Manganese (Mn)-Leachable (mg/L)	0.426				
	Mercury (Hg)-Leachable (mg/L)	<0.000050				
	Molybdenum (Mo)-Leachable (mg/L)	0.00181				
	Nickel (Ni)-Leachable (mg/L)	0.0208				
	Phosphorus (P)-Leachable (mg/L)	<0.30				
	Potassium (K)-Leachable (mg/L)	5.91				
	Selenium (Se)-Leachable (mg/L)	0.00088				
	Silicon (Si)-Leachable (mg/L)	18.1				
	Silver (Ag)-Leachable (mg/L)	0.000135				
	Sodium (Na)-Leachable (mg/L)	3.21				
	Strontium (Sr)-Leachable (mg/L)	0.0171				
	Thallium (Tl)-Leachable (mg/L)	<0.00010				
	Tin (Sn)-Leachable (mg/L)	<0.00050				
	Titanium (Ti)-Leachable (mg/L)	0.120				
	Uranium (U)-Leachable (mg/L)	0.000372				
	Vanadium (V)-Leachable (mg/L)	0.0175				
	Zinc (Zn)-Leachable (mg/L)	0.040				

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2794-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-PCT-VA	Soil	pH by PCT (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)

GLOSSARY OF REPORT TERMS
Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.
The reported surrogate recovery value provides a measure of method efficiency.
mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
N/A - Result not available. Refer to qualifier code and definition for explanation

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.

Certificate of Analysis

YUKON ZINC CORPORATION
ATTN: Mary McDougall
701 - 475 HOWE STREET
VANCOUVER BC V6C 2B3

Report Date: 20-OCT-09 10:07 (MT)
Version: FINAL

Lab Work Order #: L826173 **Date Received:** 02-OCT-09

Project P.O. #: S100386
Job Reference:
Legal Site Desc:
CofC Numbers:

Other Information:

Comments:

Andre Langlais
Account Manager

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

ALS LABORATORY GROUP ANALYTICAL REPORT

	Sample ID	L826173-1	L826173-2			
	Description					
	Sampled Date	16-SEP-09	16-SEP-09			
	Sampled Time					
	Client ID	OLD ROAD KM 26.8	AIRSTRIP LAYDOWN COMPOSITE			
Grouping	**Analyte**					
SOIL						
Physical Tests	% Moisture (%)	0.64	0.59			
Leachable Anions & Nutrients	pH (pH)	5.78	6.24			
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	4.48	3.78			
	Antimony (Sb)-Leachable (mg/L)	<0.00050	0.00066			
	Arsenic (As)-Leachable (mg/L)	0.0074	0.0085			
	Barium (Ba)-Leachable (mg/L)	1.25	0.802			
	Beryllium (Be)-Leachable (mg/L)	<0.0025	<0.0025			
	Bismuth (Bi)-Leachable (mg/L)	<0.0025	<0.0025			
	Boron (B)-Leachable (mg/L)	<0.050	<0.050			
	Cadmium (Cd)-Leachable (mg/L)	<0.00025	<0.00025			
	Calcium (Ca)-Leachable (mg/L)	1.62	3.95			
	Chromium (Cr)-Leachable (mg/L)	0.0055	0.0116			
	Cobalt (Co)-Leachable (mg/L)	0.00461	0.00520			
	Copper (Cu)-Leachable (mg/L)	0.0928	0.0753			
	Iron (Fe)-Leachable (mg/L)	8.57	9.31			
	Lead (Pb)-Leachable (mg/L)	0.0206	0.0151			
	Lithium (Li)-Leachable (mg/L)	<0.025	<0.025			
	Magnesium (Mg)-Leachable (mg/L)	1.15	2.50			
	Manganese (Mn)-Leachable (mg/L)	0.383	0.643			
	Mercury (Hg)-Leachable (mg/L)	<0.000050	<0.000050			
	Molybdenum (Mo)-Leachable (mg/L)	0.00312	0.00281			
	Nickel (Ni)-Leachable (mg/L)	0.0123	0.0197			
	Phosphorus (P)-Leachable (mg/L)	<0.90	<0.90			
	Potassium (K)-Leachable (mg/L)	2.80	2.34			
	Selenium (Se)-Leachable (mg/L)	<0.0025	<0.0025			
	Silicon (Si)-Leachable (mg/L)	16.3	15.7			
	Silver (Ag)-Leachable (mg/L)	<0.00025	<0.00025			
	Sodium (Na)-Leachable (mg/L)	1.32	2.35			
	Strontium (Sr)-Leachable (mg/L)	0.0161	0.0195			
	Thallium (Tl)-Leachable (mg/L)	<0.00050	<0.00050			
	Tin (Sn)-Leachable (mg/L)	<0.0025	<0.0025			
	Titanium (Ti)-Leachable (mg/L)	0.340	0.580			
	Uranium (U)-Leachable (mg/L)	0.000287	0.000325			
	Vanadium (V)-Leachable (mg/L)	0.0120	0.0210			
	Zinc (Zn)-Leachable (mg/L)	0.051	0.056			

Reference Information

Additional Comments for Sample Listed:

Samplenum	Matrix	Report Remarks	Sample Comments

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAFS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

MET-SHKFLSK-ICP-VA	Soil	Metals by ICPOES (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).

MOISTURE-VA	Soil	Moisture content	ASTM METHOD D2974-00

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

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Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA		

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mg/kg (units) - unit of concentration based on mass, parts per million
mg/L (units) - unit of concentration based on volume, parts per million
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